

**FOSTERING SUSTAINABILITY IN
ENVIRONMENTAL PERFORMANCE VIA ESG
METRICS: THE SIGNIFICANCE OF
MANAGEMENT APPROACH AND LEADERSHIP
ASPIRATION**

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Declaration

I declare that the work in this thesis titled "Fostering Sustainability in Environmental Performance via ESG metrics: The significance of management approach and leadership aspiration" has been conducted out by me under the supervision of Dr Hung Woan Ting, Associate Professor of Nottingham University Business School. The text of this thesis had properly acknowledged the information that was taken from the literatures and includes a list of references. No part of this thesis has ever been submitted to another institution, for another degree or diploma.



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8 September 2022

Date

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Abstract

There is an increasing trend that both multinational companies and local companies are involved in Environment, Social and Governance (ESG) compliance and reporting requirements. This is because companies have now realised the importance of ESG and ESG has become a topic, additionally, there is an increase in ESG compliance screening, and also macro environmental issues such as global warming and pollution issues are developing to a more severe stage. In order to guide companies to manage and report their ESG performance, plenty of ESG reporting frameworks have been developed such as Global Reporting Initiative (GRI) framework, Task Force on Climate-related Financial Disclosures (TCFD). This research is interested in the current involvement of Malaysia listed companies in environmental practice. Besides assessing the environmental performance level, the relationship between firm's financial performance and its environmental performance is investigated as well. This research examined the impact of stakeholder management and target setting approach on firm's environmental performance. This thesis also attempted to reveal the impact of different industry environmental sensitivity level and impact of leadership aspiration on a firm's environmental performance level.

This thesis had adopted a quantitative approach and utilised content analysis to translate the qualitative content of Malaysia listed firm's 2020 sustainability report into quantitative measures. There were a total number of 155 sample companies included for this research. Analytical software such as SPSS and NVivo were used to analyse the data collected. The result has supported the legitimacy theory's claim that firms do manage environmental performance according to the regulatory reporting requirements and national policy targets. The study also found that companies' overall environmental performance is

positively related to firms' market value in the following year by controlling firms' economic and social governance performance. Furthermore, the findings showed that target setting approach and stakeholder management have a positive impact on firms' environmental performance. Despite that there is no difference in environmental performance level across different environmental sensitivity industries, the study results provided evidence that further enhanced that leadership aspiration does create positive impact on environmental performance among high environmental sensitivity companies. The findings of this thesis contribute to management practise in terms of the approach that they could adopt in managing environmental performance, as well as the effectiveness of stakeholder management and target setting approaches in environmental performance management. It also provides a direction for policymakers during policy formulation, and it suggests an alternate research instrument which is the usage of scoring template and ESG metrics in content analysis for future researchers to conduct similar sustainability-related research.

Keywords: ESG metrics, carbon emission performance, environmental performance, firm market value, content analysis, stakeholder management, target setting approach, environmentally sensitive industry, leadership aspiration

Table of Contents	
Declaration.....	2
Acknowledgement	3
Abstract	4
Table of Contents.....	6
List of Tables	9
List of Figures	10
Chapter 1 Introduction.....	1
1.1 Introduction	1
1.2 Problem Statement	5
1.3 Research Question	9
1.4 Research Objective.....	12
1.5 Significance of the Study.....	14
1.6 Definitions of Key Terms	16
1.7 Organisation of Chapters.....	17
Chapter 2 Literature Review	18
2.1 Introduction	18
2.2 ESG metrics	20
2.3 Environmental reporting and performance.....	22
2.4 Business Performance.....	27
2.5 Management Approaches for Environmental Performance Management.....	31
2.6 Industry membership: Environmental Sensitivity Level	37
2.7 Conceptual framework	41
Chapter 3 Research Methodology	44
3.1 Introduction	44
3.2 Sample Selection and Size	46
3.3 Design of Research Instrument	50
3.4 Data Collection Method	55

3.5 Variables.....	59
3.6 Ethical Considerations.....	66
Chapter 4 Analysis and Findings.....	67
4.1 Introduction	67
4.2 Robustness Test.....	69
4.3 Descriptive Analysis.....	73
Environmental reporting and performance.....	76
4.4 Inferential Analysis.....	79
Business Performance.....	79
Management Approaches for Environmental Performance Management	97
Industry membership: Environmental Sensitivity Level	103
4.5 Conclusion	111
Chapter 5 Discussion, Recommendation and Conclusion.....	112
5.1 Introduction	112
5.2 Discussion of the analysis result.....	113
5.2.1 Environmental reporting and performance	113
5.2.2 Business Performance	118
5.2.3 Management Approaches for Environmental Performance Management	123
5.2.4 Industry membership: Environmental Sensitivity Level	127
5.3 Significance of the Findings	132
5.3.1 Research Implications	132
5.3.2 Theoretical Implication	134
5.3.3 Policy Implication.....	136
5.3.4 Managerial Implication	138
5.4 Limitations of the current research	140
5.5 Suggestions for Future Research	142
5.6 Conclusion	144
References	148
Appendices.....	158

Appendix 1 ESG metrics	158
Appendix 2 Stakeholder Saliency Framework	170
Appendix 3 Sample Exclusion List	171
Appendix 4 Scoring Template and Scale	172
Appendix 5 Industry Classification and Leadership Aspiration	174
Appendix 6 Descriptive Statistic.....	176
Appendix 7 Full SPSS output for H2	178
Appendix 8 Full SPSS output for H3	212
Appendix 9 Test of normality.....	218
Appendix 10 Number of companies that attempted category 2.11 in each industry	220

List of Tables

TABLE 1 DISTRIBUTION OF INDUSTRY	49
TABLE 2 SAMPLING PROCESS	49
TABLE 3 CONTENT ANALYSIS TEMPLATE	52
TABLE 4 SCORING TEMPLATE AND ITS RESPECTIVE DESCRIPTION. .	53
TABLE 5 SUMMARY OF VARIABLES AND ITS EXPECTED RELATIONSHIP WITH DEPENDENT VARIABLE.....	65
TABLE 6 ROBUSTNESS TEST RESULT OF EACH ENVIRONMENTAL PERFORMANCE CATEGORY	70
TABLE 7 DESCRIPTIVE STATISTICS	75
TABLE 8 AGGREGATE SCORING OF EACH ENVIRONMENTAL PERFORMANCE CATEGORY	77
TABLE 9 REGRESSION RESULTS ON FINANCIAL PERFORMANCE.....	87
TABLE 10 SUMMARY OF EXPLORATORY FACTOR ANALYSIS RESULTS FOR ENVIRONMENTAL PERFORMANCE CATEGORIES.....	92
TABLE 11 REGRESSION RESULTS ON FINANCIAL PERFORMANCE (USING FACTORS EXTRACTED).....	93
TABLE 12 DIFFERENCE IN MEAN VALUES FOR STAKEHOLDER ENGAGEMENT.....	98
TABLE 13 DIFFERENCE IN MEAN VALUES FOR TARGET SETTING	100
TABLE 14 CORRELATIONS TEST STATISTIC FOR H3C	101
TABLE 15 THE ENVIRONMENTAL SENSITIVE LEVEL CLASSIFICATION FOR EACH RESPECTIVE INDUSTRY	104
TABLE 16 THE SUMMARY OF ENVIRONMENTAL PERFORMANCE BY DIFFERENT LEVEL OF ENVIRONMENTAL SENSITIVITY INDUSTRY	104
TABLE 17 ANOVA (H4).....	106
TABLE 18 DESCRIPTIVE STATISTIC FOR H4A.....	108
TABLE 19 DIFFERENCE IN MEAN VALUES FOR LEADERSHIP ASPIRATION.....	108
TABLE 20 SUMMARY OF KEY FINDINGS.....	131

List of Figures

FIGURE 1 THE NUMBERS OF COMPANIES IN EACH INDUSTRY	4
FIGURE 2 CONCEPTUAL FRAMEWORK DEVELOPED FOR THIS STUDY	42
FIGURE 3 COMPARISON OF FIRMS DISTRIBUTION BEFORE AND AFTER APPLYING IQR BASED ON FIRM SIZE.....	48
FIGURE 4 BREAKDOWN OF ENVIRONMENTAL PERFORMANCE SCORE BY EACH RESPECTIVE INDUSTRY	73
FIGURE 5 SUMMARY OF THE AGGREGATE SCORING FOR EACH RESPECTIVE ENVIRONMENTAL CATEGORY	77
FIGURE 6 THE AVERAGE ENVIRONMENTAL PERFORMANCE OF EACH INDUSTRY BASED ON ENVIRONMENTAL SENSITIVITY LEVEL	105

Chapter 1 Introduction

1.1 Introduction

For the past decade, there is an increase in public awareness regarding corporate sustainability performance as government has strengthened the governance to ensure companies manage and report their environmental performance, both desirable and undesirable actual performance. For instance, authorities will carry out detailed investigations and take serious action against environmental polluters (Shah, 2021). Bursa Malaysia, a Malaysia capital market company has mandated all public listed companies in Malaysia to produce sustainability reporting since 2016. Bursa Malaysia has produced Environmental Social Governance (ESG) metric¹ which is a sustainability performance reporting guideline to assist listed companies in their sustainability management and report preparation. ESG metric provide a set of standardise and indicative economic, environment and social governance (EES) performance measures that covers all different industries. Each of the themes and indicators is linked to the Global Reporting Initiative (GRI) framework, the Task Force on Climate-related Financial Disclosures (TFCD), FTSE4Good, and United Nations Sustainable Development Goals (UNSDG). It provides companies with a set of sustainability performance quantitative measures that can help companies to measure and manage their sustainability practice performance easily. This metric covers economic, environmental, social and governance areas. This ESG metric overcome challenges in sustainability reporting such as different understanding of each sustainability theme and meaning, as now, the meaning and measures for each indicator are standardised (Lu and Castka, 2009). In addition,

¹ Full ESG metrics developed by Bursa is available in appendix 1b

climate change-related issues such as carbon emissions from direct operations, energy and value chain has been one of the most frequently discussed topics among experts and the public. The target of Malaysia being a carbon neutral nation in 2050 has been explicitly outlined in the 12th Malaysia plan. Wong et al. (2022) article, has introduced several carbon abatement initiatives such as launching of voluntary carbon market as a measure towards low-carbon practices. The article also highlighted that Malaysia is developing its own carbon emission trading system. Besides, Bursa Malaysia had proposed to mandate listed companies in Malaysia to provide climate change-related disclosure according to TCFD recommendations in early 2022 (Raj, 2022). After removing listed companies from the main market list retrieved from Bursa website based on exclusion criteria², Figure 1 showed that industrial products and services industry has the highest number of industry players while telecommunication and media industry has the least players. This is because the main economic activity of Malaysia, a developing country, is industrial manufacturing which is a significant carbon emitter industry. To balance the interest between developing economies and conserving the environment, green growth had been advocated in the 11th and 12th Malaysia Plans. Government has introduced national environmental policies such as forest policy, biodiversity policy and climate change issue policy as well as launching green initiatives and offering green tax incentive including encouraging energy audit, financing mechanism to support green projects and green technologies and introducing green sukuk financing to ensure the environment is managed at the same time achieving country GDP

² Exclusion criteria list available in appendix 3

growth (EconomicPlanningUnit, 2017, Jaaffar et al., 2018 and Ministry of Energy, 2017).

Malaysia government has recognised the adverse impact of neglecting environmental performance management and realised the value of managing environmental performance. Therefore, in 2015, State Forest Department of Malaysia urged logging companies to obtain green certificates as there is stringent control from the international market to only buy legal and green sustainable timber products (TheStar, 2015). There are limited studies done to examine the environmental performance level of Malaysia listed companies. Previous studies focus on environmental performance of companies in developed countries that are in a mature stage of sustainability reporting or analysing environmental performance of a specific industry in Malaysia. This study emphasises revealing the actual environmental performance of overall Malaysia listed companies and evaluates the environmental performance against ESG metric. This study also analysed the impact of stakeholder management, target setting approach, leadership aspiration and industry environmental sensitivity level on firms' overall environmental performance. According to Bursa Malaysia, accessed on November 2021, after excluding firms with incomplete data, there is a total of 318 companies listed in main market, ranging across 13 industries. Figure 1 summarised the number of firms in each industry before applying the interquartile range.

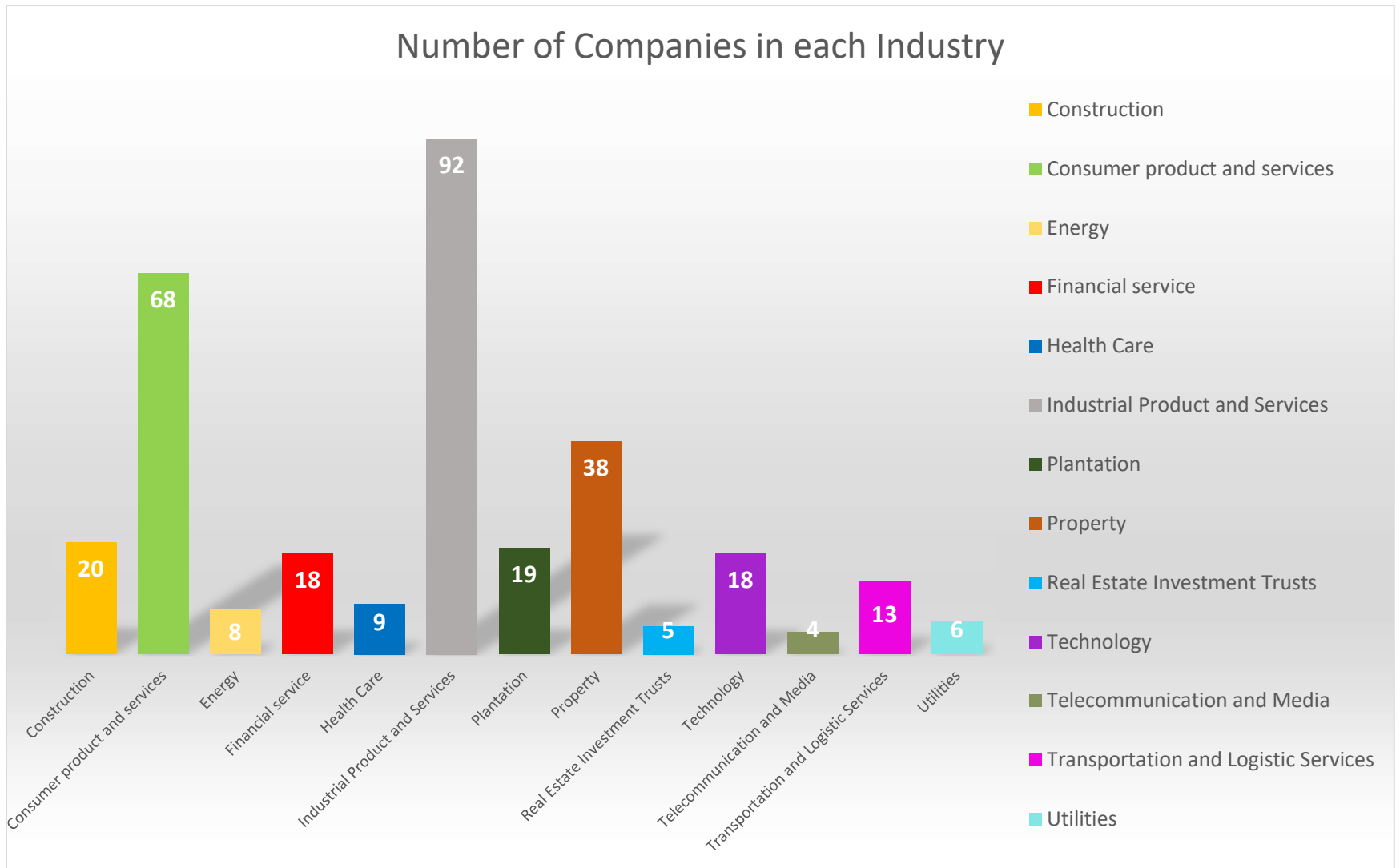


Figure 1 The Numbers of Companies in each Industry

1.2 Problem Statement

Bursa Malaysia has mandated the reporting of listed company sustainability performance since 2016. Several past studies had highlighted that Malaysia list companies' sustainability reporting including environmental is in infant stage. News reports have also highlighted that environmental sustainability is receiving more attention from both private and public firms' management. For instance, multinational corporates such as Nestle, and Sime Darby have collaborated together in reforestation activities in 2021 (TheStar, 2021b). This study would like to assess the overall environmental performance level after 5 years of mandatory sustainability reporting of Malaysia listed companies in main market. This is significant as the Malaysia companies' actual environmental performance and the extent of adoption of the ESG metrics among Malaysia listed companies will be revealed. Simultaneously, the extent of the government green growth plan and green technology master plan achievement in 2020 are being evaluated as well. This study's findings provide authorities with insights regarding the current level of carbon emission performance while assessing the progress of greenhouse emission 45% reduction target by 2030 (Daim, 2021).

This study attempted to unfold insights of importance of environmental performance in Malaysia context. Firm that fails to manage its environmental performance will experience reputation damage, loss of legitimacy stake, and most importantly, it will impact firms' financial sustainability in the long run. Company that received public scrutiny over its environmental performance and involved in an environmental pollution controversy will issue a negative signal to capital market. Investors will perceive as an additional investment risk. Therefore,

investors will withdraw their investment funds from the company. Mobus (2005) research found that maintaining legitimacy stake is a low effort continuous process but restoring legitimacy stake requires substantial effort. Restoration of the damages caused would require the company to commit a lot of time and effort. Losing legitimacy stake will cause the business organisation to face difficulty in maintaining its business operation license. Eventually, company will face business suspension, loss of customers and shortfall in investment funds. For example, the share price of FGV Holdings Berhad had dropped since Roundtable on Sustainable Palm Oil, who is a legitimate stakeholder of the company, suspended FGV Holdings Berhad's green certificate due to violation of sustainability guidelines (Saieed, 2020).

Despite there is a lot of earlier studies had found the relationship between environmental performance and financial performance in fully developed countries such as UK, Norway and US, there are only limited studies had assessed the relationship in the context of Malaysia listed companies (Moussa et al., 2021; Murray et al., 2006; Patten, 2002 and Vormedal and Ruud, 2009). Obtaining green certificates will improve firms' sales as the green certificates will help firms to trade their products in Europe more easily and eventually improve firms' financial performance (ForestStewardshipCouncil, N.A.). Thus, this study intends to identify whether the relationship holds as well in the Malaysia context. The findings will encourage businesses to engage in environmental performance management and address shareholders' concerns, as now, the financial benefit of managing environmental performance and the downside of neglecting environmental performance management are demonstrated.

Furthermore, measure-to-manage is important because it allows better management of sustainability initiatives (PwC, 2013a). Target setting

approach allow management to have a better monitoring on their environmental performance. Managing stakeholders' expectations will lead businesses to manage their environmental performance better. Companies must address each stakeholder demands respectively as failing to meet stakeholders' expectations will have adverse impact on their business sustainability. However, there is insufficient empirical results to support the claims in Malaysia context. Hence, this study aims to identify the impact of stakeholder management and target setting approach on firms' environmental performance level as management needs a suitable management approach to drive companies' environmental sustainability strategies and performance in Malaysia context.

Leadership aspiration and environmentally sensitive industry (ESI) had been claimed to be the factors that have an impact on firms' environmental performance. Leadership aspiration is claimed as an important catalyst in driving the companies' ESG strategic direction (Li et al., 2018). It was found that companies in highly environmental sensitive industry tend to give extensive environmental disclosure, but the actual environmental performance level of the industry was not investigated in Moussa et al. (2021) research. Therefore, this study tackles this by investigating both leadership and environmental sensitivity industry in the context of Malaysia listed companies.

In order to tackle the abovementioned research and knowledge gap, this study aims to reveal the current environmental performance level of Malaysia listed firms in 2020 and examine the relationship between firm's financial performance and environmental performance. This study also assesses the impact of stakeholder management and target setting approach on Malaysia listed firms' environmental performance. Both

environmental sensitivity level and leadership aspiration impact on environmental performance are investigated in this study as well.

1.3 Research Question

Due to the recent trend and discussion, the study intends to clarify the following research gaps and questions. The first research question (RQ) is interested in knowing the current environmental performance level of Malaysia listed company and the environmental performance area that received the most attention from management. This question aims to evaluate the actual environmental performance level after several years since the regulation forced companies to disclose their sustainability performance. This question hopes to seek some indications regarding the gap between government effort in promoting sustainable green business operations and the firm's actual environmental performance. In other words, an "operational audit" is performed to evaluate the gap between the government's effort and the actual outcome. Additionally, it also intends to examine the Malaysia-listed firms' environmental performance management against ESG framework. This RQ intends to demonstrate the level of compliance of firms toward mandatory of ESG reporting by evaluating the firm's environmental performance disclosure in 2020. In this question, a descriptive statistical analysis is carried out to address this RQ.

The following RQ is interested to know whether firm's environmental performance is related to its financial performance. The question aims to investigate whether the positive relationship holds in a developing country, Malaysia context. This RQ is significant because once the proposed relationship between environmental performance and financial performance is confirmed, it is able to provide a certain extent of financial motivation for managers to manage firms' environmental performance. This RQ also aims to demonstrate the financial consequences of failing to manage environmental sustainability

performance to management. This RQ is keen to know whether environmental performance management is necessary to achieve business growth and success in the long run. The significance of environmental performance as an impression management tool will be unveiled. Thus, this question aims to further enhance current existing theoretical body via investigation of the relationship in Malaysia context. Inferential statistical analysis and regression analysis are conducted to examine this RQ.

The third RQ is concerned to know whether stakeholder management and target setting approach are effective in managing firms' environmental performance. This question intends to discover and provide guidelines for managers to adopt while managing companies' environmental performance. Besides, it also attempts to evaluate the association between stakeholder management and target setting approach. This question aims to discover the impact of each respective management approach on firms' environmental performance with statistical evidence. An inferential analysis and correlation analysis are performed to tackle this RQ.

The final RQ is keen to know whether the most environmentally sensitive industry is the best environmental performer and also whether the leadership aspiration creates a positive impact on environmental performance. This question specifically aims at the scope of high environmental sensitivity industry. This is because Malaysia is a developing country that relies heavily on industrial products and services which is the main contributor to environmental degradation. Hence, assessing the environmental performance of high environmental sensitivity industry is necessary to know whether these companies acknowledge their flaws and attempt to take any environmental remediation plan. In addition, leadership aspiration impact will also be

assessed during the investigation of this RQ. This RQ is important, especially in a developing country that relies on industrial products and services manufacturing industry. Striking a balance between national economic development and environmental conservation is important before it is too late. Furthermore, leadership aspiration is seen as an important factor in driving companies from industries that are environmentally sensitive towards better environmental performance. This RQ seeks to determine whether leadership aspirations have a positive impact on high environmental sensitivity industry environmental performance. Therefore, inferential analysis is carried out to testify this RQ.

1.4 Research Objective

This study is designed and conducted in a way to achieve four major research objectives. The first objective (RO1) is to evaluate the current state of environmental performance by listed companies in Malaysia. Due to the increasing demand for sustainability compliance from environmentally sensitive industries including oil palm plantation industry, it is important to know the current environmental performance level of each industry in order to identify the progress and if there is any gap between stakeholder's demand and actual performance of the firm (TheStar, 2021a). In order to achieve this objective, the environmental disclosures are scored accordingly to the scoring template and will be used as proxy for firm's 2020 environmental performance. This objective tends to reveal the gap between current performance and optimal performance. Simultaneously, it also aims to provide ideas for policymakers and firms on their room for improvement regarding environmental performance. The second objective (RO2) is to examine the relationship between firm's financial performance and its environmental performance in Malaysia context. RO2 is designed to testify the proposed relationship based on multiple theories in the context of Malaysia. The subsequent research objective (RO3) is to investigate the impact of stakeholder management and target setting approach on environmental performance of Malaysia listed firms. This is to provide some suggestions about managerial practice while managing firm's environmental performance. The final research objective (RO4) is to examine the environmental performance of environmentally sensitive industry and the impact of leadership aspiration towards the companies' environmental performance. This RO intends to provide insights for policymakers on regulating environmentally sensitive industry and

company leaders when managing high environmental sensitive companies.

1.5 Significance of the Study

This study has several implications for theoretical and practical aspects, including research methodology aspects, regulators during policy formulation and managerial practices. From the theoretical aspect, this study analyses the results found against several managerial theories including legitimacy theory, institutional theory, signalling theory, impression management theory resource dependency theory and stakeholder theory. The study intends to conclude whether the abovementioned theories exhibit in the Malaysia listed companies' environmental sustainability practices. This will aid to fill in the research gap regarding lack of studies conducted to testify the environmental performance of the overall Malaysia listed companies. Besides, this study aims to provide managerial suggestions regarding management approaches that are suitable to implement for effective environmental performance management.

From the aspect of research methodology, this study is unique for using content analysis along with ESG metric, a performance management framework, to convert the qualitative data into quantitative comparable data. This study introduces a new research instrument which is a scoring template and scoring scale that was developed based on Bursa ESG framework and previous literature findings. This study will be using a different approach in analysing companies' environmental performance. Past studies analysed companies' environmental performance based on their environmental disclosure level in a quantitative manner. They measured and scored the environmental performance level based on the number of sentences of disclosure. Yet, in this study, companies' actual performance will be analysed in a qualitative manner which means companies no longer being scored based on the volume of disclosure, in fact, in this study they will be analysed and scored based on the level of

qualitative content they had disclosed. This study incorporates target setting approach which is one of the performance managements in its research instrument model to evaluate Malaysia listed companies' environmental performance. This is due to performance management was seen as one of the important factors that will motivate companies to manage their environmental performance.

This research aims to provide some useful input for regulators during policy formulation. This research examines the environmental performance level after 5 years of compulsory sustainability performance disclosure. It investigates the effectiveness of this regulation in requiring listed companies in Malaysia to manage their firms' environmental performance. It can also examine whether incentives and assistances such as ESG reporting framework provided by authorities manage to close the gap between expected performance and actual performance as well as the target set in national policy and current achievement.

Last but not least, the study makes significant contributions to managerial practices. This is because this research examines the impact of management approaches target setting approach and stakeholder management on the environmental performance of a firm. It intends to provide recommendations regarding managerial practice during environmental performance management. This study also demonstrated the importance of leadership aspiration in managing environmental performance.

1.6 Definitions of Key Terms

This section will be introducing the ESG metric term that will be mentioned in the following different chapters.

ESG metric, also known as the ESG framework, is a set of guidelines developed by Bursa Malaysia in 2015 to address the needs of listed companies following mandatory sustainability reporting. This guideline standardises the themes and definitions for each respective sustainability performance area including economic, environment, social and governance area. It provides performance indicators for each respective category. In addition, it also links each performance theme to respective international guidelines such as GRI and UNSDGs. ESG metric is a final product that integrates both international as well as local sustainability requirements. ESG metric is used as the primary basis for the development of content analysis template in this study. During the data collection process, the Bursa ESG metric is modified to a scoring template based on this study objective needs. Some new categories that are presence in firms' sustainability reports but not available in the Bursa ESG framework are added. These items include supplier assessment rating (2.6.1) and climate action: mitigation and adaption (2.11). The environmental performance disclosed in the reports is scored accordingly to modified ESG metric³. The scoring scale was developed based on previous studies' findings⁴.

³ The modified ESG metric available in appendix 1a

⁴ The scoring template is available in appendix 4

1.7 Organisation of Chapters

The organisation of chapters is as followed. The subsequent chapter after introduction chapter is literature review. In chapter 2, management theories as well as previous literature findings are introduced. Management theories are used to justify the basis for each hypothesis formulated. This chapter aims to allow readers to have a better understanding of current literature findings and management theories. Both data collection methodology and sample selection process are introduced in the third chapter. In chapter 3, the development of research instrument is explained along with the content analysis template. This chapter aims to aid readers to be familiar with analysis tools and variables used throughout this study. Chapter 4 is about data analysis methods' introduction and description. The statistical findings are interpreted, and any abnormality observed in the dataset is explained in this chapter. This chapter introduces types of analysis used to tackle each respective research question and gives an interpretation of the output obtained to allow readers to gain better understanding. The last chapter contains discussion sections and conclusion. The linkage between study findings and management practice can be found in chapter 5. This chapter aims to provide the readers or the target audience with a better picture of ways they can improve their current environmental practice with justification from management theories and empirical findings.

Chapter 2 Literature Review

2.1 Introduction

Natural environment quality has been significantly eroded due to excessive economic development in the past few decades. The global warming issue and pollution issue are getting more serious over time. Failing to strike a balance between environmental sustainability management and global economic development has sped up the degradation process. Therefore, United Nations (UN) has introduced 17 UNSDGs to balance the need to protect the natural environment and the need for economic development. For example, SDG 13, Climate Action is about taking actions to combat climate change while SDG 14 and 15 are established to promote conservation of natural environment resources such as marine and forest (UnitedNations, 2022).

ESG reporting framework has been developed to encourage and guide companies to run businesses in a responsible way and to achieve UNSDG. This framework provides reporting guidelines for companies and is used as a business compliance screening tool as well. For example, authorities will evaluate companies' sustainability performance against the frameworks such as GRI, TFCD, FTSE4Good to determine the level of business sustainability compliance. Therefore, companies must develop corporate sustainability strategies and manage their sustainability performance based on ESG framework, in order to show their business compliance and their commitment to preserve the society and environment wellbeing. Simultaneously, their business legitimacy can be maintained.

Corporate sustainability is an intersection point of economic, environment and social principles. It is common for management to enter a paradox situation, especially when managing their corporate

sustainability. This is because addressing the needs of stakeholders and maximising shareholder value is difficult and contrasting. Hahn et al. (2017) study suggested that paradox perspective can help to foster strategy that can overcome the tension between economic, environment and financial aspects. Paradox perspective covers three different viewpoints which are normative, instrumental, and descriptive. The study suggested that these viewpoints are mutually supportive. Descriptive aspects offer explanatory power in both instrumental viewpoints such as the corporate sustainability outcome and normative perspectives such as justifying corporate sustainability initiative. Management can utilise these aspects to overcome paradox situation while attempting to achieve better level of sustainability performance management and firm profit level.

Previous literature has provided several different aspects of environmental performance management strategies in both developed and developing countries. Therefore, this chapter introduces management theories and formulation of research hypotheses based on previous research findings and existing management theories. Meanwhile, explanation for each proposed hypothesis and the conceptual framework of this study is introduced and explained in this chapter.

2.2 ESG metrics

Previous research has shown that performance management is an effective management approach for monitoring business performance and meeting business objectives. Hence, performance management plays a significant role in steering companies' sustainability performance including environmental performance. In order to achieve environmental sustainability objectives, company should employ performance management by fostering its own corporate sustainability strategies and establish a set of quantitative environmental performance measures. This is due to quantitative sustainability measures including environmental performance can provide baseline for companies and allows them to better manage their performance (Moldan et al., 2012). Quantified performance measures also allow companies to monitor and compare their gaps between current progression and expected goals.

Malaysia as one of the UN Member States has adopted UNSDGs in 2015. Bursa Malaysia has developed an ESG framework to encourage companies to embed environment sustainability practice in business operations and driving the nation towards UNSDGs. ESG framework as known as ESG metric integrates each economic, environmental, and social governance measure with respective UNSDGs. ESG metric⁵ provides explanation for each respective themes along with respective quantitative measurements. ESG metric allows companies to know what they can measure and the ways to quantify their environmental performance. Hence, companies can better manage their business environmental performance via the adoption of ESG metric in business

⁵ Full ESG metrics by Bursa available in appendix 1b, while full explanation on ESG metrics available in chapter 1.6

operations. The implementation of ESG metrics within the country can drive the country towards UNSDGs while also developing economic growth.

ESG metrics was found to be useful for companies during their environmental performance management. This is due to ESG metrics tends to give them a standardise guideline on what and how to measure environmental performance. This study used the ESG reporting framework as the fundamental of the content analysis template to measure what is the actual environmental performance level of companies and what will impact their performance level. As this ESG metrics is opened to public and produced by recognised organisation, therefore, it is a best reference available during the development of this study research instrument tools that aims to evaluate Malaysia companies' environmental performance. Yet, there might have some noises claiming that companies will not report in according to Bursa ESG Metric guideline due the fact that it was lack of global recognition and there was no policy forcing companies to follow their sustainability reporting in accordance with the Bursa ESG framework. In fact, Bursa ESG reporting framework has stipulated each of the performance measures and cross reference with toolkit and external reference such as Global Reporting Initiative and relevant environmental policy. Therefore, it is expected that Malaysia listed companies will refer to Bursa ESG reporting guideline while managing and reporting their environmental performance.

2.3 Environmental reporting and performance

Plenty of studies had done to investigate firms' environmental disclosure and performance level in the past decade due to the increase in public investor and relevant authorities' awareness regarding the importance of environmental sustainability management. Investors no longer focus merely on financial performance; they also expect companies to show commitment to natural environment conservation. The adoption of UNSDGs by each country has sped up the process for companies to implement environmental sustainability practice in their business. After years of commitment and effort, Malaysia received a ranking of 65 out of 165 nations, with an SDG Index of 70.9% in the Sustainable Development Report 2021 (Musa, 2021).

There is an increasing trend of sustainability reporting among public Malaysia listed companies because of the legitimation of sustainability reporting since 2016. As now, listed companies are compulsory to prepare an individual section for sustainability reporting as part of their annual report. Some companies took substantive effort by producing a standalone sustainability report or switching to integrated report to show their conformity to the legislation and commitment to preserve the environment. Majority of the listed companies produce their sustainability reports in accordance with the ESG reporting guideline. This shows that companies will adopt at least a compliance strategy to manage their environmental performance to avoid punishment from authorities for violating the law. As a result, firm that adopt compliance strategy will manage and report their environmental performance based on regulatory reporting requirements.

This phenomenon can be justified by legitimacy theory. According to legitimacy theory, companies will carry out their business operations according to society boundaries and norms. Business organisations engage in environmental performance management not only to serve their social contract, but also to ensure their business survives in a turbulence business environment, such as an unexpected pandemic lockdown (Schiopoiu Burlea and Popa, 2013). It is essential for company to fulfil its social contract, otherwise it will be severely sanctioned by the society members such as regulators and eventually business will cease to operate. When the external regulator makes ESG reporting mandatory, the environmental report serves as evidence that shows company's conformity to the regulations. Firms must follow instructions given by regulators as regulators hold legitimate power to suspend business license immediately and sanction them with a heavy fine. Therefore, environmental reporting can be used as a strategic management tool to maintain companies' legitimacy stake. Mobus (2005) study found that managers incorporated sustainability strategy to maintain firm pragmatic legitimacy stake and to address the normative expectations of their stakeholders such as environmental regulators. Pragmatic legitimacy stake implies that firms will focus on delivering benefits that are appealing to their target audience, such as stakeholders (Suchman, 1995).

Environmental disclosures are affected by country's commitment as well. In Alrazi et al. (2016) found that country's environmental norms and social concerns provide significant explanatory value regarding environmental disclosure of US electricity firms. For instance, firms in country that is highly committed to environment will tend to disclose more environmental information. This is because these firms are exposed to scrutiny from stakeholders such a government,

environmentalist. Regardless their environmental performance, they are pressured to make substantive environment disclosure as they are compulsory to address the social member expectations regarding environmental issue. From the past study, it is noticed that country commitment in preserving the environmental play a huge role in guiding the companies in their environmental performance management. Malaysia government had also bound to a series of UNSDG as well as global carbon reduction target. Therefore, it can be assumed that Malaysia listed companies will monitor at least one environmental performance as per stipulated in the ESG reporting guideline. This is due to government mandatory of reporting but also to show their conformity to the government advocacy which can help them to maintain their legitimacy stake.

However, there are a limited number of studies carried out to evaluate the sustainability performance of listed companies in Malaysia using ESG metrics. Yang et al. (2021) found convincing evidence highlighting that mandatory environmental reporting in Australia had increased both quantity and quality of environmental performance disclosure in Australia companies as regulatory reporting requirements had created a coercive obligation for Australian firms to comply the law and adhere the social norm. Complying rules and regulations allows companies to obtain their business legitimacy stake (Zimmerman and Zeitz, 2002).

Therefore, this study assumes the context in Australia will be similar as in Malaysia, by hypothesising that since Malaysia regulatory body has made the reporting of sustainability performance compulsory, Malaysia listed firms will manage their environmental performance in order to maintain their legitimacy stake (Zimmerman and Zeitz, 2002). Therefore, this study assumes the context in Australia will be similar as in Malaysia, by hypothesising that since Malaysia regulatory body has

mandated the reporting of sustainability performance including environmental performance, Malaysia listed firms will manage and report their environmental performance in order to maintain their legitimacy stake.

H1: Malaysia listed companies are managing their environmental performance via compliance to regulatory requirements in reporting.

In Malaysia context, Jaaffar et al. (2018) study found that Malaysian companies increase their environmental reporting level in response to institutional pressure regarding climate change concerns. There is a growing concern about the climate change issue which is pressuring firms to adopt at least one type of environmental strategy to address this issue. This is due to climate change issues have created impact not only affecting the environmental but also local economy. Hence, Malaysia listed firms received pressure to disclose their corporate environmental impact (PwC, 2013b). Malaysia government has also put effort in promoting greenhouse gas emission reduction not only due to engagement in Paris Agreement but also because the government recognises Malaysian forests play an important role in combating global climate change issues (Nor, 2021 and Wong, 2021). Hence, this study assumes that Malaysia listed companies will be engaging in carbon emission reduction national targets, therefore, carbon emission performance category should receive the most attention from firms due to the growing trend of climate change concerns and government efforts.

H1a: Carbon emission is the environmental performance that received most attention from firms.

Previous literature had proven that legitimacy theory does motivate companies to manage their environmental performance to certain

extent. Previous studies had also rationalised the motivation for companies to manage their environmental performance based on legitimacy theory. Therefore, legitimacy theory is used to analyse the findings as it allows better understand the reasoning behind the environmental performance by the listed companies in Malaysia, whether companies are motivated to manage their environmental performance due to their legitimacy stake. Besides, this study assessed companies' environmental performance from legitimacy perspective which will reveal the significance of legitimacy management approach and the impact of legitimacy stakeholder during environmental performance management. Previous research findings have justified that legitimacy theory plays a big role in company motivation to engage in non-profit oriented business activities such as business environmental performance and other ESG practices. As such, this study had proposed that legitimacy theory will be valid among the sample of listed companies in Malaysia during their environmental performance management based on the justification that companies need to maintain their legitimacy stake in order to ensure their business sustainability.

2.4 Business Performance

Environmental performance management can be an impression management tool to impress stakeholders, including investors and customers (Moussa et al., 2021). Impression management is often used by people who try to manipulate and control the way others view them (Leary, 2001). Companies usually perform public relations (PR) activities such as charity as an impression management tool to improve public perception of their brand image or try to establish a good reputation. Environmental performance disclosure is also being used as a communication tool. Company makes substantive disclosures about previous environmental initiatives in order to inform the public about their best environmental sustainability practices. This will give a good impression to public investors, which will indirectly attract investors to allocate investment funds to the firm. Providing substantial disclosure regarding environmental performance will indirectly reduce information risk and leaves people a positive image of being environmentally responsible. By managing environmental performance, firm will reduce its environmental risk such as potential of being fined by environmental regulator. Hence, public investors will be more willing to invest in a firm that has a relatively low environmental risk and gives them a good impression.

Furthermore, Belkaoui (1976) study results claimed that environmental and social disclosure have a positive relationship with financial market performance. This situation is known as ethical investor effect. This has indirectly highlighted the change in investors' behaviour, whereby investors no longer place emphasis on firms' financial performance but also environmental and social performance. Investors have the power to reward and penalise the firms' financial benefit according to firms

environmental and social performance, they will sell off their shares which results in firm market value to decline due to share price drop.

Moreover, engaging in environmental sustainability management allows firms to achieve better financial performance. For instance, company that implement beyond compliance environmental strategy will conduct environmental initiatives more than what is required by the regulations, such as producing eco-friendly products, minimising product life cycle costs and reducing the usage of non-renewable materials (Gunasekaran and Spalanzani, 2012 and Maxwell and van der Vorst, 2003). Hence, these will attract customers who prefer eco-friendly products, and firm's production wastage cost will decrease as now the product life cycle cost has been minimised. Managing business environmental performance allows businesses to survive in a highly competitive market via their product differentiation and cost optimisation strategy. Thus, achieve better sales revenue.

Despite the reported positive relationship, environmental performance is negatively related to firm financial performance based on agency theory (Tzouvanas et al., 2020). This is because performing good in environmental will divert profit return to non-profit environmental investment such as applying accreditation for ISO 14001⁶ which will erode shareholder value (ISOUpdate.com, 2020). Thus, shareholders will sell off their shares and cause company's market value to decrease.

Moreover, signalling theory is used to explain the influence of information asymmetry between two parties whereby the sender and receiver perceive the information differently (Connelly et al., 2011). Signalling theory raised concern about the influence of information

⁶ The ISO certification ranges from \$3000 to \$5000 annually in 2020. The certification is expected to be renewed annually, and the actual cost depends on organisation size.

asymmetry and ways to reduce the information barrier. In Haninun et al. (2018) studies within Indonesia companies context, it was found that environmental disclosure and performance are used as a strategic and signalling tool to affect stakeholders' preception.

However, there were lacking research using ESG metrics to testify the proposed relationship in Malaysia companies' context. Previous studies had shown that there was limited study conducted to investigate the relationship between firms' actual environmental performance and financial performance based on ESG metrics. For example, in Nor et al. (2016) environmental disclosures was found to have a significant relationship with financial performance in Malaysia listed companies while Ong et al. (2019) study found that continuous improvement of environmental performance can bring economic benefits to firms.

According to signalling theory, environmental performance information does have a positive effect on investment decisions, where investors will react negatively to poor environmental performance (Heggen, 2019 and Holm and Rikhardsson, 2011). This is due to information barrier and information risk are minimised when the company discloses their environmental practice to public. Managing and disclosing environmental performance will send a green signal to investors to purchase the company's shares due to low information risk. Therefore, this study assumes that firms' overall and specific environmental performance areas are positively related to firms' financial performance.

H2: There is a positive relationship between Malaysia listed firms' financial performance and firms' overall environmental performance

H2a: There is a positive relationship between Malaysia listed firms' financial performance and firms' specific environmental performance areas

Previous literature findings had offered several different management theories such as signalling theory, ethical investor effect, impression management and stakeholder theory to explain and justify the positive relationship between companies' financial performance and environmental performance. Previous studies had provided an insight regarding the validity and possible relationship to be expected between firm's financial and environmental performance. Besides, some of the previous studies claimed that the relationship between companies' environmental and financial performance is negative due to agency theory. Therefore, this had offered an opportunity to explore the relationship between environmental and financial performance among Malaysia listed companies. This study had proposed that the relationship is positive as it was well-supported by several long-established management theories and the research evidence.

2.5 Management Approaches for Environmental Performance Management

Stakeholder theory states that organisations need to address the demands of each stakeholder in order to sustain their business operations in the long run. Stakeholders are those who have the right or hold the resources that can affect an organisation and also those who are affected by organisation activities (Freeman, 1984). According to Donaldson and Preston (1995) article, it explained that there are three types of stakeholder theory aspects which are descriptive, instrumental and normative aspect. Descriptive aspect of stakeholder theory is used to explain corporate behaviour while normative aspect concerns on determining moral guidelines. Stakeholder instrumental theory is used to identify the connection between stakeholder management and the achievement of corporate objectives such as profitability and company growth targets.

Stakeholder value is emphasised by extraordinarily successful companies such as Hewlett-Packard, Walmart, and Dayton Hudson, whereby managers pay attention to people who have a stake in the business entity (Kotter, 1992). Based on resource dependency theory, firms need to develop connections with external stakeholders in order to obtain resources that they lack of (Ulrich and Barney, 1984). The reason that firms must allocate resources to manage and address stakeholder needs accordingly is that stakeholders have a stake in the business, they hold power to provide resources that a firm needs to run its daily operation and have the power to affect firms' daily operation (Moussa et al., 2021). Government, supplier, employee, customer, investor, community, and sustainability accreditation body are all corporate stakeholders.

It is essential for firms to conduct stakeholder analysis for better stakeholder management. It is recommended to manage stakeholders based on stakeholder salience framework that was developed by Mitchell et al. (1997). Stakeholders can be classified based on the attributes that they possess such as power, legitimacy, and urgency⁷. Power attribute is defined as the stakeholder has a coercive, or utilitarian or a normative power to ask company to address their request while a legitimacy characteristic state that the stakeholder holds a legitimate claim that is socially desirable or is given based on social norms whereas urgency refers to the extent that the stakeholder can call for immediate action against the organisation in terms of time sensitivity or criticality (Mitchell et al., 1997).

Companies should manage stakeholders that possess all three attributes in the first place as this type of stakeholder has a legitimate claim and holds the power to call for immediate action against the business entity. This type of stakeholder is classified as definitive stakeholder which includes government and customer. For instance, government demands firm to engage in green growth by reducing its carbon emissions. If firm fails to address the demand, government has the power to suspend its operation license immediately. Customers are endowed with both power and urgency. This is because customers hold the resources such as monetary funds that firms require in order to sustain their profit and customers can claim their interest without any third-party help. If majority customers prefer to buy eco-friendly products and firm chooses to ignore their preference, then customers have the right to refuse to buy the firm's product immediately. Eventually, firm's sales will drop.

⁷ Stakeholder Salience Framework available in appendix 2

In 2020, FGV Holdings, a Malaysia-based agri-business listed companies had lost its sustainability accreditation after being claimed for violating labour rights (Saieed, 2020). In this case, Roundtable on Sustainable Palm Oil (RSPO) is a sustainability accreditation body who is also one of the FGV Holdings stakeholder who possess all three salience characteristics. RSPO is a legitimate stakeholder that has the power and time urgency to call for suspension of accreditation once complaint received or their demand was not being address by companies. As a result, FGV Holdings lost both sustainability accreditation and firm market share value. Nevertheless, there is lack of study conducted to examine the impact of both stakeholder management and target-setting approach on environmental disclosure in Malaysia context.

Moreover, environmentalists are recognised as dependent stakeholders. This is because environmentalists have a legitimate claim to protect the environment from the negative impact of business activities, and if their demand and voice are not heard by management, they can launch an immediate action such as a campaign or send a critical letter to the public media against the organization. Hence, firms should allocate attention and effort to stakeholder management and should acknowledge that the state of stakeholders is dynamic and changes over time (Mitchell et al., 1997).

Due to the rising concern of environmental issue among public, increasing environmental awareness among consumer and environment regulation tightening by authorities, companies must attain environmental claims by each stakeholder in order to avoid future litigation and liability cost (Ahmad, 2020). Hence, stakeholder management creates a positive impact on firm's environmental performance as it allows firm to address each stakeholder's demand, eventually lead to sustainable corporate profitability in the long run

(Epstein and Roy, 2003). By interacting with stakeholders, company knows about its stakeholders' expectations for environmental performance. Addressing stakeholders' demands and expectations will lead firms to achieve better environmental performance level. Therefore, this study assumes that companies with stakeholder management will have better environmental performance than those companies that do not have stakeholder management.

H3: Management approach creates an impact on environmental performance. Specifically, on:

H3a: Companies with stakeholder management have better overall environmental performance than those do not have stakeholder management.

Besides stakeholder management, target setting approach allows companies to achieve better environmental performance, as companies now need to attain the targets that they set for their environmental performance. Target setting is a mean of measure-to-manage, in other words, it is a signal indicating that companies are monitoring and managing their performance. Companies will try their best to manage their performance to achieve the target in the upcoming year. Performance measurement and target setting is important as it allows better sustainability initiative management (PwC, 2013a). In Dahlmann et al. (2017) study, it found that improvement in corporate's environmental performance is associated with absolute target, longer target frames and greater level of target ambitiousness. Therefore, this study assumes that companies with target setting in their environmental management will have better performance than those that do not have it.

H3b: Companies that have target setting will perform better overall environmental performance than those do not have target setting.

This study assumes companies that have stakeholder engagement table, they will embed a target setting approach in their environmental sustainability management which aims to impress and satisfy their stakeholders. This is because setting targets for environmental performance is an indirect way to show their stakeholders regarding their commitment towards environmental aspects. At the same time, their stakeholders' environmental-related demands are satisfied as well. Based on the best knowledge of the authors, there is currently no literature that reports on the association between target-setting approach and stakeholder management. Thus, this study will provide an important contribution regarding this theoretical body.

H3c: Both stakeholder management and target setting approach are correlated in environmental performance management.

The significance of stakeholder management and target setting approach in companies' environmental performance management have always been highlighted in past studies. With the support of past research findings and the support of stakeholder theory, this study had formulated its hypothesis which assumes stakeholder management theory will have a positive impact towards sample companies' environmental performance. This topic had been well investigated in other countries context, yet this topic was under-research in the Malaysia context. Thus, previous research had also offered a research opportunity to extend this investigation to Malaysia context, one of the developing Southeast Asia countries. By assessing the literature found, this study had managed to discover a research gap, whereby, the actual

impact of target setting approach towards companies' environmental performance as well as to discover the extent of implementation of target setting approach among Malaysia listed companies, whether management had found the value of target setting approach as one of their environment performance managements.

2.6 Industry membership: Environmental Sensitivity Level

Moussa et al. (2021) found that firms in environmentally sensitive industry will give extensive environmental target disclosure for the purpose of greenwashing. Besides, poor environmental performers were found to have a potential of utilising extensive environmental disclosure to greenwash their corporate brand impression (Wedari et al., 2021). This is because their daily business operations have created large adverse impact on the environment, these companies intend to disclose more and engage in environmental activities in order to show their remedial efforts to public. For instance, highly environmental sensitive company will disclose extensive environmental performance disclosure such as the remedial action and environmental sustainability initiatives that have taken and its future plans in the upcoming year. Companies believe that hard environmental disclosure will help them to improve their corporate image and move away from being viewed as "environmental polluters," which is also a sign of impression management. Previous studies have investigated the relationship between corporate environmental performance level and the level of environmental disclosure and found out that poor environmental performers make substantive environmental disclosure as their operation activities are engaged in environmental degradation (Dragomir, 2010).

Patten (2002) study findings showed that different industries' sensitivity towards environment will have different relations between environmental disclosure and performance. A potential explanation for the inconsistent relationship between environmental performance and environmental disclosures across industry classifications is that companies from environmentally sensitive industries already face great

exposure to the social environment because of their engagement in environment degradation business operations, and as such, extensive environmental performance data may not reduce the level of exposure and scrutiny. Eventually, high environment sensitive industry may not be engaging in extensive environmental performance level from the aspect of socio-political theories. Despite this, Buniamin et al. (2008) found that there is a positive relationship between environmental reporting, company size and environmental sensitivity. Garcia et al. (2017) study found that firms originating from Brazil, Russia, India, China, and South Africa have a relationship between their environmentally sensitive company profile and their environmental performance report. Therefore, this study formulates its hypothesis as below:

Hypothesis 4: Environmentally sensitive industry has better environmental performance as compared to other industry.

In Li et al. (2018) finding results showed that, environment, social and governance (ESG) disclosure is positively related to firm's market value due to the reduction of information risk. This positive relationship is more pronounce with a presence of powerful CEO. The study also concluded that CEO who is located at the top management level, holds the power to mediate the resource allocation plan and change a firm's goal prioritisation. Hence, if company's leader such as CEO engages and focuses on environmental sustainability, the firm's overall environmental performance tends to be better than those companies whose top management does not recognise the importance of environmental sustainability. This is because now the firm had allocated its resources towards environmental sustainability investment according to the signal given by company's leader and the subordinates had switched their goal to a more environmentally focused one.

However, some studies found that company environmental performance is not driven by individual managers due to agency theory (Rötzel et al., 2019). Yet, existing research highlighted that corporate sustainability is influenced by institutional theory whereby corporate leaders play a significant role in driving firm's sustainability practice. Institutional theory is used to explain organisational interaction with institutional dynamics and the way firms incorporate social expectations into organisational practice and culture (Dillard et al., 2004). Institutional theory has two dimension which are isomorphism and decoupling. Furthermore, cognitive role of decision maker, tone from the top plays an important role in moving sustainability strategy from compliance to beyond compliance level (Jaaffar and Amran, 2017). Previous literature findings have provided convincing evidence that leadership aspiration plays a great role in formulating environmental sustainability strategy which eventually has a significant impact on firm's environmental performance. Amran and Haniffa (2011) study found that Malaysia firms produce sustainability reporting due to isomorphism including coercive, memetic, and normative. Normative isomorphism explains that cognitive belief of top management is an important source of normative pressure on subordinates to perform well in environmental sustainability areas which shows that leadership aspiration plays a huge role in corporate sustainability. Therefore, this study assumes Malaysia listed companies that are in environmentally sensitive industries have better environmental performance is due to leadership aspiration.

Hypothesis 4a: Companies in environmentally sensitive industry, achieve better environmental performance due to its leadership aspiration.

To summarise up, previous literature had claimed that environmental sensitivity and leadership do impact on companies' environmental

performance based on impression management theory and institutional theory aspects. Previous research's results had suggested that the variation of companies' environmental performance is partly due to the type of industry nature that companies belong to. In order to testify this justification, this study is formulated in a manner to examine the relationship between the sample companies' environmental sensitivity level and its actual environmental performance. This study aims to find research evidence to rationalise the possible reason for the variation of environmental performance among different companies. Furthermore, past findings had emphasised the significance of leadership aspiration in environmental performance management. On the other hand, there were literature claiming that companies' environmental performance is not driven by companies' leadership aspiration, but it is guided by profit maximisation goal and agency theory. Hence, this study had formulated its research aims to identify the role of leadership aspiration factors among those sample companies that are environmentally sensitive. Sample companies that are environmentally sensitive are being investigated due to its nature and business impacts towards the environment quality. This study assessed the leadership aspiration among this group of companies as these companies are the main contributor to environment degradation. Therefore, it is significant to provide evidence to proof to companies' leaders that the importance to show their support on environment protection and the role they play in companies' environmental performance management.

2.7 Conceptual framework

2.7.1 Research Gap Identified

In summary, there are limited studies conducted to assess the environmental performance of firms in Malaysia context. The empirical evidence found was insufficient to justify the relationship between firm environmental performance and financial performance as well as the impact of stakeholder management and target setting approach on Malaysia firms' environmental performance. Besides, there is a knowledge gap regarding the association between stakeholder management and target setting approach. This study aims to examine the significance of leadership aspiration and the leadership aspiration impact on environmental performance of Malaysia companies.

2.7.2 Conceptual Framework

Based on literature reviewed, the following conceptual framework is developed to show the proposed hypothesis.

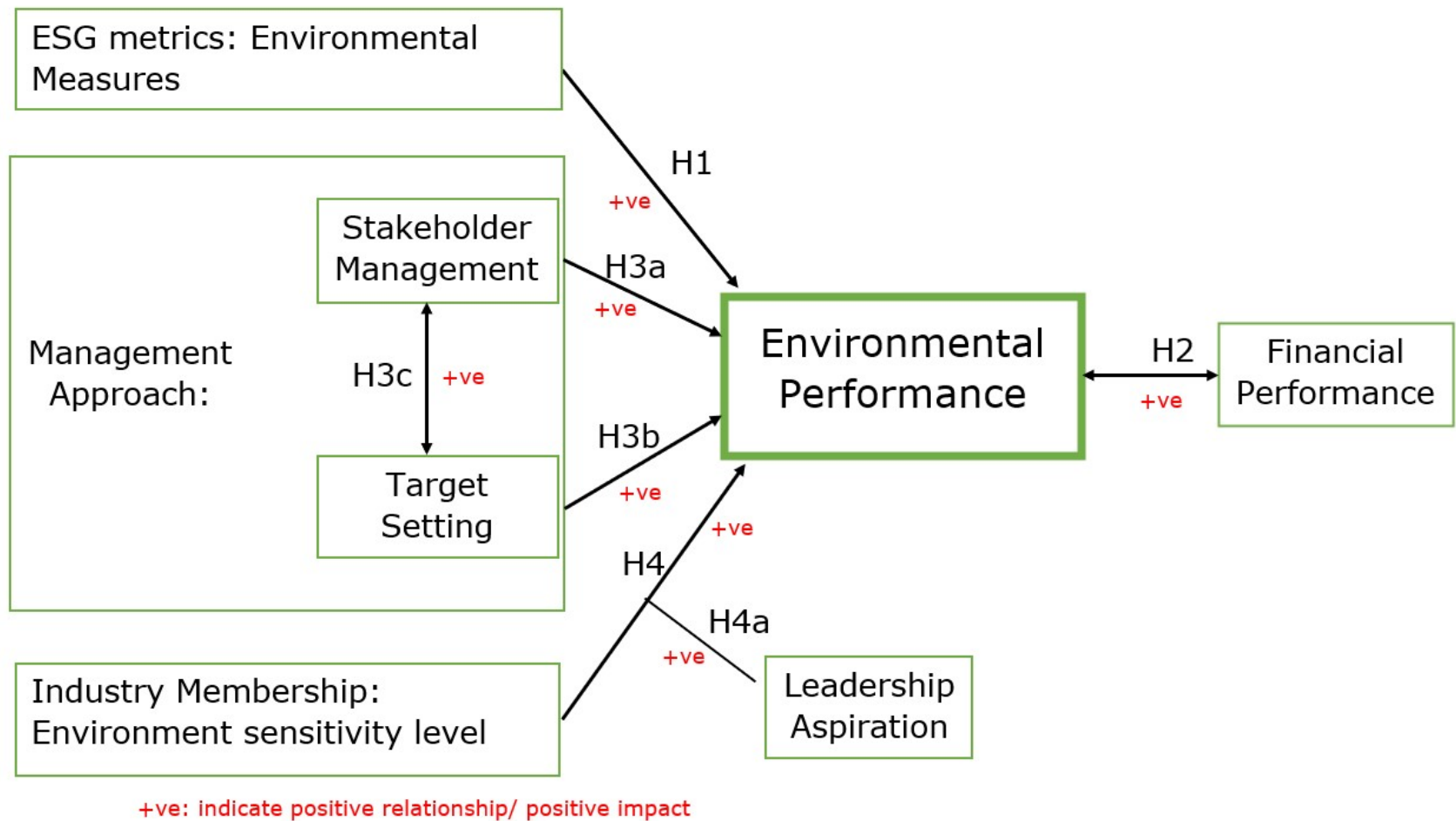


Figure 2 Conceptual Framework Developed for This Study

2.7.3 Description of conceptual framework

According to legitimacy theory and stakeholder theory, this study assumes that:

Hypothesis 1(H1): Malaysia listed firms are managing environmental performance based on the regulatory requirement.

Hypothesis 1a (H1a): Carbon emission is the environmental performance area that received the most attention from firms.

According to legitimacy theory, signalling theory, ethical investor effect, impression management and stakeholder theory, this study expects that:

Hypothesis 2 (H2): There is a positive relationship between Malaysia listed firms' financial performance and firms' overall environmental performance

Hypothesis 2a (H2a): There is a positive relationship between Malaysia listed firms' financial performance and firms' specific environmental performance areas

According to stakeholder theory, resource dependency theory, target setting and legitimacy theory, this study proposes that:

Hypothesis 3 (H3): Management Approach create impact on environmental performance specifically:

Hypothesis 3a (H3a): Stakeholder management create positive impact on environmental performance

Hypothesis 3b (H3b): Target setting creates positive impact on environmental performance

Hypothesis 3c (H3c): Both stakeholder management and target setting are correlated in environmental performance management.

According to impression management theory and institutional theory, this study assumes that:

Hypothesis 4 (H4): Environmentally sensitive industry has better environmental performance as compared to other industry.

Hypothesis 4a (H4a): Companies that are in environmentally sensitive industry, have better environmental performance is due to its leadership aspiration.

Chapter 3 Research Methodology

3.1 Introduction

This study adopted quantitative approach methodology to reveal the environmental performance by Malaysia listed companies in 2020. This study involved analysing one-year environmental performance disclosure data. Content analysis approach was implemented to analyse the environmental performance level of Malaysia listed firms. In the past decade, the relationship between firm environmental disclosure and environmental performance have been the subject of plenty of research studies. Ingram and Frazier (1980) and Wiseman (1982) study claimed that no relationship was found between environmental performance and disclosure. While Fekrat et al. (1996) study which used scoring system adjustment based on industry ranking of performance, found that there was insignificant negative relationship between environmental performance and disclosure level. Despite that, Hughes et al. (2001) study found that environmental disclosures were not useful in classifying firms' actual environmental performance. Therefore, in this study, a different scoring process was developed and used. Environment disclosures are not being scored according to the words weighted sentence disclosure, but the scoring is based on disclosure content quality which is measured from target setting approach⁸ perspective and ESG metrics⁹.

The sustainability reports produced by sample companies in 2020 were analysed against a scoring template that developed by referring to Dragomir (2010) study scoring scale. Besides, multiple regression model was conducted to examine the relationship between firm financial performance and environmental performance in Malaysia context. Independent sample test was used to assess the impact of

⁸ Scoring template available in appendix 4

⁹ ESG metrics developed for this study available in appendix 1a

stakeholder management and target setting approach on firms' environmental performance. Previous literature has highlighted that industry sensitivity is a significant factor in impacting firms' environmental performance. Therefore, one-way ANOVA test was performed to determine whether there is a difference in environmental performance amongst various industries with varying levels of environmental sensitivity. Meanwhile, the leadership aspiration impact on high environmental sensitivity industry's environmental performance was examined using an independent sample test.

3.2 Sample Selection and Size

This study employed a purposive sampling method as it is interested in public listed firm in Malaysia. Hence, only companies that are listed in Bursa Malaysia main market, currently active and have produced annual sustainability report from 2015 to 2020 are included in the research sample. Leadership statement¹⁰ in the report was extracted to assess leadership aspiration impact on environmental performance.

The initial sample size is 784 companies which consists of all the public listed company that listed in Bursa Malaysia main market. However, there are multiple companies that do not produce consecutive sustainability report. Thus, an exclusion criteria list¹¹ was developed after first screening of the annual report and sustainability standalone report in 2020. Firms that have at least one missing report during 2015 to 2020, firms that changed their financial year end during 2015 till 2020, firms that ceased to be listed in Bursa main market such as PN17 company, firms that do not have sustainability report and firms that are missing or have missing financial variables in Datastream dataset are excluded. After cleaning the sample accordingly to the exclusion list, the final sample size is 318 before applying control variables.

Firm size is a significant factor that need to be considered in order to obtain fair results. Firms size has a great impact on firm motivation to disclose environmental performance as larger firm will have greater exposure to its stakeholders. Furthermore, in Yam (2013) research, it showed that only large property companies manage to apply for professional accreditation due to the high cost of application. In order to produce a fair result, firm size is included as part of the sampling criteria in this study. Previous research has shown that

¹⁰ Full description for leadership statement available in appendix 5b

¹¹ Full exclusion list available in appendix 3

firm's total assets is a reasonable proxy for firm size (Alrazi et al., 2016, Moussa et al., 2021, Tzouvanas et al., 2020). Hence, firm's total asset is as a proxy for firm size in this study.

In order to fulfil the purpose of this study, only sample firms whose company sizes lie between the first and third quartile are included in the final sample. This is to ensure sample companies that are included in this study, are facing similar exposure level towards their stakeholders as pressure from stakeholders is a mediating factor towards firm motivation to report their environmental performance. Both Stanwick and Stanwick (1998) and Fombrun and Shanley (1990) studies found that company size is positively related to corporate social performance. Thus, this study assumes the larger the company size, the better the corporate environmental performance. Vice versa, the smaller the company size, the lower the corporate environmental performance will be. Previous studies had also used interquartile technique for sampling and filter data obtained (Cho et al., 2022; Dai and Chang, 2021 and Xolocotzin et al., 2016). IQR was known for removing potential outliers in our data and avoid extreme scores, in other word, it can help to tightens the score range. This study aims to study similar the environmental performance across a group of companies with similar size and strength, therefore, IQR was used to reduce the range of companies' size and remove potential outliers (Agresti et al., 2017 and Bernard, 2017) By selecting sample companies which total asset is located in between first and third quartile will aid in removing those best and worst performers, which are the outliers. Thus, outlier data is removed which further enhanced the normality of the data collected. After applying IQR, the final sample size is 155, which is 19.6% of the total companies listed in Bursa Malaysia main market.

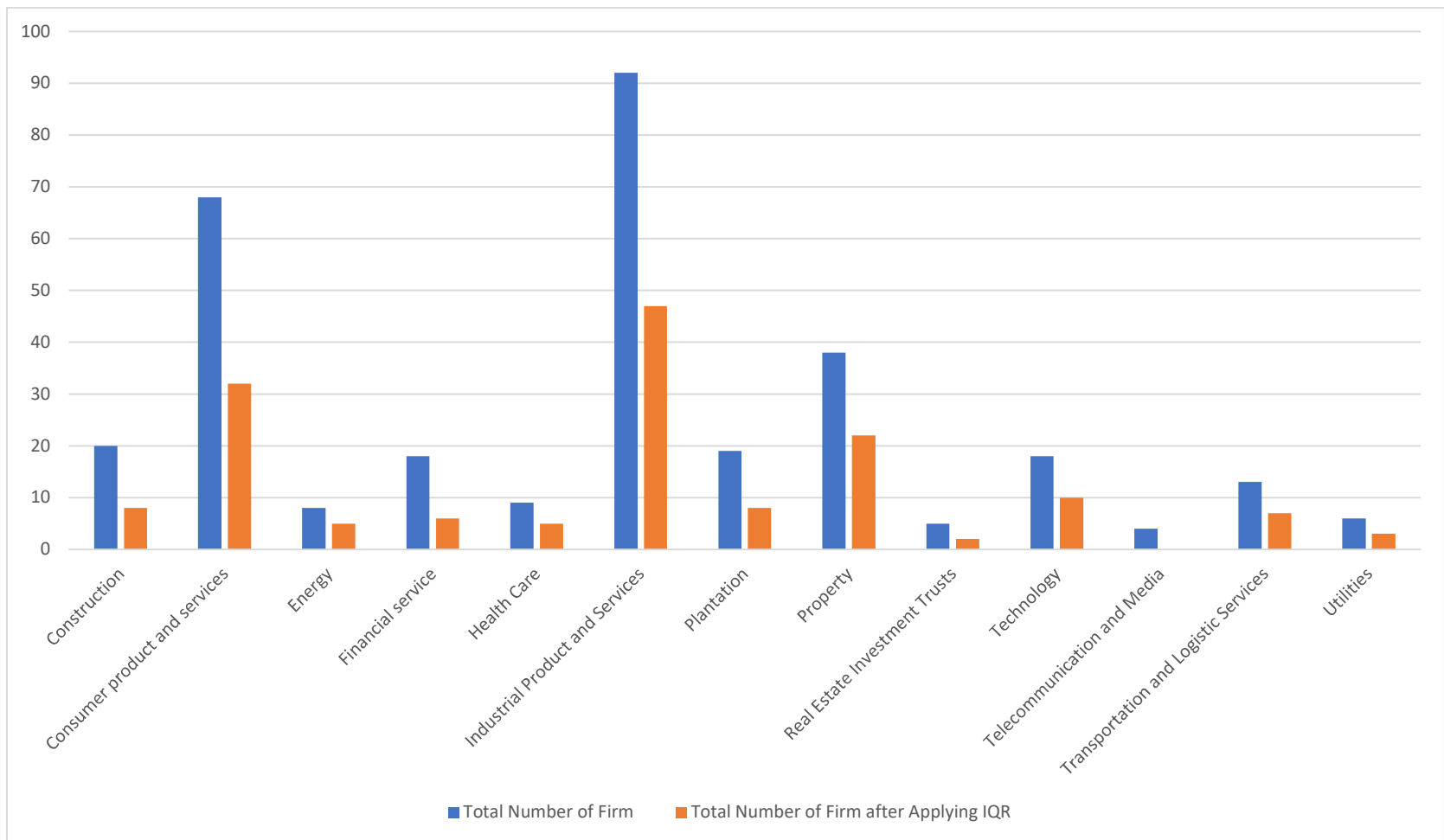


Figure 3 Comparison of Firms Distribution before and after Applying IQR based on Firm Size

Industry	Population	Samples
Construction	20	8
Consumer Product and Services	68	32
Energy	8	5
Financial service	18	6
Health Care	9	5
Industrial Product and Services	92	47
Plantation	19	8
Property	38	22
Real Estate Investment Trusts	5	2
Technology	18	10
Telecommunication and Media	4	0
Transportation and Logistics Services	13	7
Utilities	6	3
Total	318	155

Table 1 Distribution of Industry

	No.
Total number of public listed firm:	784
Remove firm that have missing financial variables data:	(466)
Total firm remaining:	318
In order to remove outliers, IQR (Firm's size between Q1 and Q3) is applied. Final sample size:	155

Table 2 Sampling Process

Table 1 showed the number of companies in each respective industry before and after controlling for firm size using IQR while Table 2 had outlined the sampling process. Table 1 and Figure 3 had showed that upon applying IQR to control firm size, the overall firm distribution is unaffected. However, after applying interquartile range based on firm size, there was no companies from telecommunication and media industry included in the sample which is due to the company size are too small.

3.3 Design of Research Instrument

Content analysis is frequently used to convert qualitative content into quantitative data, it is defined as a research method that uses a set of procedures to make valid references from text (Weber, 1990). In Moussa et al. (2021), Patten (2002) and Zahid and Ghazali (2015) had used content analysis to translate environmental performance disclosure into firms' actual environmental performance level.

In this study, a different content analysis procedure is developed and adopted. This study is interested to analyse the current development of environmental performance based on Bursa ESG framework¹². Instead of quantifying the length or word count of environmental disclosure, this study developed a set of quantifying procedure based on Bursa ESG metrics and quantified firm's environmental performance level based on its environmental disclosure quality. ESG metrics is used as a basis for the development of content analysis template as it provides different indicators for each respective theme such as carbon emission volume, waste reduction volume and water usage. These performance indicators are comparable across different companies regardless of their business nature.

The environmental performance categories are modified based on the information captured during pilot scoring process. The modification is made in terms of the coverage of each environmental performance categories as well as new environmental categories were introduced. This is to ensure that all the disclosure data available are captured in a complete manner and to assure that the scoring template can cover as much environmental practice performance of Malaysia listed firms as possible. In this study, Supplier Assessment Rating (2.6.1) is added and categorised as subcategory of supply chain while Climate Action: Mitigation and Adaption (2.11) is labelled as a new category

¹² Bursa ESG framework available in appendix 1b

of environmental performance. Category 2.6.1 refers to a specific assessment conducted by the company to examine its suppliers' overall environmental performance and their commitment to supply sustainable materials. Unlike category 2.6 which focuses on suppliers' environmental impact assessment, category 2.6.1 emphasises on assessing suppliers' performance in terms of their product quality and delivery service satisfactory level. Category 2.6.1 is least attempted¹³ by the sample companies, only three companies, one from Technology industry, one from Construction industry and one from Industrial Product and Services industry managed this category. This has implied that Malaysia listed companies have not realised the value of supply chains in environmental performance management. Category 2.11 is about the commitment and strategic plan¹⁴ that companies have developed to combat climate change issues. This category is tackled by at least one company from each industry. However, only 16.67% of total sample companies (53 out of 318 companies) attempted and disclosed this category. The firm size of the sample companies that attempted this category varied from small companies to large companies, whereby there are 12 companies from Consumer Product and Service industry while Construction industry, Real Estate Investment Trust industry and Telecommunication and Media industry each have one company that attempted this category. This outcome indicates that overall Malaysia companies, regardless of their firm size, have acknowledged the significance of addressing global warming issue. Therefore, companies develop climate change remedial strategic action plans and integrate it within their business operations.

¹³ Before controlling firm size

¹⁴ This plan refers to action plan created by the company that outlines the steps businesses have taken or future actions plan to combat climate change issue.

A template is developed by employing the environmental performance categories that are suggested in Bursa ESG metric. Each of the category's scope were slightly modified. The remarks column gives some indication of the respective environmental performance category scope by including environmental practices that were observed in the reports but were not available in the Bursa ESG framework. The following Table 3 is the content analysis template developed in this study.

Company Profile		
Year of Sustainability Report:	2020	
Company Name:		
Listed number:		
Industry:		
Market listed:		
Type of report:	Annual report / Stand Alone report / Integrated report	
Categories of environmental performance	Score	Remarks
2.1.1 Carbon Emissions (direct)		Greenhouse gas emissions, eco botanic shuttle bus service
2.1.2 Carbon Emission (indirect)		
2.1.3 Carbon Emission (value chain)		
2.2 Waste and effluent		Industrialised building system
2.3 Water		
2.4 Energy		
2.5 Biodiversity / Biodiversity Conservation Programme		Habitat Conservation
2.6 Supply chain/ Material Sourcing and Supply Chain Management		
2.6.1 Supplier Performance Rating		
2.7 Product and services responsibility		Green building certification, innovation, forest stewardship accreditation
2.8 Materials / Resource Efficiency		Integrated pest control, packaging material, certified raw material, paperless policy, raw material that are recycled product, Industrialised building system
2.9 Compliance / Environmental Compliance / Environmental monitoring		ISO environmental management
2.10 Land remediation, contamination or degradation		Environmental Impact Assessment
2.11 Climate Action: Mitigation and Adaptation		Zero burning policy

Table 3 Content Analysis Template

The content for sustainability report is analysed based on its content quality and then, scored accordingly to the scoring scale that developed based on Dragomir (2010) and Moussa et al. (2021), using Table 3 template. Setting targets for environmental performance shows companies' commitments to manage their environmental performance. Green Technology Master Plan that was introduced by the ministry, has indicated several quantified environmental performance targets for each respective industry (Ministry of Energy, 2017). This has highlighted that target setting is important in environmental performance management and should be placed at the highest scoring level. Therefore, the scoring template uses a scale from 0 to 5 which is similar to Vormedal and Ruud (2009) study scoring scale. The following Table 4 is the full scoring template¹⁵.

Score	Description
0	This category was not disclosed in the report
1	Narrative only
2	Quantitative data provided of the current year performance
3	Comparative and quantitative data provided
4	Future action plan given (brief direction or detailed action plan)
5	Future target given (narrative or quantitative)

Table 4 scoring template and its respective description.

¹⁵ Refer to appendix 4 for further clarification of scoring scale.

This study examines firms' actual environmental performance instead of companies' environmental disclosure. Meng et al. (2014) and Clarkson et al. (2008) studies suggested that there is a positive association between environmental performance and the level of discretionary environmental disclosure. Furthermore, this study will be studying firms' actual environmental performance based on the qualitative data extracted from sample companies' annual sustainability report. This is due to sample companies' environmental performance disclosure is not being examined in a quantitative way, in fact, the qualitative information obtained from the report will be examined and scored accordingly from 0 to 5, ranges from no disclosure to disclosure with target setting. This study used 0 to narrates non-disclosure which means the company did not manage their environmental performance while 5 to narrates that the companies had provided both quantitative and qualitative data which support that they did manage their environmental performance for the previous year. Additionally, they had showed commitment to manage their environmental performance by providing future target.

3.4 Data Collection Method

This study collected and analysed secondary data such as annual reports that contain sustainability report or a standalone sustainability report that was prepared and submitted to Bursa Malaysia by the sample companies in 2020. Sustainability report of each company can be easily retrieved from reliable sources. This is because sustainability reporting has been mandated since 2016 and the reports are made available at public domain such as Bursa website (Wong et al., 2019). This study is interested to examine Malaysia listed firms' environmental performance in 2020. Therefore, environmental performance disclosure in the sustainability reports were collected and analysed via content analysis. Content analysis was used to translate the qualitative performance disclosure into quantitative performance measures which allows fair comparison of environmental performance across different companies' disclosure styles.

This study involved analysing and quantifying the qualitative content in ordinal measurement via content analysis technique. The respective environmental performance category will be scored as 1 if the company provides only narrative description of its performance. For instance, company disclosed their commitment in wastage reduction without providing any quantitative measure data or future action plan, then this part will be coded under category Waste and Effluent (2.2) as 1. On the other hand, if the company had provided their historical performance quantitative data as well as their future action plan along with a quantified future target regarding energy management then it will be scored as 5 under category Energy (2.4). Meanwhile, if the company had only provided their carbon emission from direct business operation performance quantitative and comparative historical data, then under category Carbon Emission (Direct) (2.1.1) it will be coded as 3.

Leadership statement by each firm's representative including chairman, CEO, managing director, sustainability committee is a statement that gives public information regarding the level of leadership aspiration towards corporate development. Thus, this study assesses the leadership statement to know whether company leaders mentioned environmental sustainability-related topic in their statement. Leadership statement that mentioned companies' environmental performance will be treated as a proxy for the presence of leadership aspiration in their environment sustainability management. This is important as the study is interested to examine the impact of leadership aspiration towards firm's environmental performance. Hence, the leadership statements that were retrieved from corporate annual report were coded using nominal scale. For instance, under leadership aspiration of the particular company will be coded as 1 if the environmental aspect and commitment was mentioned in the statement. If the statement did not include any information about the environment, the leadership aspiration will be coded as 0 for that company.

This research is keen on studying the impact of stakeholder management on company's environmental performance. Thus, stakeholder engagement table will be treated as the proxy for stakeholder management. This is due to company can only be concluded that they are engaging in stakeholder management when they manage to provide stakeholder concerns, company actions to address respective concerns and frequency of engagement with respective stakeholders. Additionally, stakeholder matrix will also be presented if stakeholder analysis is carried out. Therefore, the availability of stakeholder engagement table is used to represent whether company manages its stakeholder expectations accordingly. The company will be coded as 1 to represent there is stakeholder management when stakeholder engagement table is found in the

annual report. Vice versa, if there is no stakeholder engagement table found, then the company will be coded as 0.

This research also investigates the impact of target setting approach on firm's environmental performance. In order to assess the impact, sample companies were coded using nominal scale of 0 and 1. The presence of target setting method will be indicated by a score of 5 in the environmental performance areas. Target setting approach is a business management strategy whereby managers will manage business performance according to the target set. This is due to managers must manage the environmental performance according to the target stated in the annual report. If they neglect the target stated in the annual report, they will be legally liable for providing fake information to public investors. Therefore, if there is at least one environmental performance category was given a scoring of 5, it means there is a quantified future target given for the category, the company will be coded as 1 for the presence of target setting approach.

Sample firms' financial performance data was retrieved from Datastream database. The financial variable, market value was used as a dependent variable to measure firm's financial performance whereas total asset value was used as control variable in order to test against the proposed relationship between firms' financial performance and their environmental performance. In this research, financial variables from 2021 are utilised to tackle time lag effect on market value. Time lag effect is referring to a situation whereby there is a delay between time of intervention or exposure and the subsequent consequence (Gail, 2005). In Lee and Choi (2015) research had shown evidence that corporate initiatives such as research and development investment is statistically significant with long-term enterprise value. For instance, it may take at least one year for the effect of the good environmental performance to

explicitly affect the firms' financial performance, which means there is no immediate effect on the firms' financial performance. Hence, financial variables in 2021 were used along with environmental performance in 2020 to testify the relationship between firms' financial performance and environmental performance.

Lastly, a pre-test on the content analysis scoring process is conducted. An independent scorer who is a course mate from the same research degree programme was found and briefed on the content analysis procedure and criteria before cross-checking. This is to ensure the validity and consistency of the content analysis scoring process. The cross-check result was satisfying.

3.5 Variables

The study is compromised by several research objectives (RO). Therefore, different variables are used to examine different hypotheses. The research variables are introduced according to RO.

RO1: To reveal the insight of environmental performance of Malaysia listed companies in 2020.

Environmental disclosure scoring by each environmental category is used as proxy for firms' environmental performance. This is because based on several existing studies such as Freedman and Stagliano (2008) findings showed that level of actual environmental performance emission is associated with the same level of disclosure. Therefore, it is appropriate to use environmental disclosure scoring as a proxy for actual environmental performance level. Additionally, the environmental performance scoring was not given based on the quantitative level of disclosure, but it is scored based on the qualitative level of companies' performance that was being reported in their sustainability report. Therefore, environmental disclosure scoring which is analysed based on the quality of the content disclosed is the best available option to represent company's actual environmental performance.

RO2: To identify the relationship between firm financial and environmental performance.

H2 model:

$$\hat{y} = Constant + \beta_1 A.Econ + \beta_2 A.Env + \beta_3 A.SG$$

Whereby,

\hat{y} : predicted firm market value in 2021

A.Econ : average economic performance scoring

A.Env : average environmental performance

A.SG : average social governance performance

H2a model:

$$\begin{aligned} \hat{y} = & Constant + \beta_1 A.Econ + \beta_2 A.SG + \beta_3 CE (direct) + \beta_4 CE (indirect) \\ & + \beta_5 CE (value chain) + \beta_6 Waste and effluent + \beta_7 Water \\ & + \beta_8 Energy + \beta_9 Biodiversity + \beta_{10} Supply Chain \\ & + \beta_{11} Product + \beta_{12} Material + \beta_{13} Compliance \\ & + \beta_{14} Land + \beta_{15} Climate Action \end{aligned}$$

Whereby,

\hat{y} : predicted firm market value in 2021; A.Econ: average economic performance scoring ; A.SG: average social governance performance; CE (direct): category 2.1.1; CE (indirect): category 2.1.2; CE (value chain) : category 2.1.3; Waste and Effluent: category 2.2; Water: category 2.3; Energy: category 2.4; Biodiversity: category 2.5 ; Supply chain: category 2.6 ; Product: category 2.7 ; Material: category 2.8; Compliance: category 2.9; Land: category 2.10; Climate action: category 2.11

Firms' market value in 2021 is used as the dependent variable in the regression model whereas environmental performance is proxied by average aggregate scoring of environmental performance (Avg AS Env) is treated as control variable.

Based on Daugaard (2019) article, it showed that corporate social performance is correlated with market-oriented performance. This

can be explained by investors evaluate corporate social performance while making investment decisions. This study assumes that investors also evaluate corporate environmental performance during investment decision making in Malaysia context. Therefore, firm market value is used as it can best reflect current market investor perceptions and it can best capture the proposed relationship. Market value of the firm is the sum of the market value of all outstanding securities which consists of common shares, preferred shares, and debt. The used of market value has also been cited in previous literature (Henri et. al., 2013; Holm and Rikhardsson, 2011 and Li et. al.2018)

Recent literature (Zhou et al., 2022) has suggested that the environmental, social, and governance (ESG) performance of listed companies can be improved, and the financial performance of the company has a clear mediating effect. Accordingly, this study recognised the effect of social governance and economic sustainability performance variables on firms' financial performance. Therefore, the average score of social governance (A.SG) and the average score of economic performance (A.Econ) are included as control variables. By adding economic and social governance performance, the internal validity of a study can be better enhanced. As the influence of confounding and other extraneous variables are being limited, consequently it will help to establish an unbiased correlational relationship between interested variables.

RO3: To assess the impact of stakeholder expectation and measure-to-manage management on environmental performance of Malaysia listed firm.

The environmental performance of 2020 which is proxied by Avg AS Env is treated as dependent variable. In order to examine the impact of different management approaches, the presence of management approach is coded via dummy variables, 0 represent absence while 1 represent presence. In this study, the availability of stakeholder engagement table in the annual report is used as a proxy for stakeholder management presence while the availability of target setting in environmental performance categories is treated as proxy for target setting approach management. In order to view the effect of different management approaches on the overall environmental performance, these two dummy variables are treated as independent variables.

RO4: To assess the impact of industries that are classified as environmentally sensitive and leadership aspiration on environmental performance.

Similar to previous research objective, firm's environmental performance in 2020 (Avg AS Env) is treated as dependent variable. Industry sensitivity level towards environment is set as independent variable. Each industry is classified using nominal scale 1,2,3, whereby 1 is the lowest sensitivity and 3 is the highest sensitivity. Industries are classified based on existing literatures that offered studies from both developed and developing countries context ¹⁶ (Buniamin et al., 2008, Jaaffar et al., 2018, Mobus, 2005, Patten, 2002 and Wong et al., 2019). An odd scale of 1 to 3 is utilised to ensure the scale manage to capture all industry characteristics including industry that possesses moderate sensitivity towards environment. This study hypothesises that most environmentally sensitive industries tend to have better environmental performance due to its leadership aspiration. The presence of leadership aspiration is set as an independent variable while firm's environmental performance in 2020 (Avg AS Env) is included as dependent variable. Leadership statement that mentions environmental performance is used to represent the presence of leadership aspiration.

The variables involved throughout the entire research study include environmental performance scoring of each listed firm in Malaysia¹⁷, market value of each respective firm in 2021, economic and social governance performance scoring, presence of stakeholder management and target setting approach, industry classification as well as presence of leadership aspiration. These variables are proxies for the conceptual framework¹⁸ and are examined to provide

¹⁶ Full industry environmental sensitivity list is available in appendix 5a

¹⁷Environmental disclosure scoring will used as the proxy to represent company's environmental performance level.

¹⁸ Available in chapter 2.7.2

evidence for the hypotheses discussed in chapter 2 while analyses of variables and findings can be found in chapter 4.

Variables	Definition	Expected Sign
<u>Dependent</u>		
Financial Performance	Market Value, Year 2021	
<u>Independent</u>		
<i>Control Variables</i>		
Ave Econ Performance	Average Economic Performance Score (A. Econ), Year 2020	
Ave Social Gov. Performance	Average Social Governance Performance Score (A. SG), Year 2020	
Target Setting	Dummy variable equal to "1" if target is set and "0" otherwise	
Stakeholder Management	Dummy variable equal to "1" if stakeholder management is practised and "0" otherwise	
<i>Env. Performance</i>		
Ave Env Performance	Average Environmental Performance, Year 2020. This comprises of the following categories:	Positive
	Carbon Emissions, direct (Category 2.1.1)	Positive
	Carbon Emissions, indirect (Category 2.1.2)	Positive
	Carbon Emissions, value chain (Category 2.1.3)	Positive
	Waste and Effluent (Category 2.2)	Positive
	Water (Category 2.3)	Positive
	Energy (Category 2.4)	Positive
	Biodiversity (Category 2.5)	Positive
	Supply chain (Category 2.6)	Positive
	Product (Category 2.7)	Positive
	Material (Category 2.8)	Positive
	Compliance (Category 2.9)	Positive
	Land (Category 2.10)	Positive
	Climate action (Category 2.11)	Positive

Table 5 Summary of Variables and its Expected Relationship with Dependent Variable

3.6 Ethical Considerations

Since this study is employing only secondary data that is available in public reliable stream such as Datastream and Bursa Malaysia. Therefore, it does not involve any company confidential data. In this study, author does acknowledge that company may prefer to protect their reputation and refuse to reveal their actual identity in this report. As a result, the actual name and identity of the sample companies will not be revealed throughout this entire thesis. The data file is encrypted and only accessible by supervisor and student researcher. Any publication of this thesis, identity of sample companies will be anonymised. This study has been approved by the ethics committee as a level A approval.

Chapter 4 Analysis and Findings

4.1 Introduction

The types of descriptive and inferential analysis used in each hypothesis investigations and the outputs generated by software are introduced and interpreted in this chapter. SPSS was used to analyse the scoring of firm's environmental performance. Both descriptive analysis and inferential analysis such as one-way ANOVA, regression analysis, independent sample tests were carried out via SPSS software. While NVivo software was utilised to code leadership statement such as Chairman message, sustainability committee statement in order to identify the presence of leadership aspiration.

Data entry was done via Excel. Environmental performance of a firm was scored accordingly to its disclosure quality and presentation based on ESG metrics. Environmental sustainability report quality was used as proxy for firm's environmental performance. Leadership statement was extracted from the 2020 company's annual report to a separate Excel file. Extraction of financial variables from Datasream database was carried out. Further data cleaning was done as the extracted company list was different from the Bursa Main Market company list. After cleaning and matching both company lists, duplicated financial data was removed before transferring to each respective company row. Both dataset and leadership statement Excel files were then imported to SPSS and NVivo respectively for further analysis.

For environmental performance scoring, the results of each respective company scoring were analysed using Excel function and SPSS analysis tool. Both nonparametric and parametric tests were conducted to analyse the ordinal data that derived via content analysis. For leadership statements by each company leader including CEO, chairman or any representative person from top management

level were coded using Table 3 template as reference. If the company leader mentions category 2.4 and category 2.8 in his statement, then the company will be coded as 1 to represent leadership aspiration is presence. Besides, T-distribution was used for all inferential analysis. This is due to the population variance of the study is unknown while sample variance is available. Factor analysis via principal component method was conducted due to presence of strong multicollinearity issue.

Supplier Assessment Rating (2.6.1) was eliminated in the inferential analysis as there were no sample companies report and manage this category. This is reasonable as this category was developed during the data collection process, it was not suggested in Bursa ESG metrics and large companies were excluded¹⁹ from the sample. It is reasonable that current sample companies will not take additional initiative to tackle categories that are not suggested by authorities, and they are not highly exposed to public visibility. The inferential analysis and regression model were carried out without including category 2.6.1 as there were none of the sample companies attempt this category in 2020.

¹⁹ Detailed explanation in chapter 3.2

4.2 Robustness Test

Table 6 is the test of normality result generated from SPSS. Kolmogorov-Smirnov Test (KS test) was conducted to confirm whether data is normally distributed or not. KS Test is a non-parametric test as it does not have any pre-condition assumption. KS test is a hypothesis test, whereby the null hypothesis state that the observation of all variables²⁰ are all normally distributed whereas alternate hypothesis state that the observations of the variables⁴ are not normally distributed. A default significance level, 0.05 was used. The decision rule in this hypothesis test is the null hypothesis will be rejected if the p-value is less than 0.05. Based on Table 6 KS test result, null hypothesis is rejected. It showed that all variables are not normally distributed. A potential reason for this result is all data were measured in ordinal scale. Ordinal measured variables will not possess normal distribution unlike interval or scale measured items. Besides, Table 4 showed the result for normality test of the residual²¹, which suggested that the null hypothesis that assumes residual is normally distributed should be rejected. Therefore, pre-condition of regression analysis that assumes residuals are normally distributed was violated.

²⁰ Variables include category 2.1.1, 2.1.2, 2.1.3, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10 and 2.11

²¹ The full test of normality for regression model is available in appendix 9

Environmental Performance Category	Kolmogorov-Smirnova	Shapiro-Wilk	Robust Standard Error
2.1.1	0.412	0.631***	560.201
2.1.2	0.441	0.614***	474.419
2.1.3	0.538	0.252***	1183.907
2.2	0.299	0.859***	477.751
2.3	0.263	0.79***	405.333
2.4	0.251	0.879***	450.466
2.5	0.475	0.46***	471.535
2.6	0.527	0.36***	1203.948
2.7	0.499	0.466***	657.196
2.8	0.417	0.581***	634.075
2.9	0.314	0.761***	614.583
2.10	0.532	0.28***	2222.105
2.11	0.512	0.425***	1739.647

*** p-value <.001

Remark: HC3 is used in the Univariate Analysis of Variance

Table 6 Robustness Test Result of each Environmental Performance Category

There are many controversies had been raised regarding the appropriateness to continue using parametric tests to analyse ordinal data. Violation of normality of data assumption, required parametric test results to be exercised with cautions. Despite that, plenty of scholars claimed that ordinal variable shall be analysed under nonparametric test as ordinal data failed to show a normal distribution. However, Norman (2010) study had proved that ordinal data that used Likert scale can be analysed using parametric statistic as long as the sample size is greater than five²², parametric test assumption of data normality is no longer required to follow as the test will yield a nearly correct result. Parametric test for Likert data is acceptable as long sample size is more than 30 (DeWees et al., 2020 ; Murray, 2013 and Sullivan and D'Agostino Sr, 2003). Therefore, the violation parametric test assumption of normal distribution of data and regression analysis that assume residual are normally distributed is no longer significant in this study as the sample size of this study is 155. Therefore, parametric tests are continued in this study to tackle the research questions mentioned in chapter 1.3.

According to Table 6, it is noticed that in the value robust standard error for each environmental performance category is large which indicates that homoscedasticity of data is violated²³. This is due to heteroscedasticity is common in analysing cross-sectional data whereby environmental performance of companies will be varied based on business nature, regulation, and companies' resources (Frost, 2022). Regardless interquartile range had been applied during sample selection, the environmental performance among the sample companies will still have a big variation due to different business

²² Central limit theorem stated that when sample size is equal or greater than 30 the distribution of sample mean is approximating to a normal distribution. In this case, the sample size involved in this study is 155 which greater than 30.

²³ Refer to appendix 7

nature and the regulation imposed on respective industry. Additionally, there are some limitations to using robust standard errors. Based on Woolridge (2009), the t-statistics only have distributions that are close to the exact t-distributions if the sample size is large, it may not have the distribution that are close to t-distribution when the sample size is small. Robust standard errors are still unbiased in the presence of homoscedasticity, but they are still less efficient as compared to conventional standard errors. Yet, using robust standard errors is a common practise in academic fields.

4.3 Descriptive Analysis

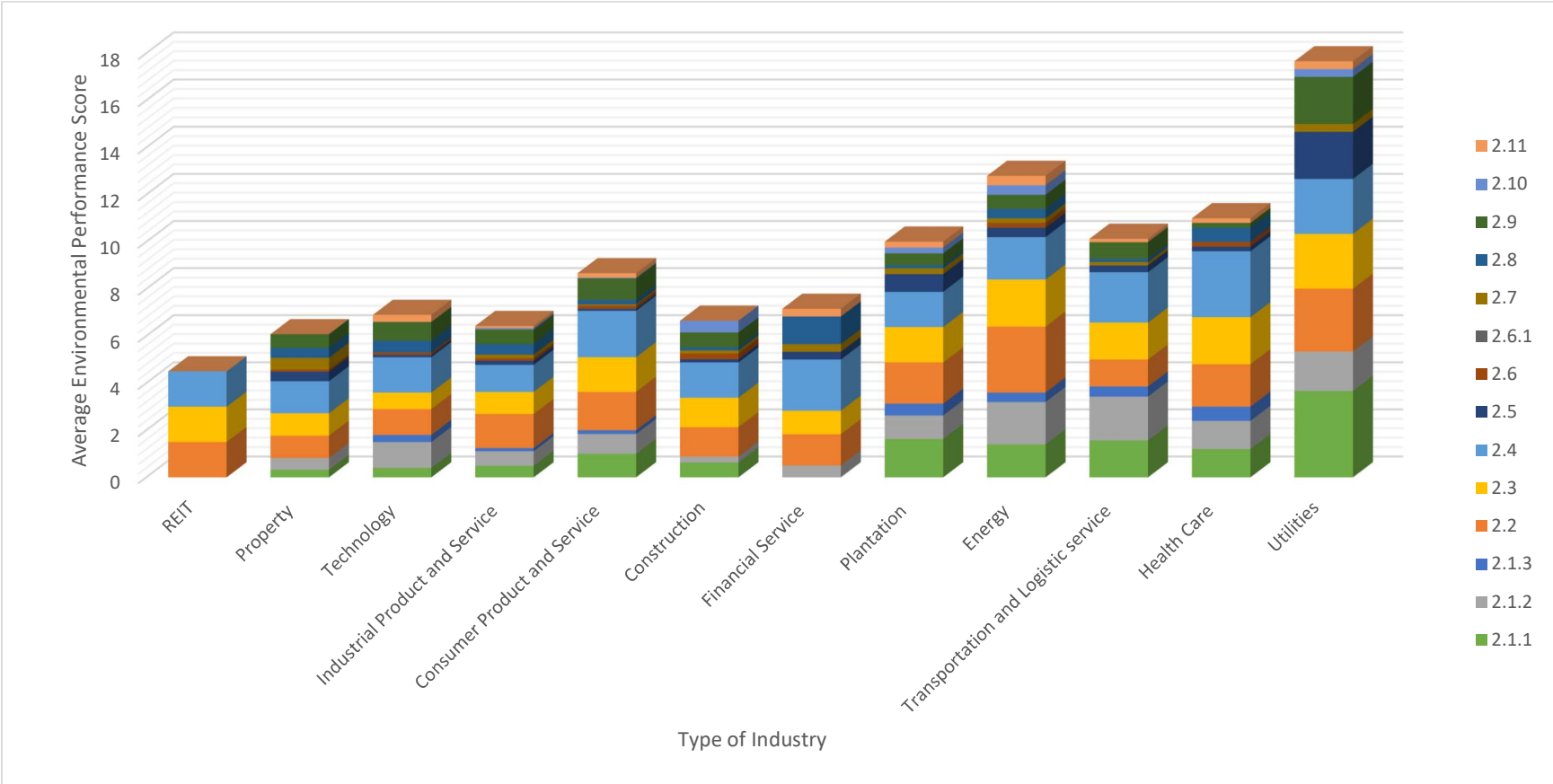


Figure 4 Breakdown of environmental performance score by each respective industry

Different type of industries will have different number of industry players. Therefore, in this study, in order to obtain a better and fair results, firm's average of environmental performance scoring is used to represent firm's environmental performance. After applying IQR based on firm size, utilities industry has the highest average scoring among all industries in Malaysia while real estate investment trust (REIT) has the lowest score. See Figure 4. The bar chart also showed that, utilities industry, which is environmentally sensitive industry provide high quality disclosure about its environmental performance in 2020.

	Mean	Maximum	Minimum	Std Dev
Ave Econ Performance	0.48	1.33	0.00	0.33
Ave Social Gov. Performance	0.81	1.91	0.00	0.45
<i>Ave Env. Performance</i>				
Carbon Emissions, direct (2.1.1)	0.77	5.00	0.00	1.31
Carbon Emissions, indirect (2.1.2)	0.80	5.00	0.00	1.38
Carbon Emissions, value chain (2.1.3)	0.17	4.00	0.00	0.69
Waste and Effluent (2.2)	1.51	5.00	0.00	1.19
Water (2.3)	1.24	5.00	0.00	1.41
Energy (2.4)	1.64	5.00	0.00	1.34
Biodiversity (2.5)	0.27	4.00	0.00	0.68
Supply chain (2.6)	0.11	1.00	0.00	0.31
Product and Service Responsibility (2.7)	0.18	2.00	0.00	0.42
Material (2.8)	0.37	3.00	0.00	0.69
Compliance (2.9)	0.68	3.00	0.00	0.84
Land (2.10)	0.08	2.00	0.00	0.32
Climate action (2.11)	0.15	2.00	0.00	0.37

Table 7 Descriptive Statistics

Environmental reporting and performance

Hypothesis 1 (H1)

Hypothesis 1 (H1) assumes that Malaysia listed companies managed their environmental performance based on regulatory reporting requirements. Hypothesis 1 (H1) is valid as the descriptive results had highlighted that Malaysia listed firms attempted to report according to regulatory reporting requirements, Bursa ESG metrics. Figure 6 showed that companies in each of the industry at least report and managed 3 types of different environmental performance that stated in Bursa ESG metrics.

According to Table 8, the aggregate scoring of each environmental performance category is more than 0, except for category 2.6.1. This showed that sample companies managed their environmental performance measures according to Bursa ESG metrics suggested environmental categories. As a result, H1 is valid as all sample companies managed their environmental performance according to regulatory reporting requirement as they managed and disclosed at least one environmental performance in their annual report.

Besides, Table 6 shows that all variables (environmental performance categories) were skewed heavily to the right and they were far from 0 kurtosis statistic, except for Waste and Effluent (2.2), Water (2.3), Energy (2.4), and compliance (2.9) which were near to 0. The phenomenon occurred as the data were measured in ordinal measurement. Thus, it will not provide a normal distribution of data²⁴.

²⁴ Explanation of the appropriateness to use ordinal data in parametric test available in chapter 4.2

Environmental Performance Category	Aggregate scoring
2.1 Carbon Emission (Sum of 2.1.1, 2.1.2, 2.1.3)	269
2.2 Waste and Effluent	234
2.3 Water	192
2.4 Energy	254
2.5 Biodiversity	42
2.6 Supply Chain	17
2.6.1 Supplier Assessment Rating	0
2.7 Product and Service Responsibility	28
2.8 Material	58
2.9 Compliance	106
2.10 Land Remediation, Contamination or Degradation	13
2.11 Climate Action: Adaption and Mitigation	23

Table 8 Aggregate scoring of each environmental performance category

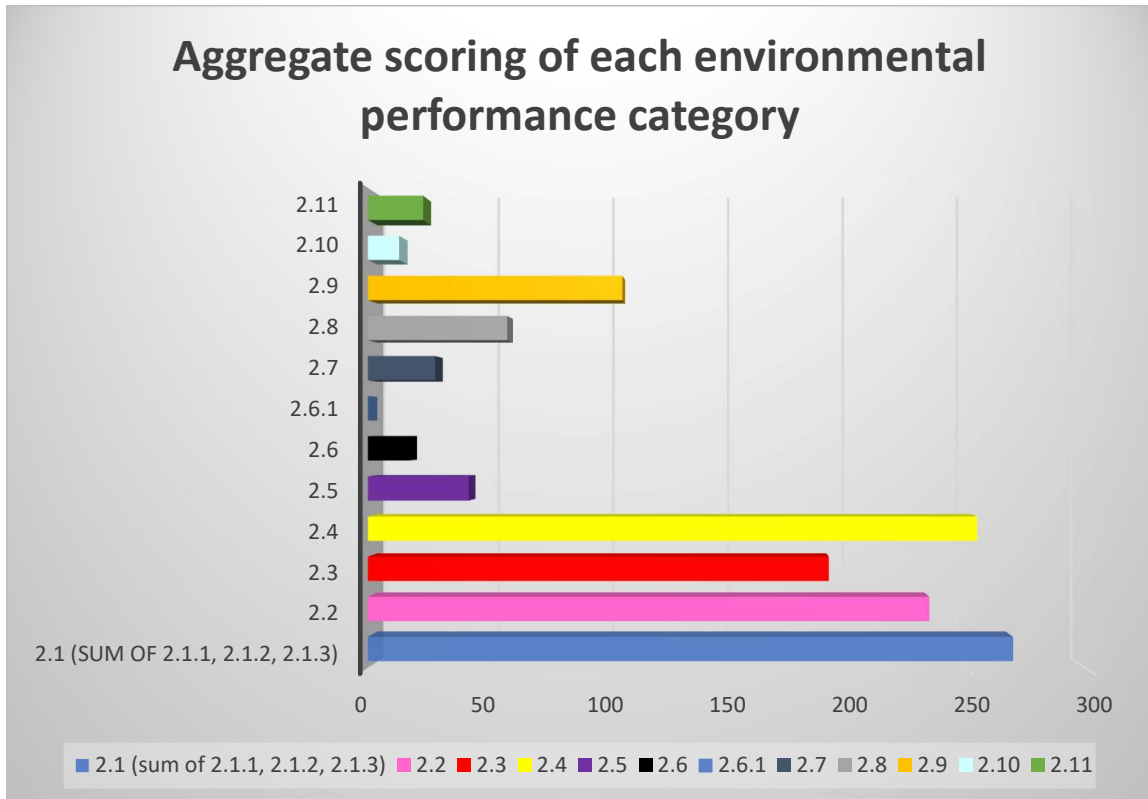


Figure 5 Summary of the aggregate scoring for each respective environmental category

Hypothesis 1a (H1a)

Hypothesis 1a assumes that carbon emission environmental performance received the most attention from Malaysia listed companies. Based on Table 8 and Figure 5, direct carbon emission (2.1.1), indirect carbon emission (2.1.2) and value chain carbon emission (2.1.3) were summed up and grouped together as carbon emission (2.1). Hypothesis 1a (H1a) is valid, as both table and figure showed listed companies in Malaysia allocated most of their attention and effort to manage and disclose their carbon emission performance. Therefore, carbon emission (2.1) has the highest aggregate score. While environmental performance category that received the least attention is Land remediation, contamination or degradation (2.10) because this category only applies to a few specific industries such as construction, plantation, and property. Thus, industry that does not fall in this scope will not be motivated to manage this environmental performance category.

Summary for RO1

The first research objective is achieved as both test result from hypothesis 1 and hypothesis 1a have revealed that listed companies in Malaysia that have the same exposure, manage and report their environmental performance according to regulatory reporting requirements. Moreover, government effort in managing global climate change such as carbon reduction target and national policy had influenced management to allocate firms' resources to manage their business carbon emission performance including direct carbon emission, indirect carbon emission and value chain carbon emission.

4.4 Inferential Analysis

Inferential statistic was conducted to testify hypotheses 2,3 and 4.

Business Performance

Hypothesis 2 (H2)

Hypothesis 2 (H2) assumes that there is a positive relationship between listed firms' financial performance and environmental performance in Malaysia context. In order to testify the proposed relationship, multivariate regression analysis was carried out. The dependent variable in this analysis was firm's 2021 market value while average economic performance and average social governance performance were controlled. The independent variable was firm's environmental performance.

The result had showed that the goodness-of-fit of the regression model is 21.8% (0.218) which means that, there is 21.8% of variation in market value of 2021 is explained by the variation in economic, environmental, social and governance performance. The low goodness-of-fit model may be due to violation of normal distribution of data assumption²⁵. In chapter 4.2 had stated that this assumption of is no longer significant as the sample size of this study is more than five. Moreover, Durbin-Watson test (DW test) is 1.876 which is near to 2, means the assumption of independence of residual is not violated. Based on the results generated, normal distribution of residual and

²⁵ Explanation of the appropriateness to use ordinal data in parametric test available in chapter 4.2

homoscedasticity of data were violated ²⁶ . Heteroscedasticity is commonly observed among cross-sectional studies²⁷.

There is strong multicollinearity issue found in the regression as the Variance Inflation Factor (VIF) and Tolerance for the variables are far from 1²⁸. The high multicollinearity between economic, environmental and social governance performance variables is expected as all the variables share the same nature and belong to sustainability performance area. Therefore, the variables are expected to be highly correlated with each other.

One-way ANOVA was conducted to test whether there is at least one independent variable is statistically significant at 5% default significance level. The hypotheses are as follow:

Null hypothesis, $H_0 : \beta_{\text{Economic performance}} = \beta_{\text{Environmental performance}} = \beta_{\text{Social governance performance}} = 0$

Alternate hypothesis, $H_1 : \text{At least one } \beta_i \text{ is not equal to } 0$

In this overall significance hypothesis test, F-test distribution and a 5 % default significance level ($\alpha = 0.05$) were used. The decision rule is to reject H_0 if the p-value from ANOVA test result Table 9, is smaller than 0.05. Based on Table 9, the p-value for ANOVA test is smaller than 0.05 which means, null hypothesis is rejected. In conclusion, there is at least one beta coefficient in the proposed model is statistically significant at 5% significance level.

This study proposed that overall environmental performance of a firm is positively related to firms' financial performance, (H2). One sample

²⁶ Refer to appendix 7

²⁷ Further explanation for heteroscedasticity is available in chapter 4.2

²⁸ Refer to Appendix 7

independent t-test is conducted to test the significance of environmental performance variable in the regression model. The hypotheses were formulated as below:

$$H_0 : \beta_{\text{Environmental performance}} = 0$$

$$H_1 : \beta_{\text{Environmental performance}} \text{ not equal to } 0$$

In this individual significance hypothesis test, t-distribution and 5% default significance level were used. The decision rule is, reject H_0 if the p-value for environmental performance is smaller than 0.05. Table 9 showed that p-value for average environmental performance scoring variable is <0.001 , which is smaller than 0.05. Therefore, null hypothesis is rejected which means average environmental performance is statistically significant at 5% significance level.

The below regression model 1 is extracted based on Table 9:

$$\hat{y} = 710.136 - 2681.230 A.Econ + 5531.054 A.Env - 1146.919 A.SG$$

Model 1 (H2)

Whereby,

\hat{y} : predicted firm market value in 2021

A.Econ : average economic performance scoring

A.Env : average environmental performance

A.SG : average social governance performance

According to Model 1, one unit increase in average environmental performance, firm market value will increase by RM5531.054, by holding other variables constant. Based on the multiple tests and analysis such as regression analysis and independent t-test that had performed, the different analysis showed a convergence result that H2 is valid. This means that there is a significant positive relationship

between listed firm's financial performance and its environmental performance in Malaysia context.

Hypothesis 2a (H2a)

Hypothesis 2a proposes that there is a positive relationship between Malaysia listed firms' financial performance and firms' specific environmental performance area ²⁹. Multivariate regression analysis was conducted whereby the dependent variable was firm market value in 2021 while average economic and average social governance performance were controlled. The independent variable in this analysis was the types of environmental performance categories. Since category 2.6.1 was not attempted by any company in the research sample size, thus it will be excluded in the following test. The following tables were extracted from the SPSS output.

The analysis output showed that goodness-of-fit for regression model is 0.344 (34.4%), which means, there is 34.4% of variation in market value 2021 can be explained by the variations in the predictor variables including economic performance, social governance performance, category 2.1.1, category 2.1.2, category 2.1.3, category 2.2, category 2.3, category 2.4, category 2.5, category 2.6, category 2.7, category 2.8, category 2.9, category 2.10 and category 2.11. The DW test statistic is 1.872 which is near to 2. Therefore, assumption of residual is independent is not violated. The SPSS analysis output showed that there is high multicollinearity issue among the predictor variables as VIF and Tolerance for each predictor are far from 1³⁰. This is expected as these individual environmental performances are all under same group which is environmental performance. Therefore, all predictor variables are supposed to be correlated with each other.

²⁹ Environmental performance area list available in appendix 1a

³⁰ Refer to appendix 7

One-way ANOVA was performed to test that there is at least one environmental performance category is statistically significant. The hypotheses were formulated as follow:

$$H_0 : \text{All } \beta_i = 0$$

$$H_1 : \text{At least one } \beta_i \text{ is not equal to } 0$$

In this overall significance hypothesis test, F-distribution and a default level of 5% significance value were used. If the p-value is smaller than 0.05 then null hypothesis will be rejected. Table 9 showed that the p-value is <0.001 which is smaller than 0.05, thus null hypothesis should be rejected. In conclusion, there is at least one beta coefficient in the proposed model is statistically significant at 5% default significance level.

Since H2a proposed that specific environmental performance of a firm is positively related to firms' financial performance. Thus, individual significance test was conducted to test the significance of each of environmental performance variables by using t-distribution. Two-tailed hypothesis test was conducted for each of the following tests. Also, a default level of 5% significance level (0.05) was applied for each of the following individual significance hypothesis tests. The same decision rule applied to the following individual significance hypothesis test whereby if the p-value from Table 9 for the respective category is smaller than 0.05, then H_0 will be rejected. The hypotheses were formulated as below:

$$H_0 : \beta_x \text{ equal to } 0$$

$$H_1 : \beta_x \text{ is not equal to } 0$$

Whereas x: category 2.1.1, category 2.1.2, category 2.1.3, category 2.2, category 2.3, category 2.4, category 2.5, category 2.6, category 2.7, category 2.8, category 2.9, category 2.10, category 2.11

Null hypothesis was rejected for testing significance of category 2.1.1 and category 2.10 at 5% significance level. Null hypothesis was not rejected for the significance test of the remaining category at 5% significance level.

In summary, only category 2.1.1 is statistically significant at 5% significance level while category 2.6 will be statistically significant if 10% significance level were applied.

The following regression model 2 is constructed based on Table 9,

$$\begin{aligned}\hat{y} = & 605.408 - 1212.226 A.Econ - 1050.273 A.SG + 1480.667 CE (direct) \\ & + 419.392 CE (indirect) - 579.838 CE (value chain) \\ & + 530 Waste and Effluent - 611.689 Water + 648.028 Energy \\ & + 110.904 Biodiversity - 2268.795 Supply Chain \\ & - 418.437 Product + 714.273 Material - 164.284 Compliance \\ & + 3037.928 Land + 1531.961 Climate Action\end{aligned}$$

Model 2 (H2a)

Whereby,

\hat{y} : predicted firm market value in 2021; A.Econ: average economic performance scoring ; A.SG: average social governance performance; CE (direct): category 2.1.1; CE (indirect): category 2.1.2; CE (value chain) : category 2.1.3; Waste and Effluent: category 2.2; Water: category 2.3; Energy: category 2.4; Biodiversity: category 2.5 ; Supply chain: category 2.6 ; Product: category 2.7 ; Material: category 2.8; Compliance: category 2.9; Land: category 2.10; Climate action: category 2.11

According to Model 2, one unit increase in direct carbon emission performance (2.1.1), firms' market value will increase by RM1480.667, by holding other variables constant. Based on the multiple tests and analysis such as regression analysis and independent t-test that had conducted, it showed H2a is valid for category 2.1.1. In other words, it means that, there is a significant positive relationship between Malaysia

listed firms' financial performance and firms' direct carbon emission performance.

Table 9 findings had demonstrated that different environmental performance aspects will affect market value in 2021. When the environmental performance indicator was split down into different specific environmental performance categories, each specific environmental category will have a small variation in each variable. As a consequence, majority of environmental performance categories were insignificant.

	Model 1 [^]	Model 2 [^]
<i>Control Variables</i>		
Ave Econ. Performance	-2681.230 (1787.450)	-1212.226 (1616.983)
Ave SG. Performance	-1146.919 (1365.804)	-1050.273 (1224.355)
<i>Env. Performance</i>		
Ave Env. Performance	5531.045 (1960.944) ***	
Carbon Emissions, direct (2.1.1)		1480.667 (560.201)***
Carbon Emissions, indirect (2.1.2)		419.392 (474.419)
Carbon Emissions, value chain (2.1.3)		-579.838 (1183.907)
Waste and Effluent (2.2)		530.000 (477.751)
Water (2.3)		-611.689 (405.333)
Energy (2.4)		648.028 (450.466)
Biodiversity (2.5)		110.904 (471.535)
Supply chain (2.6)		-2268.795 (1203.948)*
Product (2.7)		-418.437 (657.196)
Material (2.8)		714.273 (634.075)
Compliance (2.9)		-164.284 (614.583)
Land (2.10)		3037.928 (2222.105)
Climate action (2.11)		1531.961 (1739.647)
Constant	710.136 (675.654)	605.408 (549.377)
R-Square	.218	.344
Adj. R-Square	.202	.273

Notes: ***, **, * indicate significant at 1%, 5% and 10% respectively. The number of observations is 155.

Note[^]: ANOVA result indicate that there was at least one beta coefficient in the proposed model is significant at 5%

Robust Standard Errors are indicated in parenthesis.

Table 9 Regression Results on Financial Performance

H2a factor analysis

Since there is high multicollinearity issue in both regression model as the independent variables of Model 1 fall under one category which is sustainability performance while the independent variables for Model 2 are from environmental performance category. Therefore, the independent variables of both models are expected to have multicollinearity issues. The main purpose for running regression among a highlight correlated independent variables is to prove that relationship between market value and specific environmental performance.

Factor analysis via principal component analysis (PCA) was carried out to achieve dimension reduction and reduce multicollinearity issue. Reducing number of variables will help management to narrow their focus and resource to manage fewer environmental performance categories under a limited resource condition. PCA is a data reduction technique that aims to construct a linear combination of variables that capture as much variation of the original as possible via methods such as VARIMAX, under the assumption of homogeneity of variance and no error in variables. Moreover, PCA is suitable when the study is concerned to determine the minimum number of factors that will account for maximum variance in the data for the use in subsequent multivariate analysis. In this factor analysis, category 2.6.1 was excluded because there was none of the sample companies had attempted it.

KMO and Bartlett test

Performing Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO test) and Bartlett's Test of Sphericity (Bartlett's test) are essential to justify the appropriateness of factor analysis. These two tests were conducted to ensure the variable and sample is conceptually sound to undergo factor analysis. KMO is a measure of distribution of values while Bartlett's is a measure of multivariate normality of distribution. The following are the key results.

The decision rule for KMO test is, it is adequate to enter factor analysis only if KMO value is more than 0.6. Based on Table 10, KMO value is 0.787 which is higher than the benchmark value, 0.6.

H₀: The data produce an identity matrix

H₁: The data does not produce an identity matrix

For Bartlett's test, a 5% default significance level was used. Decision rule for Bartlett test is H₀ is rejected if the p-value is less than 0.05. The p-value for Bartlett's test is <0.001, which is smaller than 0.05. Thus, null hypothesis is rejected at 5% default significance level. In other words, the data does not product an identity matrix, and thus are approximately multivariate normal which means the data is normally distributed and acceptable for factor analysis. In summary, both KMO and Bartlett test showed that the factor analysis is feasible.

The results showed that there are variables with a communality value below 0.5. This implied that the variables are having less than 50% of common variance. Despite those "problematic" variables should be removed, for the purpose of this study which aimed to assess firms' environmental performance according to ESG guideline, the "problematic" variables including category 2.6, category 2.7, category 2.9 and category 2.11 with communalities of 0.446, 0.457, 0.463 and

0.395 respectively were included in the following analysis. There were 4 components extracted based on the factor analysis result. Since the scree plot is unclear hence confirmation come from "Total Variance Explained" table and "Rotated Component Matrix" table. Both tables showed that there are 4 factors extracted. Based on "Total Variance Explained" table, which is recommending that 4 factors are able to explain 57.567% of the variation in the data³¹.

Based on the Table 10, the first component extracted consist of category 2.1.1, category 2.1.2, category 2.1.3, category 2.2, category 2.3, category 2.4 and category 2.11 with factor loading of 0.778, 0.788, 0.493, 0.698, 0.805, 0.726 and 0.586 respectively. This component consists of factors that are required by the government and regulated with national policy and laws and regulation. Thus, this component is labelled as regulatory practice.

Based on Table 10, the second component extracted includes category 2.6, category 2.7 and category 2.8 with factor loading of 0.517, 0.641 and 0.684 respectively. This component includes factors which are environmental practice that is beyond compliance level, yet these practices are performed and managed by majority of the industry player. As a result, the companies within the industry will follow and managed accordingly. Therefore, this component is labelled as industry practice.

Based on Table 10, the third component extracted includes only category 2.9 with factor loading of 0.662. This component is labelled as standard compliance practice as this factor covers regulation compliance and also ISO standard compliance.

³¹ Detailed analysis output available in appendix 7

Based on the Table 10, the last component extracted consisted only category 2.5 and category 2.10 with factor loading of 0.520 and 0.828 respectively. This component is labelled as beyond compliance practice. This is because these two environmental performance indicators are biodiversity practice and land remediation practice. Hence, these practices required extra effort to attempt.

Cronbach Alpha Reliability test

An internal reliability test was carried out to ensure consistency. If the Cronbach Alpha from the reliability statistic table is more than 0.6 (the benchmark), it means that the extracted component possesses internal consistent reliability. It also means that it is fine to group together those variables under the component since the scale and question style used by those variables are consistent. On the other hand, if the Cronbach Alpha from the 'reliability statistic' table is lower than 0.6, it means that the component has an unsatisfactory internal consistent reliability.

According to Table 10, the Cronbach alpha statistic is more than 0.6, which indicated that there is internal consistency, and the extracted component is reliable as the scale used or question style used for the variables that grouped together under one component are consistent. Despite the Cronbach alpha value is greater than 0.6, a value beyond the range may indicates that there are redundant variables included. Variables were kept due to the research objective that intend to evaluate all environmental performance categories based on ESG metric.

Items	Rotated Factor Loadings			
	Regulatory Practice	Industry Practice	Standard Compliance Practice	Beyond Compliance Practice
Carbon Emissions, direct (2.1.1)	.778	-.142	-.189	.160
Carbon Emissions, indirect (2.1.2)	.788	.036	-.123	.066
Carbon Emissions, value chain (2.1.3)	.493	.113	-.582	.091
Waste and Effluent (2.2)	.698	.178	.075	.134
Water (2.3)	.805	.163	.123	-.039
Energy (2.4)	.726	.277	.167	-.204
Biodiversity (2.5)	.138	.454	-.292	.520
Supply chain (2.6)	.126	.517	.342	.215
Product (2.7)	-.026	.641	.205	.059
Material (2.8)	.060	.684	-.258	-.238
Compliance (2.9)	.078	.125	.662	.059
Land (2.10)	.078	-.062	.130	.828
Climate action (2.11)	.586	-.177	-.088	.114
Eigenvalues	3.524	1.571	1.212	1.177
% of variance	27.104	12.086	9.320	9.056

Note 1: Factor loadings over .50 appear in bold.

Note 2: KMO value (.787) ; Bartlett test sig (<.001)

Note 3: Cronbach Reliability Statistic, 2.961E-16

Table 10 Summary of Exploratory Factor Analysis Results for Environmental Performance Categories

H2a Regression Analysis with extracted component from factor analysis

Next, another regression analysis was conducted by using the four new components extracted. The following tables are the output extracted from SPSS regression analysis results. Economic and social governance variables are controlled.

	Model 3 [^]
<i>Control Variables</i>	
Ave Econ. Performance	-709.061 (1681.364)
Ave SG. Performance	-1287.913 (1381.527)
<i>Env. Performance</i>	
Regulatory Practice	2474.606 (932.232) ^{***}
Industry Practice	-405.611 (432.952)
Beyond Compliance Practice	877.144 (621.235)
Standard Compliance Practice	-561.212 (572.622)
Constant	3394.559 (1492.333)
R-Square	.247
Adj. R-Square	.217

Notes: ^{***}, ^{**}, ^{*} indicate significant at 1%, 5% and 10% respectively. The number of observations is 155.

Note[^], ANOVA test result indicate there is at least 1 beta coefficient is significant at 5% significance level.

Table 11 Regression Results on Financial Performance (Using Factors Extracted)

According to Table 11, ANOVA test, indicates that there is at least one beta coefficient does not equal to zero at 5% significance level. Hence, there is at least one variable is significant in the model. Table 11 had showed that the regulatory variable is statistically significant at 5% significance level.

According to Table 11, Model 3 has a goodness-of-fit of 0.247 (24.7%). This means that there is 24.7% of variation in the dependent variable is explained by the variation of the predictors in the model. A DW statistic of 1.939 which is near to 2 showed that there is independent of residual³². Multicollinearity issue among the variables had been reduced after performing factor analysis.

³² Refer to appendix 7

The Model 3 is constructed based on Table 11 as below.

$$\hat{y} = 3394.559 - 709.061 A.Econ - 1287.913 A.SG + 2474.606 Regulatory \\ - 405.611 Industry - 561.212 Standard Compliance \\ + 877.144 Beyond Compliance \\ Model 3 (H2a, after factor analysis)$$

Whereby,

\hat{y} : predicted firm market value in 2021

A.Econ : average economic performance scoring

A.SG : average social governance performance

Regulatory : Regulatory practice performance

Industry : Industry practice performance

Standard : Standard compliance practice performance

Beyond compliance : Beyond compliance practice performance

According to Model 3, one unit increase in regulatory practice performance, firm market value will increase by RM2474.606, by holding other variables constant. Based on the multiple tests and analysis results, H2a is valid for regulatory practice performance. In addition, the regression model also showed that firm's regulatory practice performance has the strongest positive relationship with the firm market value.

Summary RO2

Research objective 2 had achieved and the result showed that there is a positive relationship between firm's financial performance and firm's environmental performance. In addition, it also showed that carbon emission from direct business activities has a positive relationship with firms' market value. Public will assess carbon emission performance from direct business activities during making investment decision. If firm's carbon performance is good, then they will invest in the firm's shares. This will lead the firm market value and share price to increase.

Factor analysis was conducted to achieve dimension reduction and resolve high multicollinearity issue in Model 2. Factor analysis extracted four different components. A further Cronbach Alpha reliability test, significance t-test and regression analysis were performed for the newly extracted factors. The result showed that regulatory environmental practice has a positive relationship with firm market value in 2021. If firm manage to improve regulatory environmental practice performance, firm market value will increase, holding other variables constant.

Management Approaches for Environmental Performance Management

Hypothesis 3: (H3) Hypothesis 3a (H3a)

One-tailed independent sample t-test was conducted to examine the third hypothesis which assumes management approach create impact on environmental performance specifically stakeholder management approach and target setting approach. Hypothesis 3a (H3a) assumes that stakeholder management approach creates positive impact on environmental performance of Malaysia listed firm. Environmental performance was set as dependent variable while the presence of stakeholder management was set as independent variable. The hypotheses were formulated as below:

$$H_0: \mu_{\text{stake}} \leq \mu_{\text{non-stake}}$$

$$H_1: \mu_{\text{stake}} > \mu_{\text{non-stake}}$$

Whereby,

μ_{stake} : the mean of environmental performance of company that have stakeholder management

$\mu_{\text{non-stake}}$: the mean of environmental performance of company that do not have stakeholder management

Before analysing the independent sample test result, it is necessary to evaluate Levene test result. This is because Levene test is significant to determine whether is there a violation of homogeneity of variance assumption³³. The p-value for Levene test is <0.001 which is smaller than default significance level which is 0.05. Therefore, the null hypothesis that assumes homogeneity of variance among the two-sample group is rejected, which means the variance of the two sample

³³ Levene test hypotheses: H_0 : The variance of the two groups is equal while H_1 : The variance of the two groups is not equal

groups were different. The violation of this assumption implied that the following independent sample test result need to exercise with cautions. Next proceed to independent sample test. This is a one-tailed test hence, one-sided p-value is highlighted. The decision rule of this test is to reject null hypothesis if the p-value under t-test column from Table 12 is smaller than 0.05. Based on Table 12, the p-value is <0.001 which is smaller than 0.05. Thus, null hypothesis is rejected at 5% significance level. In conclusion, the companies with stakeholder management tend to have better environmental performance than those companies who do not have stakeholder management. H3a is valid but the results need to be interpreted with cautions as the pre assumption test was violated.

t-test			
Item	Mean difference	t-stat	p-value
Stakeholder Engagement	.326243931507089	3.508	<.001

Note: P-value for Levene Test : <0.001

Table 12 Difference in Mean Values for Stakeholder Engagement

Hypothesis 3b (H3b)

The following independent sample test was performed to testify H3b which assumes target setting approach creates positive impact on environmental performance. The dependent variable of this test was firms' environmental performance, while presence of target setting scoring was the independent variable. The hypotheses were formulated as below:

$$H_0: \mu_{\text{target}} \leq \mu_{\text{non-target}}$$

$$H_1: \mu_{\text{target}} > \mu_{\text{non-target}}$$

Whereby,

μ_{target} : the mean of environmental performance of company that have target setting

$\mu_{\text{non-target}}$: the mean of environmental performance of company that do not have target setting

Based on Table 13, independent sample test result table, Levene test result must be evaluated as it is a significant factor to determine whether the assumptions of homogeneity of variance is violated or not³⁴. According to Table 13, the p-value under Levene test column is 0.073 which is greater than 0.05. Therefore, the null hypothesis of Levene test is not rejected. Therefore, the assumption that assumes the variance of the two groups are equal is not violated.

Next independent sample test was performed. This test was a one-tailed test hence, one-sided p-value was highlighted. The decision rule of this test is to reject null hypothesis if the p-value from Table 13 is smaller than 0.05. Based on Table 13, the p-value under the t-test column is

³⁴ Levene test hypotheses: H_0 : The variance of the two groups is equal while H_1 : The variance of the two groups is not equal

<0.001 which is smaller than 0.05. Thus, null hypothesis is rejected at 5% significance level. In conclusion, the environmental performance of companies with target setting is better than those companies that do not have target setting, H3b is valid.

t-test			
Item	Mean difference	t-stat	p-value
Target Setting	.992380952380953	4.484	<.001

Note: P-value for Levene Test : 0.073

Table 13 Difference in Mean Values for Target Setting

Hypothesis 3c (H3c)

Pearson correlation analysis was conducted to examine whether stakeholder management is correlated with target setting approach based on the stakeholder theory assumption. Hypothesis 3c (H3c) assumes target setting approach and stakeholder management is correlated. The hypotheses were formulated as below:

H₀: Target setting approach and stakeholder management are not correlated

H₁: Target setting approach and stakeholder management are correlated

The decision rule of Pearson correlation test is to reject null hypothesis if the p-value is smaller than the default significance level which is 0.05. Based on Table 14, correlation table, the p-value is 0.198 which is larger than 0.05. Therefore, null hypothesis should not be rejected. This means that target setting approach and stakeholder management were not correlated. Therefore, H3c is invalid.

Stakeholder Engagement and Target Setting	
Sig. (2-tailed)	.198
Pearson Correlation	.104

Table 14 Correlations Test Statistic for H3c

Summary for RO 3

In summary, H3a and H3b are accepted at 5% significance level. Yet, H3a should be used with extra precautions as the assumption of two independent samples have equal variance was violated. While H3c is rejected as there was no statistical relationship found between target setting and stakeholder management. As a result, the third research objective has achieved since the impact of both different management approach on environmental performance of Malaysia listed firm as well as the association between target setting and stakeholder management have been revealed.

Industry membership: Environmental Sensitivity Level

Hypothesis 4 (H4)

Hypothesis 4 (H4) proposes that environmentally sensitive industry has better environmental performance as compared to other industry. In order to investigate the validity of this hypothesis, environmental performance was set as the dependent variable while industry environmental sensitive level was determined as independent variable. The high environmental sensitive industry includes Construction industry, Energy industry, Industrial Product and Services industry, Planation industry, Property industry, Transportation and Logistics Service industry and Utilities industry. While moderate sensitivity industry covers Consumer Products and Services industry, Health Care industry and Technology industry. Lastly, the least environment sensitivity industry includes REIT industry and Financial Service industry. The following Table 15 showed the summary of industry classification based on the sample companies whereby 1 represents low sensitivity level, 2 represents moderate sensitivity level and 3 represents highest sensitivity level.

Type of industry	Environment Sensitivity Level
REIT	1
Property	3
Technology	2
Industrial Product and Service	3
Consumer Product and Service	2
Construction	3
Financial Service	1
Plantation	3
Energy	3
Transportation and Logistic service	3
Health Care	2
Utilities	3

Table 15 The environmental sensitive level classification for each respective industry

Industry Type	No. of PLC	Aggregate Score (per industry)	Average of Environmental Performance
Least Sensitive,1	9	64	7.11
Moderate Sensitive,2	46	375	8.15
Most sensitive,3	100	756	7.56

Table 16 the summary of environmental performance by different level of environmental sensitivity industry

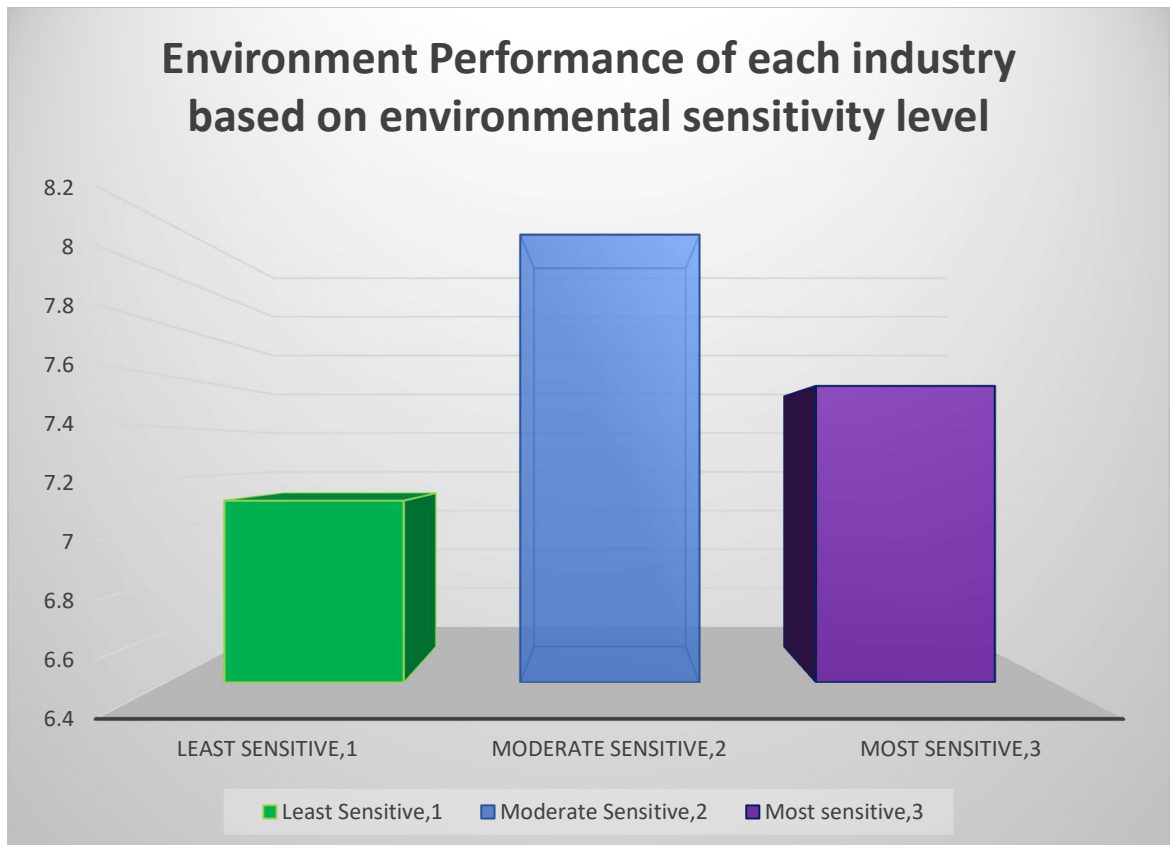


Figure 6 The average environmental performance of each industry based on environmental sensitivity level

Both Table 16 and Figure 6 explicitly showed that moderate environmental sensitivity industry has the best performance which is opposed to H4 that assumes highly environmental sensitive industry will have the highest environmental performance.

One-way ANOVA was conducted to gain confirmation whether there is any difference between their environmental performance. F-distribution and a default 5% significance level were used. The decision rule for ANOVA test is to reject null hypothesis when the p-value from ANOVA table is smaller than default significance level which is 0.05. The hypotheses were formulated as below:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

H_1 : at least one μ_i is different from others

Whereby,

μ_1 =mean of environmental performance scoring of least environment sensitive industry

μ_2 = mean of environmental performance scoring of moderate environment sensitive industry

μ_3 = mean of environmental performance scoring of highest environment sensitive industry

Avg AS ENV					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.074	2	.037	.193	.824
Within Groups	29.018	152	.191		
Total	29.092	154			

Table 17 ANOVA (H4)

According to Table 17, the p-value is 0.824 which is larger than 0.05. Therefore, null hypothesis is not rejected. Different industries with different environmental sensitivity levels do not have environmental performance that is statistically different from other industries. Despite Table 16 and Figure 5 showed moderate sensitive industry is the highest environmental performer, there is no statistic evidence suggested that

moderate level of environmental sensitivity industry is statistically different from other environmental sensitive level industry. H4 is rejected as the highest environmental sensitive industry was not the best environmental performers.

Hypothesis 4a (H4a)

The last hypothesis is hypothesis 4a (H4a) which assumes that companies in high environmental sensitivity industry tend to have better environmental performance is due to its leadership aspiration. Based on descriptive statistic Table 18 showed that among high environment sensitive industry, companies with leadership aspiration have higher mean of environmental performance scoring than those without leadership aspiration. In order to verify whether the environmental performance of the leadership aspiration group is statistically different from the group without leadership aspiration, an independent sample t-test was conducted. The hypotheses were formulated as below:

$$H_0: \mu_{\text{leadership}} \leq \mu_{\text{non-leadership}}$$

$$H_1: \mu_{\text{leadership}} > \mu_{\text{non-leadership}}$$

Whereby,

$\mu_{\text{leadership}}$: mean of environmental performance of firms that have leadership aspiration

$\mu_{\text{non-leadership}}$: mean of environmental performance of firms that do not have leadership aspiration

Leadership	N	Mean	Std. Deviation	Std. Error Mean
1	64	.608	.475	.059
0	36	.419	.391	.065

Table 18 Descriptive Statistic for H4a

Item	Mean difference	t-stat	p-value
Leadership Aspiration	.190	2.038	0.022

Note: P value for Levene test: 0.050*

Table 19 Difference in Mean Values for Leadership Aspiration

This independent sample test conducted was a one-tailed test and used default significance level which is 0.05. Levene test result was assessed to determine is there any violation of homogeneity of variance assumption³⁵. According to Table 19, the p-value under Levene test column is 0.050³⁶ which is greater than 0.05. Therefore, null hypothesis of Levene test is not rejected which means, the variance of the assumption is not violated.

Next, for one-tailed independent sample test, one-sided p-value is highlighted. The p-value under t-test column from Table 19 is 0.022 which is smaller than 0.05. Thus, null hypothesis is rejected at 5% significance level. This means that in high environment sensitive companies with leadership aspiration have higher environmental performance that those high environmental sensitive company without leadership aspiration. In conclusion, company in high environmental sensitive industry has higher environmental performance is due to its leadership aspiration. H4a is valid.

Summary for RO 4

H4 is rejected as there was no statistical evidence showed that high environmental sensitivity industry has the highest environmental performance level as compared with other industry. Moreover, H4a is accepted which means leadership aspiration does create a positive impact on high environmental sensitive firms' environmental performance level. Overall, the last research objective had achieved as the environmental performance of different environmental sensitivity level of industry and leadership aspiration impact have been assessed. This study has confirmed that different industry environment sensitive level does not perform differently among each other. In addition, this study found that leadership aspiration has

³⁵ Levene test hypotheses: H₀: The variance of the two groups is equal while H₁: The variance of the two groups is not equal

³⁶ 0.050 is treated as a value which is more than 0.05

created a positive impact on environmental performance of firm that is located in environmentally sensitive industry.

4.5 Conclusion

In summary, the analysis test result of this study had accepted H1, H1a, H2, H3b and H4a at 5% significance level. Yet, H2a was only valid for environmental performance Direct Carbon Emission from Business (2.1.1) at 5% significance level. The study results rejected H2a for all environmental performance variables except for category 2.1.1 at 5% significance level. Furthermore, the study findings suggested that H3a was valid with a certain level of reliability due to violating homogeneity of variance assumption. In addition, this study rejected both H3c and H4. Despite failing to show statistically evidence to prove different industry environmental sensitive level have different level of environmental performance, H4a was accepted as there was statistic evidence showed that leadership aspiration did create positive impact among high environmental sensitive companies. Further discussion of the results is available in chapter 5.

Chapter 5 Discussion, Recommendation and Conclusion

5.1 Introduction

This chapter focuses on discussing and interpreting the analysis results against management theories including legitimacy theory, impression management theory, signalling theory, stakeholder management theory, resource dependency theory, and institutional theory. A table of key findings summary is available at the end of discussion chapter 5.2. Next, significance of findings part is introduced. The types of contribution that this study had made including research implication, theoretical implication, policy implication and managerial implication are discussed in this section. Authors acknowledged that no research is perfect, thus, the limitations of study section is available to recognise the weaknesses that this study was exposed to. Suggestions for future research direction and a concluding statement are available in the last part of this chapter.

5.2 Discussion of the analysis result

5.2.1 Environmental reporting and performance

The first hypothesis test was performed to study the current level of environmental performance by Malaysia listed company and the environmental performance area that received most attention from Malaysian companies. Environmental performance scoring was used to represent the actual environmental performance in this study because existing literature studies found that companies make emission disclosure according to their actual emission performance (Freedman and Stagliano, 2008).

This study had provided evidence that companies in each different industries tackled at least three environmental performance categories. This implied that Malaysia companies are currently managing their environmental performance according to regulatory reporting requirements and government advocacy of carbon neutral. Managing companies' environmental performance at the compliance level would avoid companies from receiving legal penalties due to violating legal requirements and simultaneously satisfying government requirements (Delmas and Montes-Sancho, 2015; Freedman and Patten, 2019; Hunt and Auster, 1990 and Jaaffar et al., 2018). Malaysia listed companies do manage and report their environmental performance according to the Bursa ESG reporting framework. Malaysia listed companies take strategic measures to manage their environmental performance not only to satisfy regulatory requirement, at the same time, they also intend to maintain their legitimacy stake as well as tackling the demand of their legitimacy stakeholder. The statistic test results had provided ample of evidence that legitimacy theory and stakeholder theory are valid in the context of Malaysia listed companies, whereby, the companies had realised the significance of business legitimacy stakeholder and impact of legitimacy stakeholder if their demand are not being

address accordingly. Hence, they would attempt to manage at least 3 different environmental performance categories to show conformity towards the regulation. At the same time, they will definitely manage their companies' carbon emission related performance in order to respond to their legitimacy stakeholder, the government's advocacy of carbon neutrality.

Nevertheless, country commitment in environmental performance target will affect firms' environmental performance level. This is due to if the country is engaging in carbon reduction target, it will formulate environmental policies to assist the companies towards the carbon reduction target it had set. Malaysia government had submitted a carbon reduction of 45% target by 2030 to the United Nation. Therefore, it had produced an ESG reporting guideline as well as introducing several tax incentives to encourage business to pivot towards green activities and manage their environmental performance accordingly (Yong, 2023). On the other hand, if the country does not engage in any carbon reduction target, it will not offer attractive incentive and allocate fund in its national budget to assist and encourage business to manage their environmental performance. Therefore, companies will not be motivated to engage in higher level of environmental performance engagement, and they will tend to adopt compliance strategy whereby they take minimal steps in managing their environmental performance just to avoid punishment or violation of environmental regulations. In Malaysia context, results had shown that countries commitment and national target of green economy development and carbon reduction target do impact Malaysia listed companies to engage more in environmental performance management due to legitimacy theory and profit maximisation goal as now they can enjoy more tax relief and incentives if they engage in green investment and at the same time, they can attain their legitimacy stakeholder, government

demand accordingly. Countries commitment and national target will definitely impact companies' environmental performance level not only because of government plays a legitimacy stakeholder role but also companies will tend to engage in green investment as they were motivated to enjoy the series of subsidies and tax incentive that are offered by the government to encourage companies to improve their environmental performance and ultimately to achieve national carbon reduction target.

Real Estate Investment Trust (REIT) was found to have the lowest average environmental scoring. This could be due to a variety of factors including the fact that REIT industry is the least environmentally sensitive industry. Therefore, REIT companies focus on other sustainability area as their business operation is exposed to environmental risk at a limited extent. Moreover, utilities industry was found to be the highest environmental performance scoring industry as this industry is an environmentally sensitive industry due to its business nature. Utilities industry was exposed to high environmental risk, and it is highly regulated due to its business impact towards environment. The results found that utilities companies tend to tackle as much environmental performance as suggested by Bursa ESG guideline to maintain their business legitimacy and show their conformity. Therefore, after adjusting for number of firms in each of the industries, utilities industry had the highest environmental performance level.

The result also highlighted that Supplier Assessment Rating (2.6.1) was not attempted by the sample companies. Category 2.6.1 was developed during content analysis process and was not a suggested item in Bursa guideline. Companies will not tackle environmental performance that are not suggested as it required additional effort and resources. Additionally, Biodiversity (2.5), Supply Chain (2.6), Product and service responsibility (2.7), Material (2.8), Compliance

(2.9), Land remediation, contamination or degradation (2.10) and Climate action: Mitigation and Adaption (2.11) have an aggregate scoring that is lower than 100 as these categories required extra human effort and incurred high cost while attempting them. For instance, category 2.8 requires companies to incur higher production cost for using recyclable raw material. Besides, category 2.9 and category 2.10 required companies to employ profession and apply professional accreditation such as ISO 14001 compliance application and environmental impact assessment which are both costly. While Carbon emission (2.1)³⁷, Waste and Effluent (2.2), Water (2.3), Energy (2.4) were most tackled by sample companies as these can be easily measure and manage them such as implementing usage of electronic copy to reduce unnecessary paper wastage which is category 2.2 while category 2.4 involves measuring monthly electricity usage which does not incur additional cost.

The analysis results indicated that Malaysia listed companies allocated more effort in managing their carbon emission performance as compared to other environmental performance area. This implied that the government efforts to achieve 45% reduction of greenhouse gases target and carbon neutral were effective. Government had offered incentives to encourage Malaysia companies to participate in carbon reduction initiatives, by introducing and implementing environmental-related national policy, tax incentive, set limitation on carbon emission by each company since 2011 (Carvalho, 2016). Malaysia listed companies are motivated to engage in carbon emission reduction practice as they want to show more conformity. Showing conformity is important as it may affect business legitimacy and business operation license. Hence, companies will try to embed environmental practices that are encourage by the authorities as they

³⁷ Carbon emission (2.1) include direct emission (2.1.1), indirect emission (2.1.2) and value chain emission (2.1.3)

want to gain social acceptance and legitimatise their operations activities. By managing their environmental performance enables companies to maintain their business legitimacy stake and enjoy business financial subsidies offered by the government (Buhr, 2002; Hossain et al., 2015 and Moussa et al., 2021). In summary, Malaysia listed firms' environmental performance level in 2020 can be explained from legitimacy theory perspective. This study found that sample companies managed their environmental performance in accordance with Bursa ESG metrics. The evidence provided had managed to achieve the research objective which intend to reveal the current state of listed companies' environmental performance in Malaysia based on the perspective of legitimacy theory. The results also further enhanced the stakeholder theory argument whereby the more attributes the stakeholder holds, there is higher urgency for company to address that stakeholder's demand. Government's demand needs to be prioritised as government is a stakeholder that holds legitimacy, urgency and power. Company needs to attempt government's demand first to avoid sanctions which is destructive to the business. Hence, firms must report and manage their environmental performance according to government expectations. Therefore, H1 and H1a are valid.

5.2.2 Business Performance

The relationship between firms' financial performance and their environmental performance in Malaysia context was examined in this study. According to the findings, H2 is valid, whereby there is a positive relationship spotted between firms' financial performance and firms' environmental performance. The analysis results showed that environmental performance has the highest positive magnitude relationship with firm market value 2021. Companies' market value will increase the most when companies manage and improve their environmental performance. This is due to win-win logic aspect, whereby firms will achieve ecological efficiency when firms manage their environmental performance, eventually, firms will achieve overall cost reduction. This study results had also suggested the sample companies will gain financial benefits such as product differentiation and avoid environmental fines, which is similar to Henri et al. (2013) study findings. Eventually, firm's financial performance will improve when they manage their environmental performance.

However, agency theory proposed a negative relationship between firm's environmental performance and its financial performance as good environmental performance is at the expense of shareholder value. Allocating resources to improve environmental performance may result in financial diversion from profitable investment and erosion of shareholder value (Henri et al., 2013 and Tzouvanas et al., 2020). Despite that, this study showed there is a positive relationship between Malaysia listed firm's market value and its environmental performance. This is because engaging in environmental performance will address stakeholder demands (Tzouvanas et al., 2020). Upon satisfying stakeholders' demand, stakeholders such as government, investors and customers will be willing to bring in resources such as financial investment, operating license and sales into the organisation.

The regression analysis model that shows that there is a positive relationship among environmental performance and financial performance had also supported the arguments that claiming stakeholder theory and resource dependency theory arguments are valid in Malaysia context. Besides, the regression analysis does provide substantiate evidence to proof that investor in Malaysia, do evaluate companies' environmental performance while making investment decision as there is a positive relationship found between companies' market value and companies' environmental performance. The results found also suggested that ethical investor effect does exist in Malaysia investment market.

The fact that environmental performance is positively related to firm's financial performance indicates the existence of ethical investor effect in the Malaysia context. Financial performance of a company is encouraged to be measured using market-based financial variables such as firm market value as it can best reflect how investor values firm's environmental performance. Aside from that, company with good environmental performance will issue a green signal to public investors and improve investors' impressions especially when investors are evaluating investment risk of the firm (Epstein and Roy, 2003 and Tzouvanas et al., 2020). This is because firms that have good environmental performance tend to have lower environmental risk such as risk of being fined or license suspension. Investors will perceive good environmental performance as a signal to buy. They prefer to invest in this type of company as the overall share volatility is low and environmental risk is managed by the company. Environmental performance management has also been used as an impression management tool as reporting environmental performance would allow companies to leave an image of environmentally responsible companies among public including regulators and investors. This study findings had supported that the

proposed positive relationship between firms' financial and environmental performance can be explained from the aspect of signalling theory and impression management theory as firms that manage their environmental performance at a highest standard will tend to send out a positive signal to the market and attract ethical investor to invest. When companies manage and improve their environmental performance, at the same time, their financial performance which is the market value of the companies will increase as investors had perceived the improvement of environmental performance as a low investment risk signal. Therefore, investors will make their decision to buy in the company's stock.

This study found that direct carbon emission from business operations (2.1.1) is significantly positively related to firm's market value. This result unveiled the impact government effort on firms' environmental performance. This is because government holds legitimacy power over the business organisation and has implemented national policies and regulations such as climate change policy and environmental policy that focus on regulating firms' carbon emission and business environmental impact (Daim, 2021). According to pragmatic legitimacy, firm focus on delivering benefits at audience interest such as government's interest in carbon emission reduction and land contamination (Mobus, 2005). Listed companies' environmental risk will be relatively low once they have addressed regulatory requirements. Eventually, company that manage environmental performance will indirectly send signal to security market investor regarding the firm's environmental risk (Murray et al., 2006). This study findings had demonstrated that the statement claimed in Mobus (2005) and Murray et. al (2006) studies are found to be valid in Malaysia context as well due to the positive relationship between companies' market value and environmental performance is observed. This is because investors will evaluate this "signal" during

making investment decision. Better environmental performance and disclosure will improve firm's market value as information is made transparent and environmental risk is minimised to lowest possible level (Li et al., 2018). Besides, carbon abatement investment (CAI) is found to be value-adding especially in countries that have climate change policy. Investors view CAI as strategy to build valuable resources and capabilities under stringent carbon regulation such as UK public policy that sets ambitious carbon reduction target (He et al., 2021). This scenario is similar with Malaysia context, whereby government does set carbon reduction-related targets. Therefore, investor who is investing in those companies that are located in a stringer carbon regulation will evaluate the environmental performance of the companies. In a stringent carbon regulation country, improvement in companies' environmental performance level, investor will be more willing to invest in these companies which ultimately will boost up companies' financial performance, market value.

Further analysis results showed that regulatory environmental practice has a positive relationship with firm's market value. This further enhanced both legitimacy argument and impression management arguments. This is due to firms' environmental performance is governed by regulation and national policy such as water policy and energy policy, therefore firms must tackle the relevant environmental performance in order to maintain firms' legitimacy stake. The findings also proved that environmental performance management is used as a value-adding tool and impression management tool. This supports legitimacy theory argument and further emphasises that companies use environmental performance management as their corporate brand impression management tool. Apart from that, there is a negative relationship found between firm market value and standard practice as well as

industry practice. This is reasonable as adopting these practices require large amount of monetary fund. ISO standard accreditation application cost is expensive³⁸, and development of eco-friendly product requires plentiful time and money investment. Based on agency theory, these practices will erode shareholders' value. Eventually shareholders will sell off their shares and causes firm's market value to drop.

Nevertheless, regulatory practice is significantly and positively related to firm market value. Thus, firms need to manage and improve regulatory required level environmental performance in order to achieve higher firm market value. Tackling regulatory required environmental practice would help firms to maintain their business legitimacy. At the same time, firm would manage to shape a better reputation among their stakeholder as indicated by firms' market value.

In summary, firm's overall environmental performance has a significant positive relationship with firm's financial performance in Malaysia context. However, only environmental performance category 2.1.1 has a positive significant relationship with firm market value. Further analysis showed that regulatory practice has a positive relationship with the firms' market value.

³⁸ Including annual audit fee, training fee and application fee around \$3000 to \$5000, depending on firm size

5.2.3 Management Approaches for Environmental Performance Management

In this study, the impact of stakeholder management and measure-to-manage management on Malaysia listed firms' environmental performance were examined. The analysis results showed management approach does create a positive impact on Malaysia listed firms' environmental performance. Companies with stakeholder management had better environmental performance than those without stakeholder management. Based on stakeholder theory, it is important that company knows its stakeholders and addresses their expectations accordingly. Managing stakeholders' expectation is important as stakeholders hold resources that firms are dependent on to ensure long-term business sustainability (Hossain et al., 2015, and Moussa et al., 2021). To understand stakeholders' expectations on a company's environmental performance, company should hold a stakeholder engagement session in which it can engage in a two-way conversation with its stakeholders. Stakeholder engagement enables firms to know their stakeholders' such as environmentalists, customers and government environmental expectations. Therefore, companies can manage their environmental performance according to their expectation. Eventually, firms will achieve better environmental performance level. The analysis results had justified that the claiming of stakeholder engagement does bring positive impact on companies' environmental performance is valid among the sample companies. Therefore, it had further supported that stakeholder management theory as companies with stakeholder engagement do perform better than those without stakeholder engagement. Besides, this study findings had also indirectly confirmed that Hossain et. al. (2015) and Moussa et. al. (2021) study that claim companies will engage and address stakeholder demand

due to resource dependency theory is found to be applicable in Malaysia listed companies as well.

According to stakeholder theory and resource dependence theory, firms must satisfy and attain stakeholder's request in order to get the resources that the firms need such as monetary fund, business license and sales revenue from the stakeholder group. Moreover, it is essential for firms to tackle stakeholder demands, especially those stakeholders that possess characteristic such as urgency, power and legitimate. This must be done in order to avoid serious brand reputation damage and suspension of accreditation. According to Mitchell et al. (1997) stakeholder salience is dynamic, if stakeholder's demand was not heard and attained by the firm, once stakeholder group gains additional attributes over time, they will launch destructive actions such as protest against the firm. Firm will encounter both monetary and reputational damage. For instance, environmentalists possess legitimacy and urgency, firm need to address their expectation and demand accordingly to avoid them from gaining power and take legitimacy action against the firm. Hence, stakeholder voice should be heard and managed by the firm through stakeholder engagement sessions as early as possible. This study results had proven that upon satisfying stakeholder demand, firms tend to achieve a higher level of

Apart from that, this study assumes that target setting approach has positive impact on environmental performance. Dahmann et al. (2017) study found that improvement in environmental performance is associated with absolute and greater ambitious of target setting. Therefore, target setting approach is assumed to create a positive impact on a firm's environmental performance. Additionally, Wu et al. (2018) study confirmed that target setting performance management can aid in maximising operation efficiency and reduce undesirable output. In other words, target setting can aid company in achieving

operational efficiency and minimising undesirable waste including greenhouse gas emission which eventually improve its environmental performance. The results obtained had confirmed that companies with target setting approach did perform better in environmental performance than those companies that did not implement target setting approach. Dahlmann et. al. (2017) and Wu et. al. (2018) arguments and findings are further enhanced by this study results and this study had further provided substantiate evidence to prove that companies with target setting tends to have better environmental performance level than those companies without target setting performance management approach.

Corporates set targets in their environmental performance for the purpose to and maintain their legitimacy stake and have a green public procurement (Rietbergen et al., 2015). Adopting target setting approach allows companies to impress their stakeholders, by showing that their care for the environment. It also indirectly shows stakeholders regarding firms' commitment to improve the environmental quality. Target setting is no longer an approach to manage firm environmental performance, but it is also used as a stakeholder management approach. Hence, this study assumes that target setting approach is correlated with stakeholder management. Despite the data showed there is an association between target setting and stakeholder management, the further analysis results suggested that both management approaches were not correlated in Malaysia listed companies' context. The potential reasons include managers in Malaysia have not realise the value of target setting approach in managing company's stakeholders and there might be a potentially sample size issue.

To summarise up, companies that adopt stakeholder management or target setting approach tend to have better environmental performance than those companies that do not adopt any of the

approaches. Hence, companies should adopt either target setting approach or stakeholder management approach as these approaches can help them to enhance and manage their environmental performance with better effectiveness and efficiency.

5.2.4 Industry membership: Environmental Sensitivity Level

The last research objective of this study was to examine the environmental performance of environmentally sensitive industry and its leadership aspiration impact. H4 assumes that Malaysia listed companies which located in high environmental sensitivity industry tend to have better environmental performance as compared to other industry. However, this study discovered that there was no difference in terms of the average environmental performance scores between the three industries with different level of environmental sensitivity. Despite the mean environmental performance of each industry is different, there is no evidence found to prove that different industries perform differently in terms of their environmental performance. One possible explanation for this phenomenon is companies that are classified as high environmental sensitivity industry had been subjected to high public and environmentalist scrutiny since their business operation create significant adverse impact on environment quality. This had indirectly shown that impression management theory does not apply to companies that are high environmental sensitivity as the results shown there was no difference in terms of environmental performance level among different level of environmental sensitivity companies. This has explained that extraordinary environmental performance and comprehensive disclosure will not reduce the amount of exposure substantially. Therefore, highly environmental sensitive companies are not motivated to perform better environmental performance which is similar to Patten (2002) study findings. Besides, another potential reason is Malaysia companies' environmental performance is still in the infant stage of development. In Lu and Castka (2009) study which proved that CSR in Malaysia is in infant stage as well as Zahid and Ghazali (2015) study also found that Malaysia sustainability reporting is in infant stage. Due to the fact the environmental sustainability of

listed companies in Malaysia is still developing, hence, it may be too early to capture the expected relationship between industry environmental sensitivity level and firms' environmental performance. Meanwhile, sample size issue may also make it difficult to capture the environmental performance of the actual population. This is due to the sample does not include all listed companies in Bursa main market.

This study assumes that leadership aspiration has a positive impact in companies that are in environmentally sensitive industry. The results had confirmed that leadership aspiration did create a positive impact on environmental performance among companies in environmentally sensitive industry. Rötzel et al. (2019) research found that signals from top management level are significant in leading companies to achieve better environmental performance as the integration of environmental management control system within business management control system is regarded as the signal given by top management to shift the business to be more environmental oriented. Furthermore, leadership aspiration is significant as leaders of a company have direct control power over the business operation including influencing company ESG quality and disclosure (Li et al., 2018). The significance of leadership aspiration can be justified by institutional theory. In Amran and Haniffa (2011) study found that belief of company's leader or top management level is seen as an important source of normative pressures on subordinates. If company's CEO views environmental performance is important and mentions company's environmental performance in their statement, subordinates are motivated and will perceive this as a signal from superior to engage more in environmental sustainability initiatives. Leadership is a critical catalyst in implementing best practice of sustainability within an organisation (Newell and Manaf, 2008). There was plenty of research evidence that showed leaders with past

experience in environmental-related area, would deviate positively in green management practice and ultimately will lead to a better organisation environmental performance (Jaaffar and Amran, 2017). Leadership aspiration is concluded as a key factor that can guide companies to manage environmental performance better. This study results had demonstrated the significance of leadership aspiration among the companies from environmentally sensitive industry on environmental performance level. It has also further confirmed that the previous literature that claims institutional theory is applicable in Malaysia context. As now, the inferential analysis results had showed that environmentally sensitive companies with leadership aspiration tend to have better environmental performance than those companies without leadership aspiration.

Despite there was no evidence found to support that industry environmental sensitivity level does affect the environmental performance of listed companies in Malaysia, there was relationship found between leadership aspiration and high environmental sensitivity firm's environmental performance. The results have supported that leadership aspiration is an essential factor in environmental performance management among high environment sensitive companies. Therefore, business leaders should be aware by this point that the power and influence they possess do create a significant impact in driving companies' environmental performance. Company's leaders must constantly emphasise to their subordinates the importance of environmental responsibility and track their progress in achieving their environmental performance goals.

The following table is the summary of key findings.

Key Findings	Descriptions
1	Malaysia listed companies are managing their environmental performance in according to regulatory reporting requirements. (H1 accepted at 5% significance level)
2	Malaysia listed companies allocated their attention and resource in managing companies' carbon emission performance. (H1a accepted at 5% significance level)
3	There is a significant positive relationship between Malaysia listed firms' market value and environmental performance. (H2 accepted at 5% significance level)
4	There is a significant positive relationship between specific environmental performance, direct carbon emission from business (2.1.1) and firms' market value. (H2a accepted for 2.1.1 at 5% significance level)
5	After performing regression analysis using factors extracted, regulatory environmental practice has a significant positive relationship with firms' market value. (H2a accepted for regulatory practice at 5% significance level)
6	Stakeholder management has a significant positive impact on firms' environmental performance. (H3a accepted at 5% significance level with restriction ³⁹)

³⁹ Levene test showed there is no homogeneity of variance.

7	Target-setting approach has a significant positive impact on companies' environmental performance. (H3b accepted at 5% significance level)
8	There is no correlation found between target setting approach and stakeholder management. (H3c rejected at 5% significance level)
9	There is no statistical evidence suggest that environmentally sensitive industry has better environmental performance as compared to other industries. (H4 rejected at 5% significance level)
10	Leadership aspiration do create a positive impact among high environmental sensitivity industry's environmental performance. (H4a accepted at 5% significance level)

Table 20 Summary of Key Findings

This research study had managed to evaluate the current level of environmental performance among listed companies in Malaysia, by identifying the gap between actual performance level and regulatory requirement. Furthermore, the relationship between Malaysia listed firms' financial and environmental relationship had been examined from several theoretical aspects. This study had identified the impact of management approaches such as stakeholder management and target setting approach on environmental performance. Lastly, the environmental performance of environmental sensitive level industry and its leadership aspiration impact had been assessed and the results indicated that there is a need to review organisation actual commitment and resource allocation to support the environmental performance.

5.3 Significance of the Findings

The study has demonstrated several important contributions to the existing body of knowledge. Therefore, the significance of this study's findings is evaluated based on research implications, theoretical implications, policy implications and managerial implications.

5.3.1 Research Implications

One of the research implications that this study has brought is, it is the first to carry out content analysis using ESG metric as a research instrument. The content analysis scoring template was developed using Bursa ESG reporting framework guideline as the basis and was then modified during the data collection process in order to capture additional significant items that were not covered by the Bursa framework. The ESG metric developed in this study is fresh and it does create a significant research implication for future researchers. This newly introduced research instrument would give an additional content analysis template for future research, especially in research that involve evaluation of Malaysia listed companies' environmental performance. This study had used a different approach in analysing companies' environmental performance. Past studies used and analysed companies' environmental performance based on their environmental disclosure level, quantitative manner. They measured based on the number of sentences of disclosure, instead of analysing companies' actual qualitative disclosure level. The qualitative of environmental disclosure in companies published publicly report is highly reliable as companies are obliged to provide true and fair view of their actual performance, otherwise they will be found legally liable for violating the legislation and will be fined heavily by authority and face loss of reputation among public eyes whereby companies would avoid this for their business sustainability. In this study, it structured the research instrument model by incorporating the significance of

performance management which differs this study instrument from other previous studies. Performance management was seen as one of the important factors that guide companies to manage their environmental performance. As a results, companies environmental performance disclosure is interpreted based on its qualitative disclosure and the extent of implementation of target setting performance management approach.

Despite the goodness-of-fit of the proposed model being low, this study showed that ordinal data measurement is feasible for any parametric test to produce results with a certain level of reliability as long as the sample size involved is satisfying.

5.3.2 Theoretical Implication

This study had contributed to enhance current management theories. This study found that empirical evidence to support the arguments of legitimacy theory, stakeholder theory, resource dependency theory, impression management theory, institutional theory and signalling theory. The abovementioned management theories and respective claims are found to be valid in Malaysia listed companies' context

With the use of ESG metrics, this study findings confirmed legitimacy theory, whereby companies manage their environmental performance according to regulatory reporting requirements for the purpose of maintaining their business legitimacy. The results concluded that Malaysia listed companies manage and report their environmental performance according to Bursa ESG reporting framework. As now companies have acknowledged that business must fulfil its social contract such as managing business environmental performance in order to survive in an indefinite time.

Furthermore, the positive relationship found between the corporate's financial performance and its environmental performance has concluded that impression management and signalling theory are valid in Malaysia, a developing country context. This has enhanced the generalisability of the impression management theory and signalling theory as these theories are applicable in another developing country's context. This means that companies in Malaysia use environmental reporting as an impression management tool to shape their corporate image in the public market as well as use it as a signalling tool to attract investors to invest their companies.

Moreover, this research study had analysed the effectiveness of managing environmental performance level using stakeholder management approach. The findings confirmed that stakeholder management theory and resource dependency theory are valid in the

Malaysian context. Companies that manage stakeholder demand have better environmental performance because they understand the influence of stakeholders on the business and the business being dependent on the resource that stakeholder holds, and they had also recognised the importance of address stakeholders' demand. Stakeholder management enables companies to know better about their stakeholders' expectations on companies' environmental performance.

Undeniably, this study findings had demonstrated the importance and validity of these long-established management theories. This study had also provided substantial evidence to support that the rationale and impact of these management theories are valid in Malaysia context. From managerial implication aspect, this study had managed to further enhance the abovementioned theories arguments as well as proven that those theories are found in Malaysia listed companies' context.

5.3.3 Policy Implication

This study's findings suggested that Malaysia listed companies manage and report their environmental performance according to regulatory reporting requirements. The findings revealed that sustainability development in Malaysia is in pre-mature stage as the environmental score for some specific industries in the sample is relatively low and some expected relationships were missing. The results indicated that additional efforts such as introducing new incentive schemes or regulations are required to boost Malaysia sustainability development. Policymakers such as government should know that they possess legitimate power over business organisations and have the power to influence companies' environmental performance level. Government should monitor companies' environmental performance and provide assistances that companies need in order to motivate the companies to adopt environmental sustainability practices (Lu and Castka, 2009).

The development and distribution of ESG metrics is an effective measure that helps tackle companies' confusion by standardising sustainability performance definitions and provides companies with an indicative ESG performance management framework. Policymakers' effort in mandating sustainability performance reporting is the main catalyst to drive listed companies in Malaysia from zero sustainability management to today's pre-mature stage. The study found that carbon emission performance has the highest score, which has reassured that government efforts in directing the nation towards a carbon neutral country are effective. The government's advocacy and introduction of several environment policies have successfully guided Malaysia listed companies to manage their environmental performance. The results had demonstrated that government and policymakers' efforts are beginning to pay off. Therefore, this study has managed to reveal

new insights for policymakers on their policy effectiveness and their role in driving companies' environmental performance. Since the legislation of mandatory sustainability reporting and the development of ESG reporting framework are effective to encourage listed companies to manage their environmental performance, policymakers should foster and introduce new incentive schemes that can help to further improve companies' environmental performance level.

Therefore, this study had brought a significance implication on future policy formulation direction and had confirmed the effort contributed by government to advocate environment preservation and conservation is effective and efficient. This had indirectly highlighted that government plays a great role in guiding Malaysia listed companies towards carbon neutrality target as well as reducing overall nation carbon emission level. The results of this studies had explicit stipulated the influence of government demand as well as the companies are also motivated by financial benefits during environmental performance management. As a results, government should consider offering series of subsidies or tax allowance scheme in order to direct the entire nation businesses to achieve the carbon reduction target or any other future environmental related national target.

5.3.4 Managerial Implication

This study has made significant contributions to current managerial practice. The study results proved that firm's environmental performance has a positive relationship with firm's financial performance. The importance of environmental performance has now been revealed, companies are motivated to manage their business environmental performance as it can help to improve their business financial performance. To achieve sustainable business profit and shareholder value growth, management must divert resources to manage environmental performance.

Moreover, this study provided a primary model to capture the relationship between each respective environmental performance category and firm market value. Managers can gain some insight regarding which environmental performance category is most important to manage first, by assessing the magnitude of each environmental performance category's impact on firm market value based on the proposed model. When resources are limited, company should prioritise managing the environmental performance that has the biggest positive impact on the firm market value before moving on to the second-largest impact.

Additionally, the findings implied that companies who adopted either stakeholder management or target setting approach tend to achieve better environmental performance than those who did not adopt any of the approaches. Management is encouraged to adopt either stakeholder management or target setting approach as this study confirmed that implementation of these management approaches enables firms to achieve better environmental performance and better satisfaction among stakeholders particularly those whom firms rely for resources. This study had provided empirical evidence that, among companies that have similar size and public exposure level, target setting approach and stakeholder management do help them

to manage their environmental performance better. Meanwhile, this study discovered that leadership aspiration creates a positive impact on high environmental sensitivity firms' environmental performance. This indicates that in Malaysia context, not only stakeholders but leaders of an organisation play a vital role in driving business organisations environmental sustainability performance. Beside government effort, managerial effort is also important to improve environmental performance of Malaysia listed companies.

This study had managed to prove that the financial benefits of managing environmental performance that companies can enjoy. Furthermore, it also offered additional management approaches, stakeholder engagement and target setting approach that were proven to be effective in managing environmental performance. It also revealed the significance of company leader's attitude towards environmental performance. This study is expected to help companies' management to manage their environmental performance in a more effective and efficient manner by implementing the suggested management approaches. It also aims to hint companies' top management regarding the extent of the impact of their aspiration on the overall companies' environmental performance as well as future achievement.

5.4 Limitations of the current research

This study was exposed to several limitations. First, the results were lack of comparability as it only involved one-year annual report analysis (Ahmad, 2020). Therefore, this study could not provide information regarding the environmental performance trend of Malaysia listed companies since 2016. This study acknowledged that it is a cross-sectional study, which is less appropriate to be used to capture the relationship between firm's financial performance and its environmental performance as Murray et al. (2006) study suggested that a longitudinal study is more appropriate to capture the proposed relationship. Due to time and human resource restrictions, this study only managed to carry out a one-year cross-sectional study.

Besides, this study was prone to generalisability issue. This is because the secondary data collection and analysis focus in Malaysia listed companies' context. Thus, the findings of this study were only applicable to listed companies in Malaysia main market. It is inappropriate to apply the findings in a different context such as different listing market or country (Luo and Tang, 2020). This study had a potential sample size issue which results in failing to capture the correlation between target setting approach and stakeholder management as well as failing to capture those high environmental sensitivity industries possess the highest environmental performance. The ideal sample size would be including all 789 companies but subjected to data availability and quality, this study included only 155 companies.

Additionally, low goodness-of-fit of the regression models was one of this study's weaknesses. Low goodness-of-fit is subject to issues such as violation of normality in residual, violation of normal distribution of data as well as multicollinearity issue⁴⁰. This is due to the usage of

⁴⁰ Normality test for data as well as residual result is available in appendix 9

independent variables that were measured in ordinal scale in inferential analysis and the existence of outliers. This study also acknowledged the high Cronbach alpha reliability value which was beyond 2. Cronbach value will inflate with the increased number of items, a value beyond the range implied that, there were redundant variables included in the analysis (Taber, 2017). Despite there were several variables with communality less than 0.5, the variables were kept because this research was interested in evaluating all environmental performance categories.

Moreover, this study was prone to subjectivity due to human intervention. This is because content analysis method implemented in this research whereby researcher scored the quality of the environmental performance according to own subjective judgement manually. However, a scoring guideline was developed⁴¹. Yet, there was also probability of inconsistency in text classification due to researcher biasness and subjective judgement involved during the content analysis (Dragomir, 2010). This study also recognised the limitation of industry classification. This study formulated the classification based on existing literature that offered studies from both developed and developing countries context from the view of resource constraint. The classification of environmental sensitivity industry by using science-based ratings from professional agencies and carbon emission volume will be preferable.

⁴¹ Scoring template guideline is available in appendix 4

5.5 Suggestions for Future Research

Longitudinal study approach is suggested for future research study as this approach can capture the proposed relationship better than cross-sectional study. The trend of the environmental performance of listed companies in Malaysia can be reviewed using longitudinal data. This can improve the comparability of findings. Moreover, data collection should avoid using ordinal data, or substitute the performance scoring by using ESG ratings by credible agencies in order to generate a regression model with better goodness-of-fit. This would also avoid the violation of assumptions for parametric test. Future research study can carry out a longitudinal study regarding leadership aspiration impact on companies' future environmental performance in Malaysia context using ESG metrics. This is not cover by the study due to time constraint. The classification of environment sensitive industry based on the rating from professional agencies are encouraged to use in order to justify the validity of this study findings.

In addition, this study does not investigate the causal relationship between financial and environmental performance, it is advisable for future researcher to investigate the causal relationship and the joint effect of the independent variables in the regression model. Content analysis template and scoring template that developed in this study are suggested for future researchers to use in environmental performance related study. The template can be modified and adapt depending on the research context. In the future, researchers are encouraged to perform similar research study but in a different context. This is to test the generalisability of results found in this study. For example, carry out the research using the same research instrument and methodology in a different country context, or using listed companies in Leap and Ace market. Future researchers are encouraged to use different market-based financial performance to

testify the relationship found between firms' financial performance and firms' environmental performance.

5.6 Conclusion

This is a quantitative approach study that utilised content analysis scoring template that was developed based on Bursa ESG metrics. This study has achieved all four of its research objectives including evaluation of current state of environmental performance by listed companies in Malaysia, investigation of the relationship between firm financial performance and environmental performance in Malaysia context, examination of the stakeholder management and target setting approach impact on environmental performance of Malaysia listed firms and investigation the environmental performance of environmentally sensitive industry and the impact of leadership aspiration towards the companies' environmental performance. The final sample size was 155 listed companies in main market. Sustainability reports which is secondary data, which published by sample companies for their financial year end of 2020 were retrieved from Bursa official domain. Both descriptive and inferential statistics were performed via SPSS and NVivo to analyse the data collected.

The results had confirmed that government efforts in driving the entire nation to achieve carbon reduction targets and Paris Agreement target were effective. To encourage businesses to manage their business sustainability performance, including environmental performance, government has made additional efforts, including mandatory of sustainability reporting since 2016. Government's effort in strengthening governance, conserving natural resources and combating climate change as outlined in 11th Malaysia plan, are now bearing fruits. This study found that companies are managing and reporting their environmental performance according to Bursa ESG guideline. The overall Malaysia listed companies' environmental performance level is satisfying, as companies in different industries tackled and reported at least 3 different types of environmental performance. Besides, carbon emission including

direct emission, indirect emission and value chain emission have received the most attention from companies. This has highlighted the importance of government's role in directing nations towards the goal of becoming carbon neutral nation and the initiatives they have taken to encourage businesses to manage their environmental performance were effective. The findings suggest that in order to help businesses better manage their environmental performance and thus contribute to the overall sustainability wellbeing of the entire country, the government should acknowledge the significance of the role they played and should offer more financial and non-financial assistance.

This study managed to capture the positive relationship between firms' market value and firms' environmental performance in Malaysia context. Carbon emission from direct business operations is positively related to firm market value. This further enhanced the validity of legitimacy theory, impression management theory and signalling theory in Malaysia listed companies' context. The findings have provided convincing evidence that delivering good environmental performance pays off. It suggests that improving businesses' environmental performance can increase companies' market value. According to impression management and signalling theory, investors perceived good environmental performance as low environmental risk and will prefer to invest in companies with good environmental performance. Further analysis confirmed that companies need to manage their regulatory⁴² environmental performance because doing so will enable them to meet the demands of their key stakeholders especially expectations from regulatory bodies.

Furthermore, this study found that both target setting approach and stakeholder management approach have a positive impact on firm's

⁴² Regulatory practice includes category 2.1.1, category 2.1.2, category 2.1.3, category 2.2, category 2.3, category 2.4, category 2.11

environmental performance. Implementation of target setting approach along with ESG Bursa framework will make it easier for management to measure and manage their environmental performance. Since Bursa ESG framework provides a set of standardised quantitative environmental performance measures. Therefore, companies can evaluate and compare their environmental performance with industry benchmarks or other industry players by embedding ESG framework within their business. Meanwhile, managers can identify and manage the gap between their current progression and the target by using both targets setting approach and ESG framework simultaneously. Besides, stakeholder management has a positive impact on the environmental performance as firms' value relies on stakeholders to bring in resources the organisation needs but this needs to be exercised with cautions⁴³. Due to resource dependency and stakeholder theory, management should conduct stakeholder engagement sessions in order to understand their stakeholders' expectations on firms' environmental initiatives. Hence, firms can better manage their environmental performance and address their stakeholders' demand. Eventually, a trust will be constructed between firm and stakeholders which will allow the firm to gain competitive advantage and resources such as investment funds and sales revenue (PwC, 2013a, Tzouvanas et al., 2020, Wong et al., 2019)

The environmental performance of environmentally sensitive industries in Malaysia had been assessed in this study. Despite Moussa et al. (2021) and Patten (2002) research outcome suggesting that environmentally sensitive industries tend to have higher environmental performance level, the analysis results showed that there was no difference in environmental performance among different levels of environmental sensitivity industry. This may be due

⁴³ The test violated the assumptions of homogeneity of variance

to sample size issue and the current sustainability development in Malaysia context is in pre-mature stage. Moreover, this study found evidence to further support previous studies that highlighted that company's leaders is an important role in driving company's environmental performance as they hold the power to impact organisational resources and goal priority. Therefore, leadership aspiration towards environmental sustainability is an essential catalyst to achieve better environmental performance and driving the entire firm towards a better level of sustainability performance (Amran and Haniffa, 2011, Li et al., 2018, Newell and Manaf, 2008). This can be justified by institutional theory, such as normative pressure from the CEO. This study has confirmed that institutional theory is valid in Malaysia context. At the same time, the findings also highlighted the importance of leadership aspiration by providing evidence that shows firms tend to have better environmental performance with the presence of leadership aspiration.

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Appendices

Appendix 1 ESG metrics

1a ESG metrics developed during the data collection:

The below table is the summary of environmental performance subcategories and its responding towards united nation sustainable development goals.

Categories	Subcategories	UN SDG	Remarks	
2.0 Environmental	2.1.1 Emissions (direct)	12,13,14, 15	Greenhouse gas emissions, eco botanic shuttle bus service	
	2.1.2 Emission (indirect)			
	2.1.3 Emission (value chain)			
		2.2 Waste and effluent	3,6,12,14	
		2.3 Water	6,8,12,14	
		2.4 Energy	7,8,12,13	Industrialised building system
		2.5 Biodiversity / Biodiversity Conservation Programme	12,14,15	Habitat conservation
		2.6 Supply chain/ Material Sourcing and Supply Chain Management 2.6.1 Supplier Performance Rating	5,8,16	
		2.7 Product and services responsibility	8,12,13,14,15	Green building certification, innovation, forest stewardship accreditation
		2.8 Materials / Resource Efficiency	8,12	Integrated pest control, packaging material, certified raw material, paperless policy, raw material that are recycled product, Industrialised building system
		2.9 Compliance / Environmental Compliance / Environmental monitoring	8,12	ISO environmental management
	2.10 Land remediation, contamination or degradation	3,6,12,14,15,13,1,2	Environmental Impact Assessment	
	2.11 Climate Action: Mitigation and Adaptation		Zero burning policy	

The following are the descriptions for above environmental performance category.

2.1.1 Emissions (direct) refer to emission from direct business operations such as manufacturing process.

2.1.2 Emission (indirect) refer to emission from indirect business operations including carbon emission from energy used

2.1.3 Emission (value chain) refer to emission that released from the entire business value chain, from supplier towards the end product user

2.2 Waste and effluent refer to waste management

2.3 Water refer to water management

2.4 Energy refer to energy management including electricity, biomass energy

2.5 Biodiversity / Biodiversity Conservation Programme refer to commitment or action taken to preserve and conserve the biodiversity ecosystem.

2.6 Supply chain/ Material Sourcing and Supply Chain Management refer to supply chain management in terms of environmental performance.

2.6.1 Supplier Performance Rating refer to supplier performance annual evaluation in terms of their environmental commitment

2.7 Product and services responsibility refer to the extent of product and service is designed to minimise its adverse impact towards environment

2.8 Materials / Resource Efficiency refer to the extent of material eco-friendliness and utilisation rate


2.9 Compliance / Environmental Compliance / Environmental monitoring refer to the extent that organisation comply to environmental regulations and number of fines it receives including accreditation of ISO environmental management


2.10 Land remediation, contamination or degradation refers to environmental impact assessment done by firm especially property and construction before conducting their operations as well as soil management

2.11 Climate Action: Mitigation and Adaptation refer to action plan and strategy that company developed in order to combat global climate change issue including no open burning policy.



1b ESG metrics from Bursa Malaysia:


The below figures are the screenshot of environmental performance categories that extracted from Bursa ESG reporting framework (BursaMalaysia, 2015).


Themes	Definition	Indicators	Guidance on sector applicability	References (to the Toolkits and external references)
Environmental				
Emissions 	Emissions refer to the discharge of environmentally hazardous substances (e.g. dust, dark smoke, emissions with metallic compounds) into the atmosphere. (This definition is in accordance with the schedules as provided in the Environmental Quality Act (Clean Air) Regulations 2014). Emissions also encompasses discharge of greenhouse gas (e.g. carbon dioxide (CO2), methane, nitrous oxide, etc.).	Scope 1 emissions in tonnes of CO ₂ e	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN15 • http://www.ghgprotocol.org/ • Environmental Quality Act (Clean Air) Regulations 2014 Palm oil producers could also refer to http://www.rspo.org/certification/palm-ghg-calculator
		Scope 2 emissions in tonnes of CO ₂ e	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN16 • http://www.ghgprotocol.org/ • Environmental Quality Act (Clean Air) Regulations 2014 Palm oil producers could also refer to http://www.rspo.org/certification/palm-ghg-calculator
		Scope 3 emissions in tonnes of CO ₂ e	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN17 • http://www.ghgprotocol.org/node/453 • Environmental Quality Act (Clean Air) Regulations 2014 Palm oil producers could also refer to http://www.rspo.org/certification/palm-ghg-calculator



Themes	Definition	Indicators	Guidance on sector applicability	References (to the Toolkits and external references)
Environmental				
		NO _x emissions in g/Nm ³ per product or operating hour	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN21 • http://www.ghgprotocol.org/ • Environmental Quality Act (Clean Air) Regulations 2014
		SO _x emissions in g/Nm ³ per product or operating hour	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunication • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN21 • http://www.ghgprotocol.org/ • Environmental Quality Act (Clean Air) Regulations 2014
		Particulate emissions (mg) per operating hour (from measurement)	<ul style="list-style-type: none"> • Construction and real estate • Manufacturing • Oil & gas • Plantation • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Emissions • GRI: G4-EN21 • RSPO, Principle 5.6 • Environmental Quality Act (Clean Air) Regulations 2014
Waste and effluent 	Waste is broken down into hazardous and non-hazardous waste, where hazardous waste is governed by local environmental regulations i.e. the Environmental Quality (Scheduled Wastes) Regulations 2005. Non-hazardous waste includes general waste such as paper and plastic.	Total volume of effluent generated	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI: G4-EN22 • Environmental Quality (Industrial Effluent) Regulations 2009
		Total weight or volume of hazardous waste generated	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI: G4-EN23



Themes	Definition	Indicators	Guidance on sector applicability	References (to the Toolkits and external references)
Environmental				
	Effluent is defined as any liquid that is disposed as waste or wastewater.		<ul style="list-style-type: none"> • Plantation • Telecommunications • Utilities 	<ul style="list-style-type: none"> • Environmental Quality (Scheduled Wastes) Regulations 2005 - Schedule 5
		Total weight or volume of non-hazardous waste generated	<ul style="list-style-type: none"> • All sectors 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI: G4-EN23
		Total weight or volume of waste sent to landfill for disposal	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI: G4-EN23 • Environmental Quality (Scheduled Wastes) Regulations 2005 - Schedule 5
		Ratio of waste to production	Consumer goods	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • http://www.theconsumergoodsforum.com/
		Ratio of waste (e.g. empty fruit bunches; kernels) repurposed and disposed	Plantation	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • RSPO, Principle 5.3
		Amount of drilling waste and strategies for treatment and disposal	Oil & gas	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI Sector Disclosures: Oil and Gas, OG7 (page 47)

		Oil spills	Oil & gas	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent • GRI Sector Disclosures: Oil and Gas, G4-EN24 (page 26) • http://www.ipieca.org/focus-area/oil-spill-preparedness
		Amount of e-waste disposed	<ul style="list-style-type: none"> • Technology • Telecommunications 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Waste and effluent
Water 	Considers consumption and efficiency of water usage for industrial processes and general purposes.	Total volume of water used	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Water • https://www.cdp.net/water
		Percentage of water recycled and reused	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Water • GRI: G4-EN10 • https://www.cdp.net/water
		Water usage per product / output	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Water • https://www.cdp.net/water
Energy 	Considers the efficient use and consumption of electricity as well as energy generated from renewable sources.	Total energy consumed (kWh/MWh)	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI: G4-EN3 • http://www.ghgprotocol.org/
		Amount of reduction in energy consumption achieved as a result of conservation and efficiency initiatives	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI: G4-EN6

		Energy intensity - kWh/MWh per employee / man-hours / square meter	All sectors	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI: G4-EN5 <p>Oil & gas sector could also refer to http://www.ipieca.org/topic/climate-change/meeting-challenge#ti1012</p>
		Alternative energy research (e.g. wind, biomass, solar, clean fuels, other climate change-related matters) (investment amount and plans)	Oil & gas	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI Sector Disclosures: Oil and Gas, OG2 (page 42) • http://www.ipieca.org/topic/climate-change/meeting-challenge#ti1012
		Use of renewable energy (kWh/MWh)	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI: G4-EN3
		Total energy produced (kWh/MWh)	<ul style="list-style-type: none"> • Plantation • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Energy • GRI Sector Disclosure: Electric Utilities, EU2 (page 29)
Biodiversity 	Relates to the identification and assessment of risk associated with biodiversity by reporting on the potential impact on terrestrial, fresh water and marine environment that lies within, contains, or is adjacent to areas with high biodiversity value.	Number and percentage of significant operating sites in which biodiversity risk has been assessed and monitored (e.g. terrestrial, fresh water and marine environment for oil & gas sector)	Oil & gas	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Biodiversity • http://www.ipieca.org/focus-area/biodiversity • GRI Sector Disclosures: Oil and Gas, OG 4 (page 44)

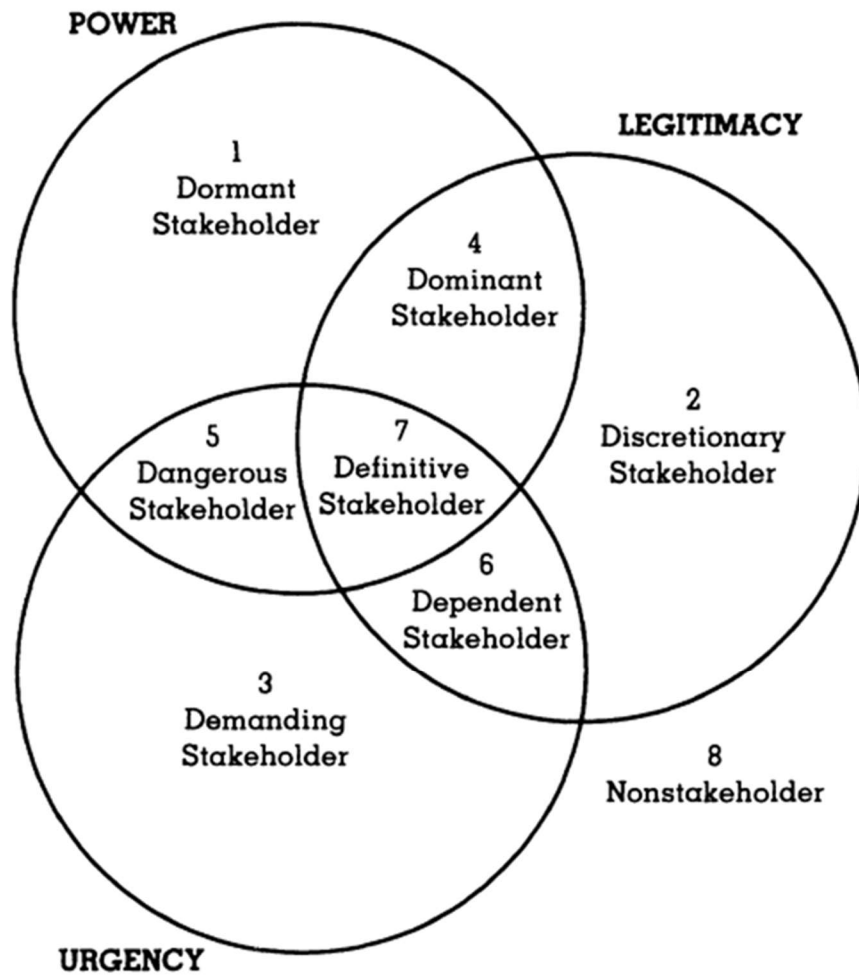
		Areas of High Conservation Value avoided	<ul style="list-style-type: none"> • Plantation • Oil & gas • Utilities 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Biodiversity • http://www.ipieca.org/focus-area/biodiversity • RSPO Principle 5.2
		Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	<ul style="list-style-type: none"> • Plantation • Oil & gas • Utilities • Construction & Real Estate 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Biodiversity • GRI: G4-EN12 • http://www.ipieca.org/focus-area/biodiversity
		Habitats protected or restored (Qualitative disclosure)	<ul style="list-style-type: none"> • Plantation • Oil & gas • Utilities • Construction & Real Estate • 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Biodiversity • GRI: EN13 • GRI Sector Disclosure: Electric Utilities, EU13 (page 40) • http://www.ipieca.org/focus-area/biodiversity
Supply Chain (Environmental) 	All significant environmental impacts observed or assessed in the supply chain in relation to products and services produced and/or offered.	Assessment of new and existing suppliers to identify environmental impacts (e.g. resource use, waste management, impact on biodiversity, etc.)	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - : Supply Chain • GRI: G4-EN32 & G4-EN33 • http://www.theconsumergoodsforum.com/ • https://www.cdp.net/en-US/Programmes/Pages/CDP-Supply-Chain.aspx • http://www.bsr.org/en/our-insights/report-view/key-performance-indicators-for-responsible-sourcing
		Results of supplier monitoring/auditing	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing 	
		Actions on supplier's non-compliance to supplier's environmental impacts	<ul style="list-style-type: none"> • Oil & gas • Plantation • Telecommunications • Utilities 	

		assessment (e.g. training and communications)		
Product and Services Responsibility (Environmental) 	The environmental impact of products and services in the course of their lifecycle, (including product design, development, testing, etc.).	Product stewardship (product's impact on the environment)	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Products and Services Responsibility • GRI: G4-EN27
		Benzene, lead and sulfur content in fuels	Oil & gas	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Products and Services Responsibility • GRI Sector Disclosures: Oil and Gas, OG8 (page 27)
		Product innovation to reduce impacts (e.g. eco-friendly, less chemicals/toxic substances, etc.)	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Products and Services Responsibility • GRI: G4-EN27 • http://www.theconsumergoodsforum.com/ • https://www.cdp.net/en-US/Programmes/Pages/CDP-Supply-Chain.aspx
Materials 	Materials are components used as inputs in the production of goods. This theme encompasses the sourcing and composition of materials used in the production of goods (and packaging). It discusses the practice and commitment to responsible sourcing and management of materials, and how these were given consideration in the fabrication of a product.	Ratio of raw materials sourced from sustainable sources	<ul style="list-style-type: none"> • Consumer goods • Manufacturing • Plantation 	Refer to: <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Materials • RSPO Principles

		Policies and commitment to certified raw materials sourcing	<ul style="list-style-type: none"> • Consumer goods • Manufacturing • Plantation 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Materials • http://www.theconsumergoodsforum.com/ • https://www.cdp.net/en-US/Programmes/Pages/CDP-Supply-Chain.aspx • https://ic.fsc.org/requirements-guidance.105.htm
		Materials used by weight or volume	<ul style="list-style-type: none"> • Consumer goods • Manufacturing • Plantation 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Materials • GRI: G4-EN1
		Percentage of recycled input materials	<ul style="list-style-type: none"> • Consumer goods • Manufacturing • Plantation 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Materials • GRI: G4-EN2
Compliance (Environmental) 	Compliance identifies the adherence of an organisation's activities to relevant laws and guidelines. It outlines an organisation's degree of observance to laws and guidelines governing its business, as well as efforts undertaken in assessing the anticipated environmental impact of its activities.	Total monetary value of fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	<ul style="list-style-type: none"> • Construction and real estate • Consumer goods • Manufacturing • Oil & gas • Plantation • Telecommunications • Utilities 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Compliance • GRI: G4-EN29
Land remediation, contamination or degradation 	Land contamination may adversely affect or render land unproductive. Contamination may occur as a result of the current or prior activity of the organisation or its previous occupier. Contamination may be of natural origin, in various states (solid, liquid or gas), and may affect soil quality	Land remediated or in need of remediation for the existing or intended land use, according to applicable legal designations	Construction and real estate	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Land remediation, contamination or degradation • GRI Sector Disclosures: Construction and Real Estate Sector, CRE5 (page 74).

<p>(degradation) and its surrounding ecological and environmental receptors. Land remediation, on the other hand, refers to the efforts taken to remove or reduce pollutants or contaminants in the soil. This theme requires disclosure on the management of soil quality and initiatives assumed in the remediation of contaminated land.</p>	<p>Number of operations for the year and how many have conducted environmental impact assessments.</p>	<ul style="list-style-type: none"> • Plantation • Oil & Gas • Construction & Real Estate • Manufacturing • Utilities 	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Land remediation, contamination or degradation • Refer to GRI: G4-S01
	<p>Disclosure on current practice and soil management strategy</p>	<p>Plantation</p>	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Land remediation, contamination or degradation • RSPO, Principle 4.2 and 4.3
	<p>Number of sites that have been decommissioned and sites that are in the process of being decommissioned</p>	<p>Oil & gas</p>	<p>Refer to:</p> <ul style="list-style-type: none"> • Toolkit: Themes and Indicators - Land remediation, contamination or degradation • GRI Sector Disclosures: Oil and Gas, OG11 (page 51)

Appendix 2 Stakeholder Salience Framework



Stakeholder Salience Framework (Mitchell et al., 1997)

Appendix 3 Sample Exclusion List

The below is the sample exclusion list

1. Firm that has two annual reports in a year due to change of financial year end
2. Firm that has at least one missing annual report since 2015
3. Firm that listed after 2015 in Bursa Main Market
4. Firm that are not from Bursa Main Market
5. Firm that does not produce sustainability report
6. Firm that is missing or has missing financial variables in Datastream dataset


Appendix 4 Scoring Template and Scale

The below is the scoring template used during content analysis:

Year of Sustainability Report	2020	
Company Name:		
Listed number:		
Industry:		
Market listed:		
Type of report:	Annual report / Stand Alone report / Integrated report	
Categories of environmental performance	Score	Remarks
2.1.1 Carbon Emissions (direct)		Greenhouse gas emissions, eco botanic shuttle bus service
2.1.2 Carbon Emission (indirect)		
2.1.3 Carbon Emission (value chain)		
2.2 Waste and effluent		Industrialised building system
2.3 Water		
2.4 Energy		
2.5 Biodiversity / Biodiversity Conservation Programme		Habitat Conservation
2.6 Supply chain/ Material Sourcing and Supply Chain Management		
2.6.1 Supplier Performance Rating		
2.7 Product and services responsibility		Green building certification, innovation, forest stewardship accreditation
2.8 Materials / Resource Efficiency		Integrated pest control, packaging material, certified raw material, paperless policy, raw material that are recycled product, Industrialised building system
2.9 Compliance / Environmental Compliance / Environmental monitoring		ISO environmental management
2.10 Land remediation, contamination or degradation		Environmental Impact Assessment
2.11 Climate Action: Mitigation and Adaptation		Zero burning policy

The highlighted environmental performance categories are the additional categories there were added during the content analysis process while the remarks column provides the expansion of the respective environmental performance categories scope.

The below is the scoring scale used during content analysis:



Score	Description
5	Future target given (narrative or quantitative)
4	Future action plan given (brief direction or detailed action plan)
3	Comparative and quantitative data provided
2	Quantitative data provided of the current year performance
1	Narrative only
0	This category was not disclosed in the report

The scoring template developed to analyse the sustainability report quality was based on several studies. This study is interested in management approach impact towards the environmental performance level. The measure-to-manage approach, also known as the target setting approach, is viewed as an efficient management tool. Therefore, the presence of quantified target setting by companies is weighted heavily. It is believed that if a company is engaged in environmental sustainability management, they will be quantifying their environmental performance as well as achievement and reporting it in their annual sustainability report. Thus, quantitative and comparative data are weighted more than the qualitative environmental sustainability content. Reporting future plans in a company's annual report enables them to show their commitment to conducting those plans, as they would be liable for providing fraudulent information in their report if they refused to carry out what they reported in their annual report.

Appendix 5 Industry Classification and Leadership Aspiration

5a Industry Classification

The table below is the Environmental Sensitivity Industry Classification List

Environment Level	Sensitivity	Industry
1, least sensitivity level		Financial Service, Real Estate Investment Trust
2, moderate sensitivity level		Consumer and Product Services, Health Care, Technology, Telecommunication and Media
3, high sensitivity level		Construction, Energy, Industrial Product and Services, Planation, Property, Transportation and Logistic Service, Utilities

Environmental sensitivity industry is defined as the level of environmental degradation by each industry. The higher the contributor to environmental degradation industry, the higher the level of environmental sensitivity it is. For example, the industrial product and service industries are classified as highly environmentally sensitive due to the level of emission and volume of pollutants released during daily manufacturing operations, whereas the financial services industry is classified as low-sensitive because its emissions and pollutants released to the environment are relatively low when compared to the industrial product and service industries. Due to time and resource restrictions, the classification of industry sensitivity towards the environment has been developed based on several literature review justifications, including Buniamin et al. (2008), Jaaffar et al. (2018), Khalid et al. (2012), Mobus (2005), Moussa et al. (2021), Patten (2002) and Yam (2013). The classification involved justification of environmentally

sensitive industries from both developed and developing countries' contexts. Therefore, the classification of industry can be considered as appropriate as it includes both justification from developed countries such as UK and US as well as developing countries like Malaysia.

5b Leadership Aspiration Classification

Leadership aspiration and leadership aspiration are used interchangeable throughout this thesis. Both leadership aspiration and commitment are referring to the view of company's leader on importance of environmental performance. Some leaders weighted economic sustainability more than other two. Yet some leaders view companies' environmental sustainability performance as the most important. In this study, leadership aspiration will be referring to company leaders' viewpoint regarding environmental performance. Leader of a company that brought aspiration to the subordinates to manage company's environmental performance is referred as a leader that focus on environmental sustainability performance and will mention environmental performance, both past history or future directions in their message to stakeholder or annual report statement. These are the indication of presence of leadership aspiration in environmental performance management.

Appendix 6 Descriptive Statistic

Type of industry	No. of Firm	2.1.1	2.1.2	2.1.3	2.2	2.3	2.4	2.5	2.6	2.6.1	2.7	2.8	2.9	2.10	2.11
REIT	2	0.00	0.00	0.00	1.50	1.50	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Property	22	0.32	0.50	0.00	0.95	0.95	1.36	0.41	0.09	0.00	0.50	0.41	0.59	0.00	0.00
Technology	10	0.40	1.10	0.30	1.10	0.70	1.50	0.10	0.10	0.00	0.00	0.50	0.80	0.00	0.30
Industrial Product and Service	47	0.49	0.62	0.13	1.45	0.94	1.15	0.17	0.11	0.00	0.15	0.45	0.62	0.06	0.09
Consumer Product and Service	32	1.00	0.84	0.16	1.63	1.47	1.97	0.09	0.13	0.00	0.06	0.19	0.91	0.03	0.19
Construction	8	0.63	0.25	0.00	1.25	1.25	1.50	0.13	0.25	0.00	0.13	0.13	0.63	0.50	0.00
Financial Service	6	0.00	0.50	0.00	1.33	1.00	2.17	0.33	0.00	0.00	0.33	1.17	0.00	0.00	0.33
Plantation	8	1.63	1.00	0.50	1.75	1.50	1.50	0.75	0.00	0.00	0.25	0.13	0.50	0.25	0.25
Energy	5	1.40	1.80	0.40	2.80	2.00	1.80	0.40	0.20	0.00	0.20	0.40	0.60	0.40	0.40
Transportation and Logistic service	7	1.57	1.86	0.43	1.14	1.57	2.14	0.29	0.00	0.00	0.14	0.14	0.71	0.00	0.14
Health Care	5	1.20	1.20	0.60	1.80	2.00	2.80	0.20	0.20	0.00	0.00	0.60	0.20	0.00	0.20
Utilities	3	3.67	1.67	0.00	2.67	2.33	2.33	2.00	0.00	0.00	0.33	0.00	2.00	0.33	0.33
Mode		3.67	1.86	0.60	2.80	2.33	2.80	2.00	0.25	0.00	0.50	1.17	2.00	0.50	0.40

Descriptive Statistics												
	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
2.1.1	155	5	0	5	119	.77	1.308	1.712	1.514	.195	1.099	.387
2.1.2	155	5	0	5	124	.80	1.384	1.914	1.438	.195	.783	.387
2.1.3	155	4	0	4	26	.17	.692	.478	4.063	.195	15.379	.387
2.2	155	5	0	5	234	1.51	1.186	1.407	.674	.195	-.305	.387
2.3	155	5	0	5	192	1.24	1.405	1.975	.761	.195	-.695	.387
2.4	155	5	0	5	254	1.64	1.338	1.791	.456	.195	-.824	.387
2.5	155	4	0	4	42	.27	.677	.459	3.040	.195	10.121	.387
2.6	155	1	0	1	17	.11	.314	.098	2.523	.195	4.421	.387
2.6.1	155	0	0	0	0	.00	.000	.000	.	.	.	.
2.7	155	2	0	2	28	.18	.418	.175	2.201	.195	4.191	.387
2.8	155	3	0	3	58	.37	.685	.469	2.183	.195	5.104	.387
2.9	155	3	0	3	106	.68	.843	.711	1.050	.195	.290	.387
2.10	155	2	0	2	13	.08	.321	.103	4.142	.195	18.010	.387
2.11	155	2	0	2	23	.15	.374	.140	2.367	.195	4.797	.387
Valid (listwise)	N 155											

Appendix 7 Full SPSS output for H2

H2 regression analysis full output

Descriptive Statistics			
	Mean	Std. Deviation	N
Market Value 2021	2023.4775	4928.80528	155
Avg. AS Econ	.472043010752688	.332151234503964	155
Avg. AS ENV	.633137829912023	.516109176538327	155
Avg. AS SG	.804692082111436	.388438908584307	155

Correlations					
		Market Value 2021	Avg. AS Econ	Avg. AS ENV	Avg. AS SG
Pearson Correlation	Market Value 2021	1.000	.083	.425	.145
	Avg. AS Econ	.083	1.000	.554	.632
	Avg. AS ENV	.425	.554	1.000	.604
	Avg. AS SG	.145	.632	.604	1.000
Sig. (1-tailed)	Market Value 2021	.	.153	<.001	.036
	Avg. AS Econ	.153	.	.000	.000
	Avg. AS ENV	.000	.000	.	.000
	Avg. AS SG	.036	.000	.000	.
N	Market Value 2021	155	155	155	155
	Avg. AS Econ	155	155	155	155
	Avg. AS ENV	155	155	155	155
	Avg. AS SG	155	155	155	155

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Avg AS SG, Avg AS ENV, Avg AS Econ ^b	.	Enter

a. Dependent Variable: Market Value 2021

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.467 ^a	.218	.202	4402.33115	1.876

a. Predictors: (Constant), Avg AS SG, Avg AS ENV, Avg AS Econ

b. Dependent Variable: Market Value 2021

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	814682260.005	3	271560753.335	14.012	<.001 ^b
	Residual	2926458449.674	151	19380519.534		
	Total	3741140709.678	154			

a. Dependent Variable: Market Value 2021

b. Predictors: (Constant), Avg AS SG, Avg AS ENV, Avg AS Econ

		Coefficients ^a									
		Unstandardized Coefficients		Standardized Coefficients		Correlations			Collinearity Statistics		
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	710.136	817.608		.869	.386					
	Avg AS Econ	-2681.230	1434.256	-.181	-1.869	.064	.083	-.150	-.135	.555	1.803
	Avg AS ENV	5531.045	898.063	.579	6.159	<.001	.425	.448	.443	.586	1.707
	Avg AS SG	-1146.919	1281.553	-.090	-.895	.372	.145	-.073	-.064	.508	1.969

a. Dependent Variable: Market Value 2021

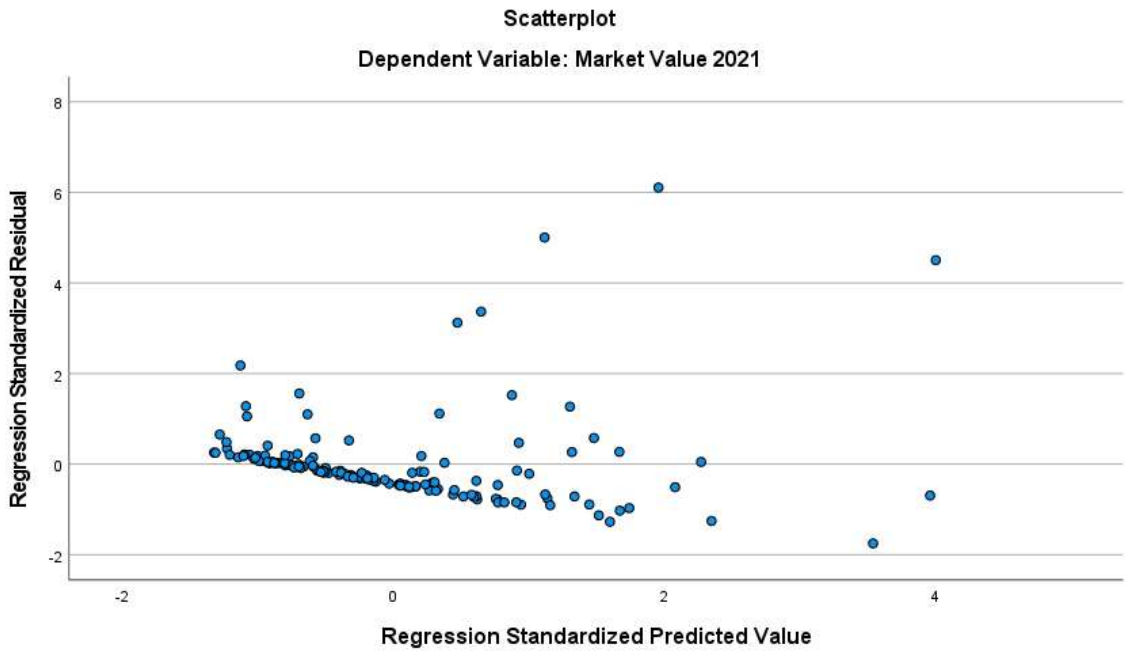
		Collinearity Diagnostics ^a						
		Eigenvalue	Condition Index	Variance Proportions				
Model	Dimension			(Constant)	Avg AS Econ	Avg AS ENV	Avg AS SG	
1	1	3.547	1.000	.01	.01	.02	.01	
	2	.230	3.930	.40	.02	.47	.01	
	3	.154	4.799	.11	.77	.39	.00	
	4	.069	7.160	.48	.20	.12	.98	

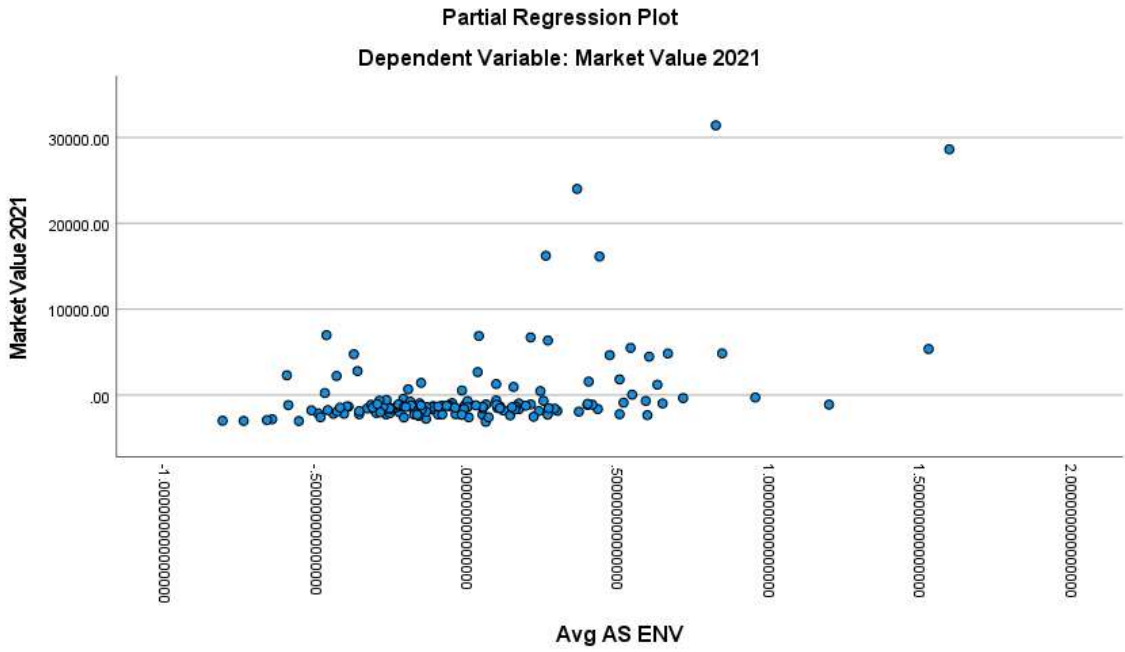
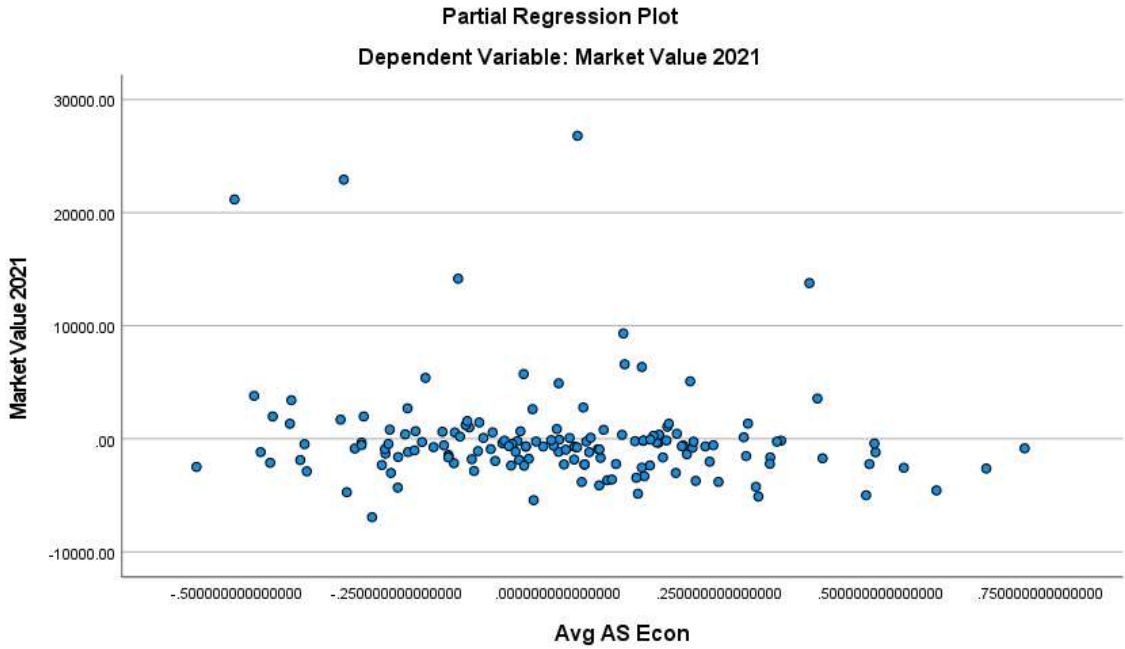
a. Dependent Variable: Market Value 2021

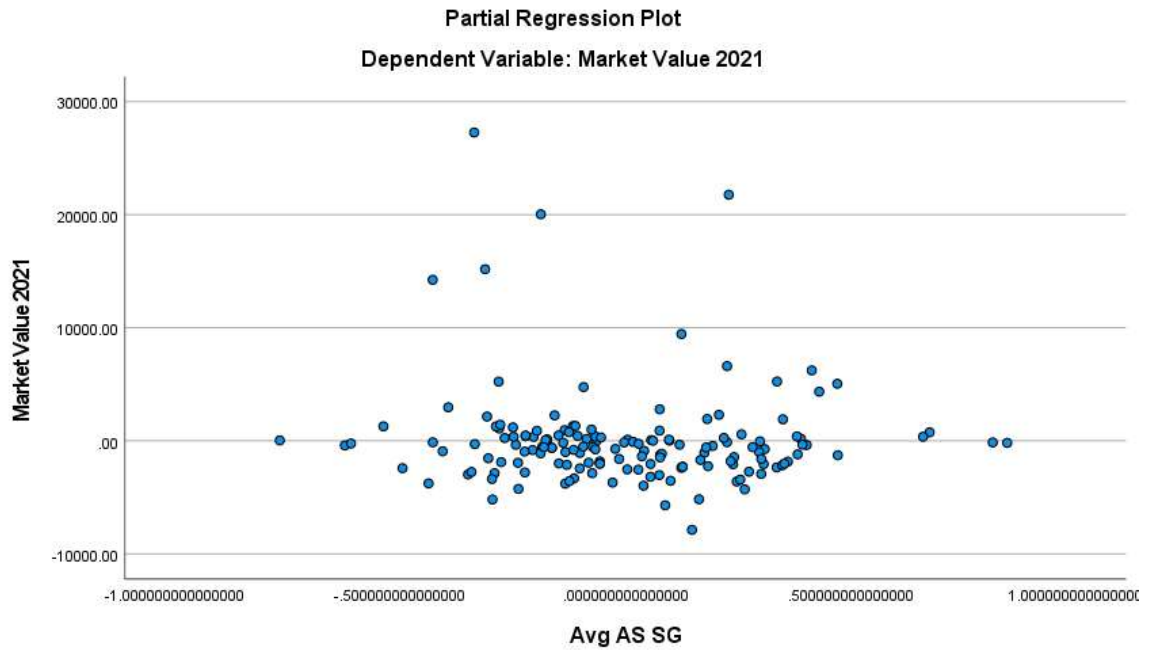
Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1009.2352	11240.0303	2023.4775	2300.03142	155
Residual	-7704.13281	26886.90039	.00000	4359.24041	155
Std. Predicted Value	-1.319	4.007	.000	1.000	155
Std. Residual	-1.750	6.107	.000	.990	155

a. Dependent Variable: Market Value 2021







H2a Full regression output

Descriptive Statistics			
	Mean	Std. Deviation	N
Market Value 2021	2023.4775	4928.80528	155
Avg AS Econ	.4720430107526	.3321512345039	155
	88	64	
Avg AS SG	.8046920821114	.3884389085843	155
	36	07	
2.1.1	.77	1.308	155
2.1.2	.80	1.384	155
2.1.3	.17	.692	155
2.2	1.50	1.175	155
2.3	1.21	1.376	155
2.4	1.63	1.315	155
2.5	.26	.663	155
2.6	.10	.305	155
2.6.1	.00	.000	155
2.7	.18	.418	155
2.8	.37	.685	155
2.9	.67	.838	155
2.10	.08	.321	155
2.11	.14	.368	155

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.587 ^a	.344	.273	4201.24733	1.872

a. Predictors: (Constant), 2.11, 2.9, 2.5, 2.8, 2.10, 2.6, 2.7, 2.4, 2.1.3, Avg AS Econ, 2.2, 2.1.1, Avg AS SG, 2.1.2, 2.3

b. Dependent Variable: Market Value 2021

		Correlations																
		Marke t Value 2021	Avg. AS Econ	Avg. AS SG	2.1.1	2.1.2	2.1.3	2.2	2.3	2.4	2.5	2.6	2.6.1	2.7	2.8	2.9	2.10	2.11
Pearson Correlatio n	Marke t Value 2021	1.000	.083	.145	.496	.383	.203	.281	.227	.241	.091	-.096	.	-.069	.046	-.041	.225	.292
	Avg. AS Econ	.083	1.00 0	.632	.294	.296	.129	.463	.446	.397	.298	.135	.	.208	.203	.165	.063	.174
	Avg. AS SG	.145	.632	1.00 0	.338	.432	.228	.492	.478	.459	.229	.136	.	.095	.121	.149	.108	.389
	2.1.1	.496	.294	.338	1.000	.616	.417	.516	.517	.379	.204	-.037	.	-.053	-.033	-.023	.108	.392
	2.1.2	.383	.296	.432	.616	1.000	.429	.394	.527	.555	.163	.111	.	.018	.079	-.012	.126	.375
	2.1.3	.203	.129	.228	.417	.429	1.00 0	.311	.264	.219	.202	.010	.	-.038	.182	-.095	.024	.339
	2.2	.281	.463	.492	.516	.394	.311	1.000	.562	.387	.216	.198	.	.091	.119	.110	.094	.344
	2.3	.227	.446	.478	.517	.527	.264	.562	1.00 0	.664	.176	.150	.	.081	.117	.037	.093	.314
	2.4	.241	.397	.459	.379	.555	.219	.387	.664	1.00 0	.149	.226	.	.112	.171	.064	-.017	.245
	2.5	.091	.298	.229	.204	.163	.202	.216	.176	.149	1.00 0	.156	.	.135	.115	.014	.142	.009

	2.6	-.096	.135	.136	-.037	.111	.010	.198	.150	.226	.156	1.000	.	.209	.125	.108	.110	.042
	2.6.1	.	.	.	.	.	.	.	.	.	.	.	1.000	.	.	.	.	.
	2.7	-.069	.208	.095	-.053	.018	-.038	.091	.081	.112	.135	.209	.	1.000	.193	.115	.031	-.041
	2.8	.046	.203	.121	-.033	.079	.182	.119	.117	.171	.115	.125	.	.193	1.000	.046	-.055	.020
	2.9	-.041	.165	.149	-.023	-.012	-.095	.110	.037	.064	.014	.108	.	.115	.046	1.000	.055	.005
	2.10	.225	.063	.108	.108	.126	.024	.094	.093	-.017	.142	.110	.	.031	-.055	.055	1.000	.118
	2.11	.292	.174	.389	.392	.375	.339	.344	.314	.245	.009	.042	.	-.041	.020	.005	.118	1.000
Sig. (1-tailed)	Market Value 2021	.	.153	.036	<.001	<.001	.006	<.001	.002	.001	.131	.118	.000	.197	.283	.307	.002	<.001
	Avg AS Econ	.153	.	.000	.000	.000	.055	.000	.000	.000	.000	.047	.000	.005	.006	.020	.219	.015
	Avg AS SG	.036	.000	.	.000	.000	.002	.000	.000	.000	.002	.045	.000	.120	.067	.032	.090	.000
	2.1.1	.000	.000	.000	.	.000	.000	.000	.000	.000	.005	.323	.000	.255	.343	.389	.090	.000
	2.1.2	.000	.000	.000	.000	.	.000	.000	.000	.000	.021	.085	.000	.412	.163	.440	.060	.000
	2.1.3	.006	.055	.002	.000	.000	.	.000	.000	.003	.006	.452	.000	.319	.012	.121	.384	.000
	2.2	.000	.000	.000	.000	.000	.000	.	.000	.000	.004	.007	.000	.129	.069	.087	.123	.000

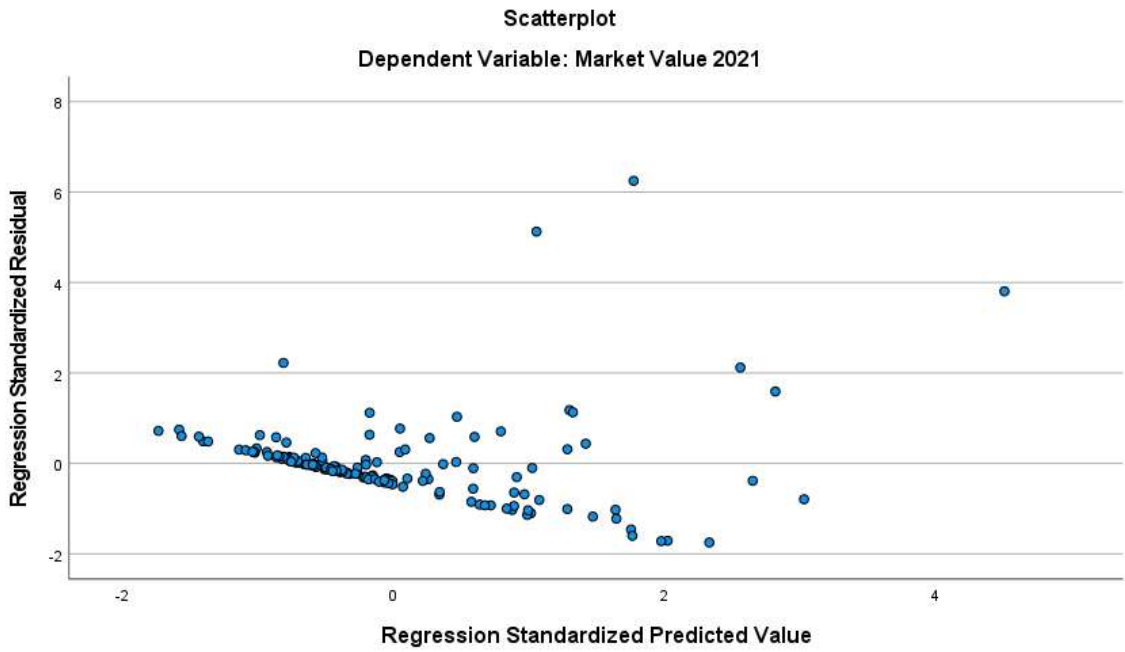
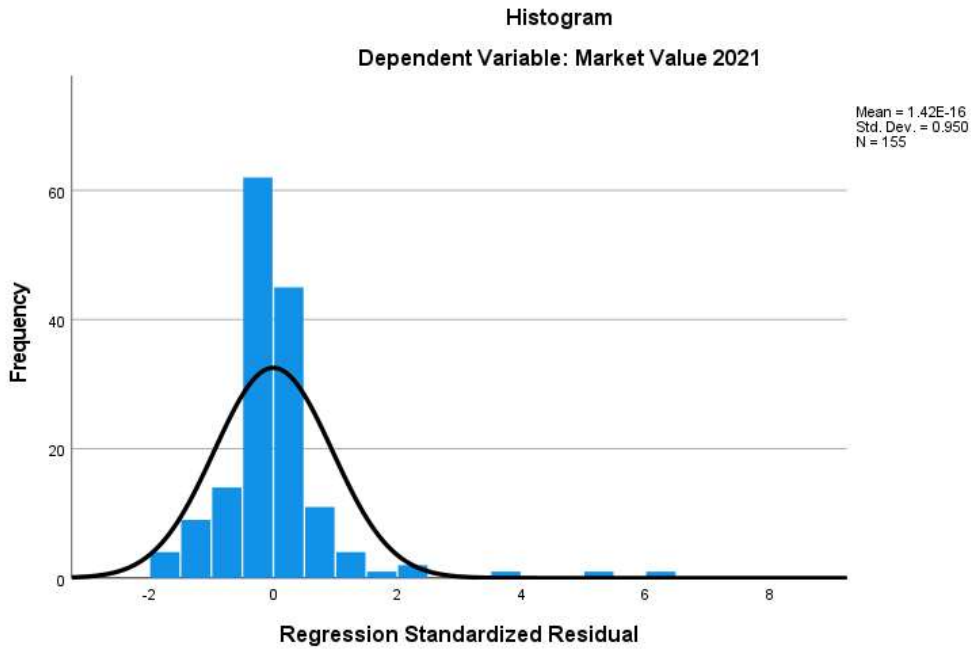
	2.3	.002	.000	.000	.000	.000	.000	.000	.000	.014	.031	.000	.157	.073	.325	.125	.000
	2.4	.001	.000	.000	.000	.000	.003	.000	.000	.032	.002	.000	.083	.017	.213	.415	.001
	2.5	.131	.000	.002	.005	.021	.006	.004	.014	.032	.026	.000	.047	.077	.433	.039	.458
	2.6	.118	.047	.045	.323	.085	.452	.007	.031	.002	.026	.000	.005	.061	.090	.087	.301
	2.6.1	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	2.7	.197	.005	.120	.255	.412	.319	.129	.157	.083	.047	.005	.000	.008	.077	.349	.306
	2.8	.283	.006	.067	.343	.163	.012	.069	.073	.017	.077	.061	.000	.008	.284	.248	.404
	2.9	.307	.020	.032	.389	.440	.121	.087	.325	.213	.433	.090	.000	.077	.284	.249	.475
	2.10	.002	.219	.090	.090	.060	.384	.123	.125	.415	.039	.087	.000	.349	.248	.249	.071
	2.11	.000	.015	.000	.000	.000	.000	.000	.001	.458	.301	.000	.306	.404	.475	.071	.
N	Marke t Value 2021	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	Avg AS Econ	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	Avg AS SG	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.1.1	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.1.2	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.1.3	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.2	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.3	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
	2.4	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155

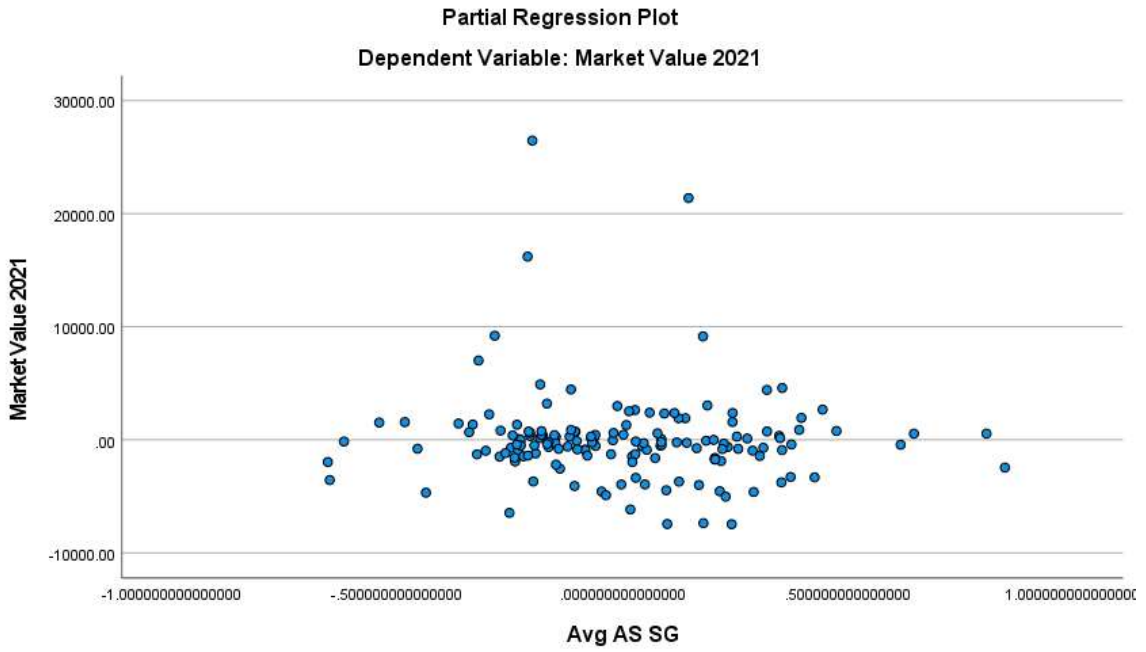
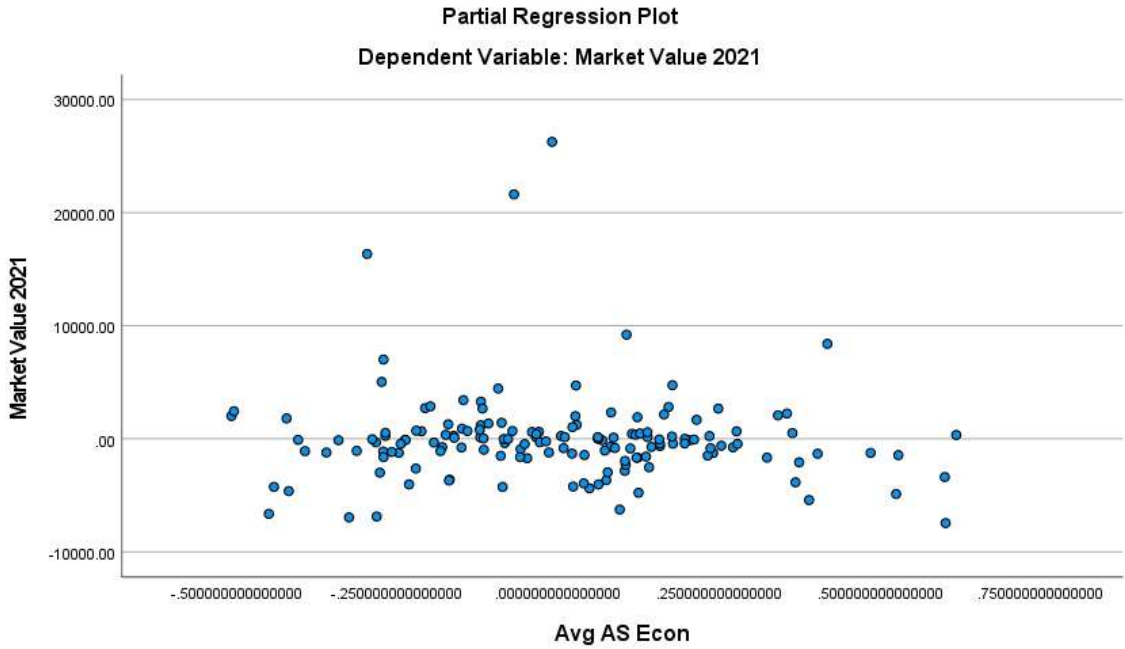
2.5	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.6	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.6.1	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.7	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.8	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.9	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.10	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
2.11	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155

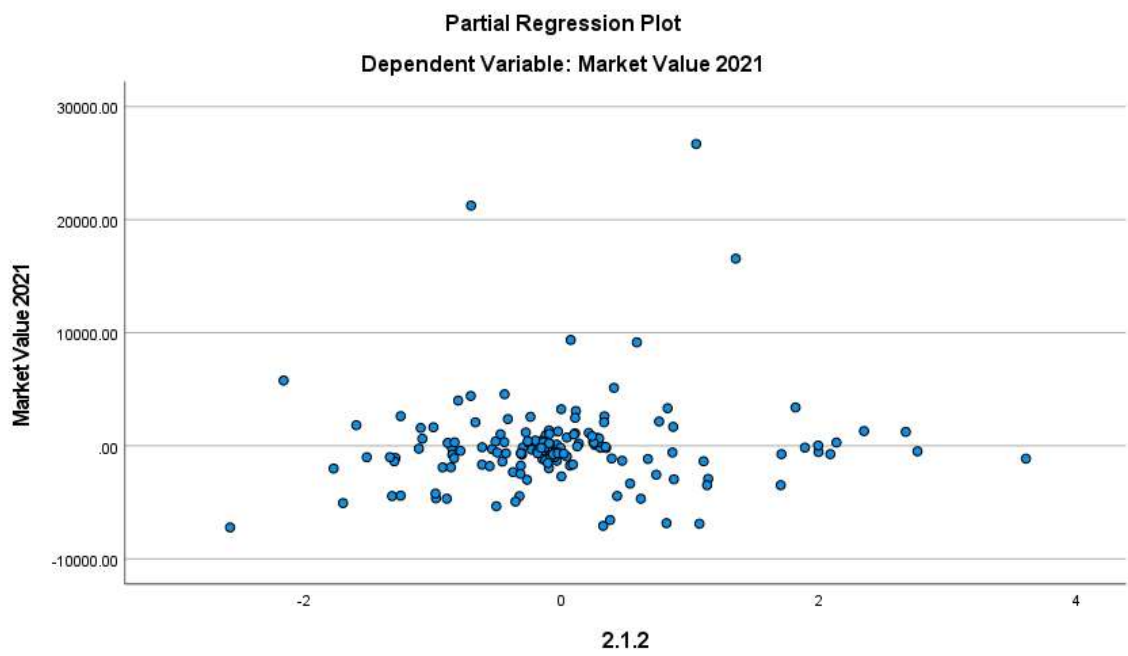
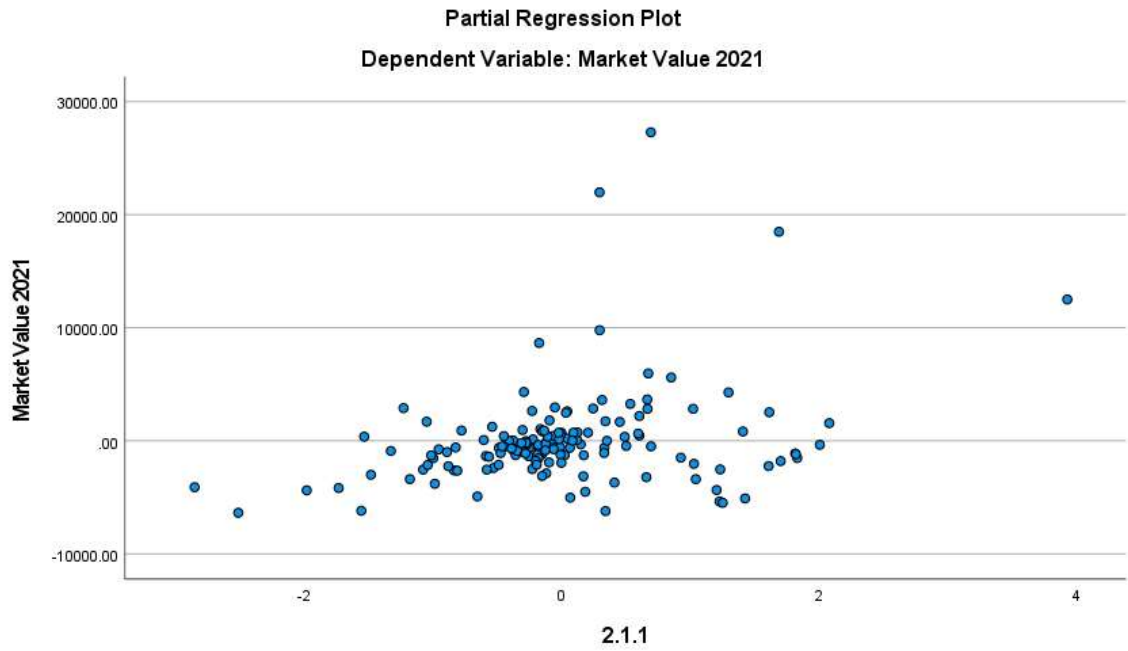
Model		Coefficients ^a									
		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	605.408	859.318		.705	.482					
	Avg AS Econ	-1212.226	1440.299	-.082	-.842	.401	.083	-.071	-.058	.501	1.997
	Avg AS SG	-1050.273	1287.550	-.083	-.816	.416	.145	-.069	-.056	.458	2.182
	2.1.1	1480.667	386.509	.393	3.831	<.001	.496	.309	.263	.448	2.231
	2.1.2	419.392	365.937	.118	1.146	.254	.383	.097	.079	.447	2.237
	2.1.3	-579.838	591.266	-.081	-.981	.328	.203	-.083	-.067	.686	1.459
	2.2	530.000	401.703	.126	1.319	.189	.281	.111	.091	.514	1.945
	2.3	-611.689	383.982	-.171	-1.593	.113	.227	-.134	-.109	.411	2.434
	2.4	648.028	383.478	.173	1.690	.093	.241	.142	.116	.451	2.219
	2.5	110.904	562.490	.015	.197	.844	.091	.017	.014	.824	1.213
	2.6	-2268.795	1211.457	-.141	-1.873	.063	-.096	-.157	-.129	.838	1.193
	2.7	-418.437	861.960	-.036	-.485	.628	-.069	-.041	-.033	.882	1.134
	2.8	714.273	532.125	.099	1.342	.182	.046	.113	.092	.862	1.160
	2.9	-164.284	418.692	-.028	-.392	.695	-.041	-.033	-.027	.930	1.075
	2.10	3037.928	1099.297	.198	2.764	.006	.225	.228	.190	.918	1.089
	2.11	1531.961	1097.693	.114	1.396	.165	.292	.118	.096	.702	1.425

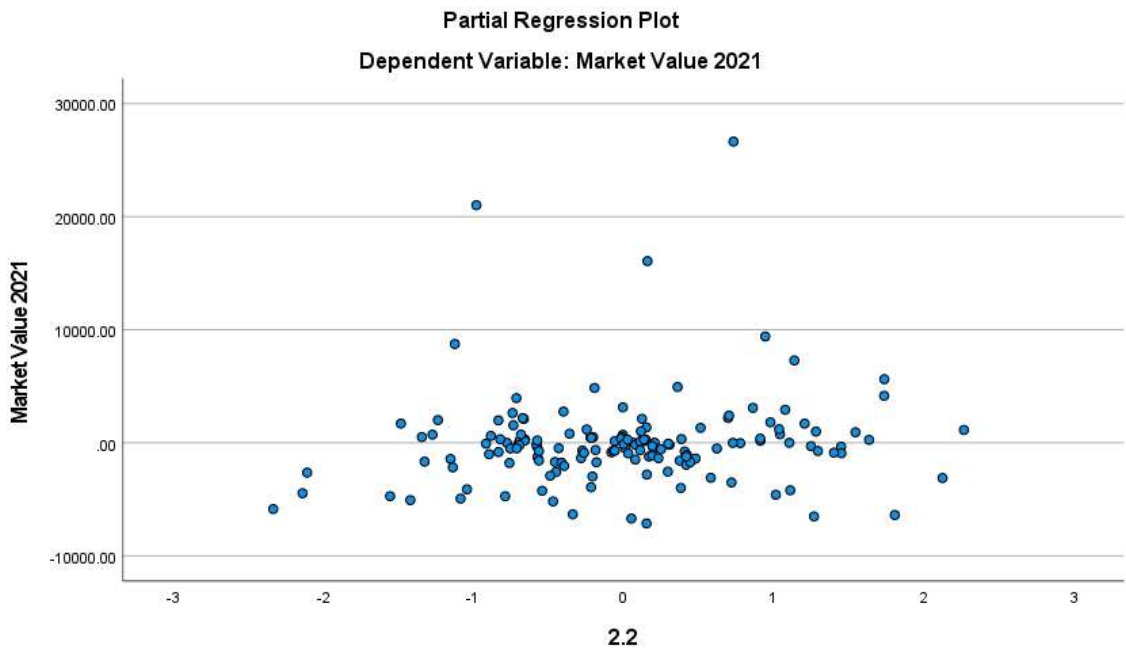
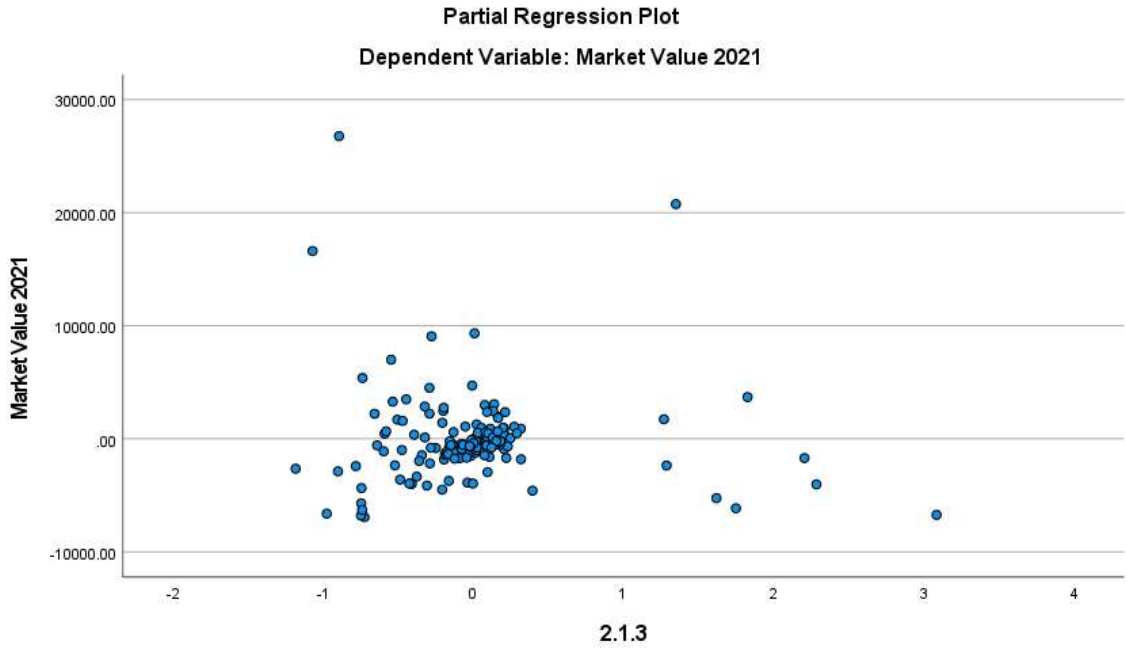
a. Dependent Variable: Market Value 2021

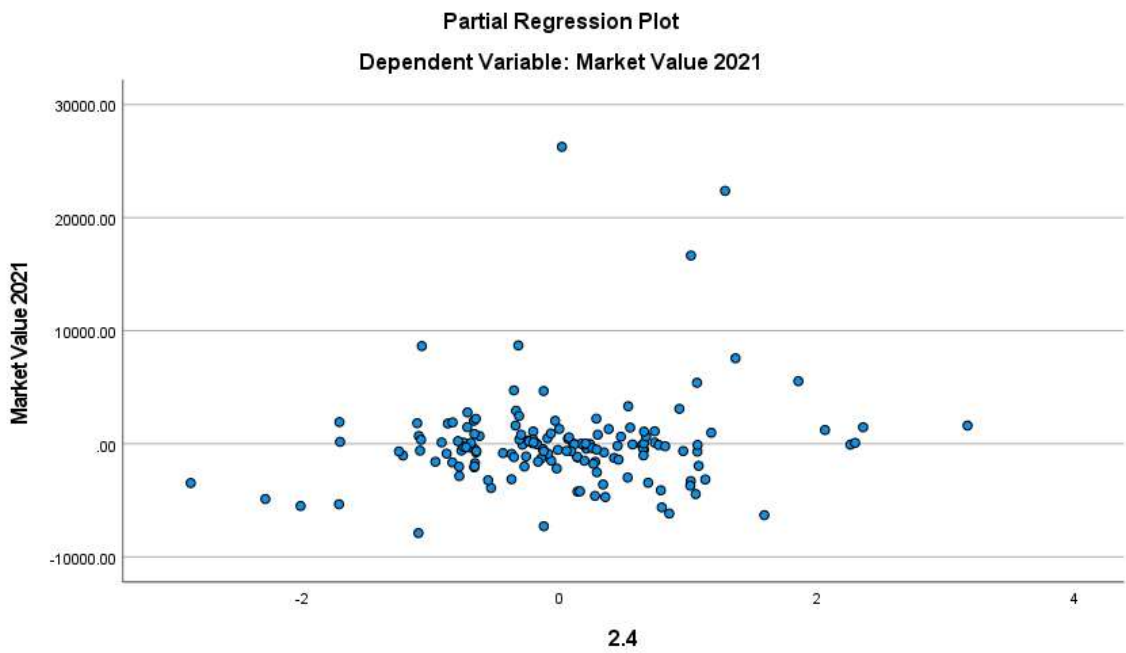
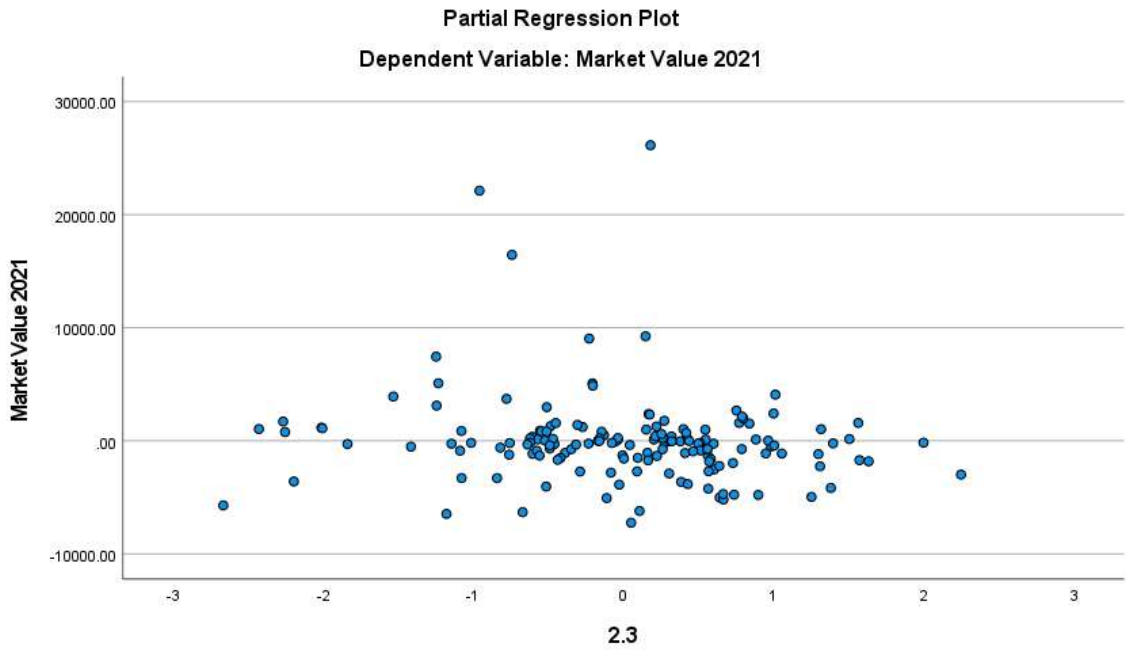
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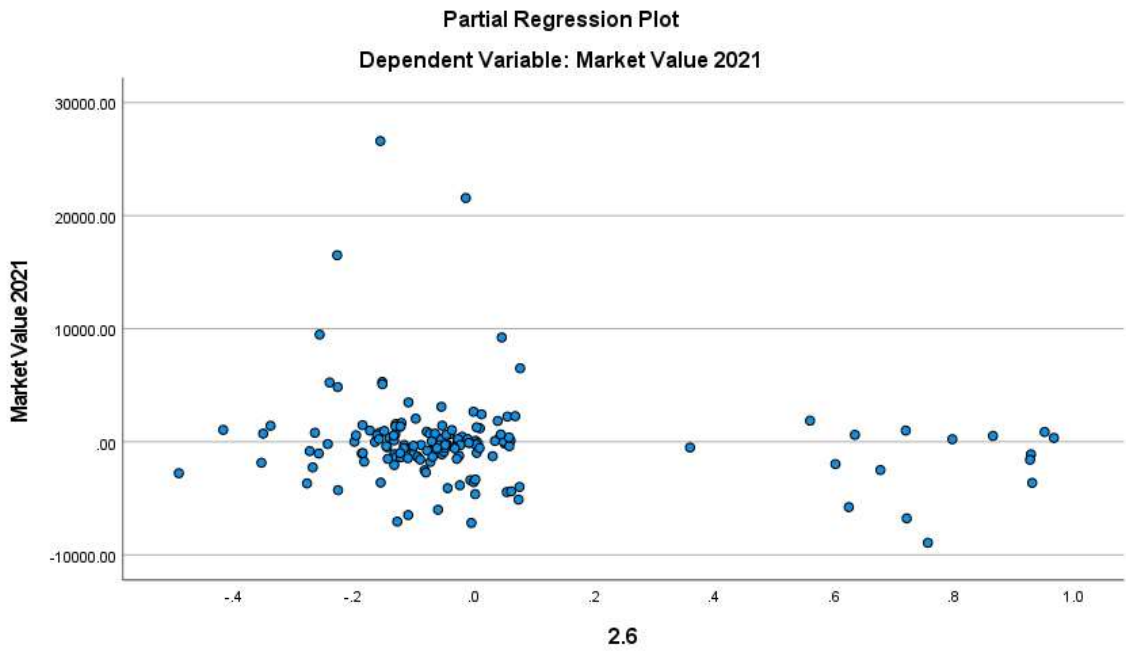
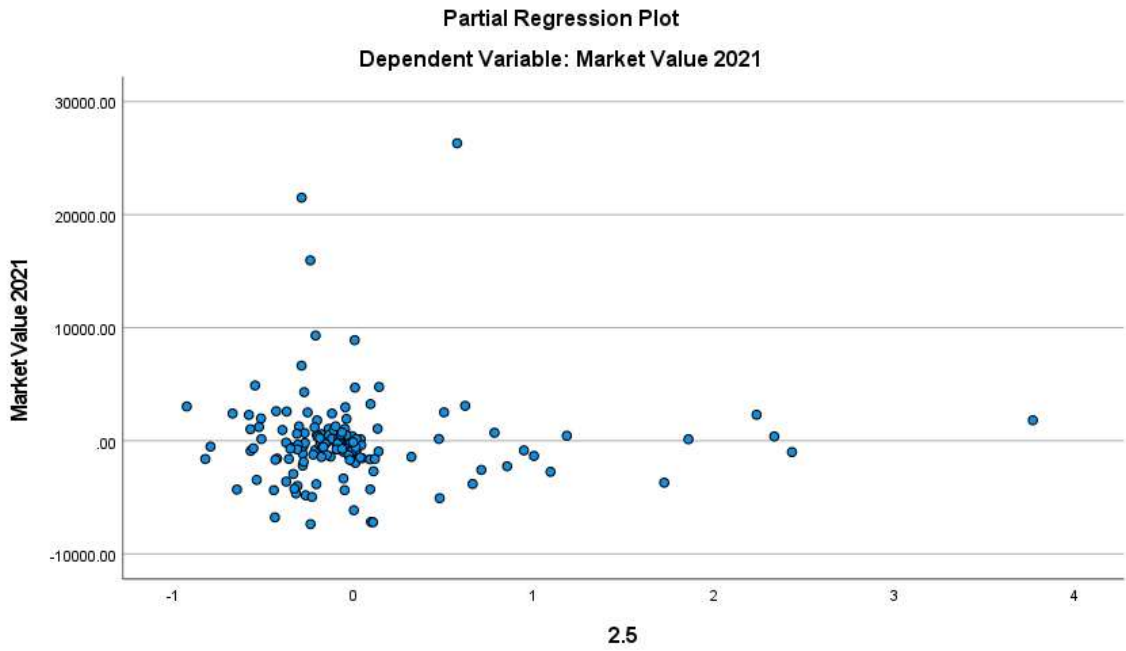


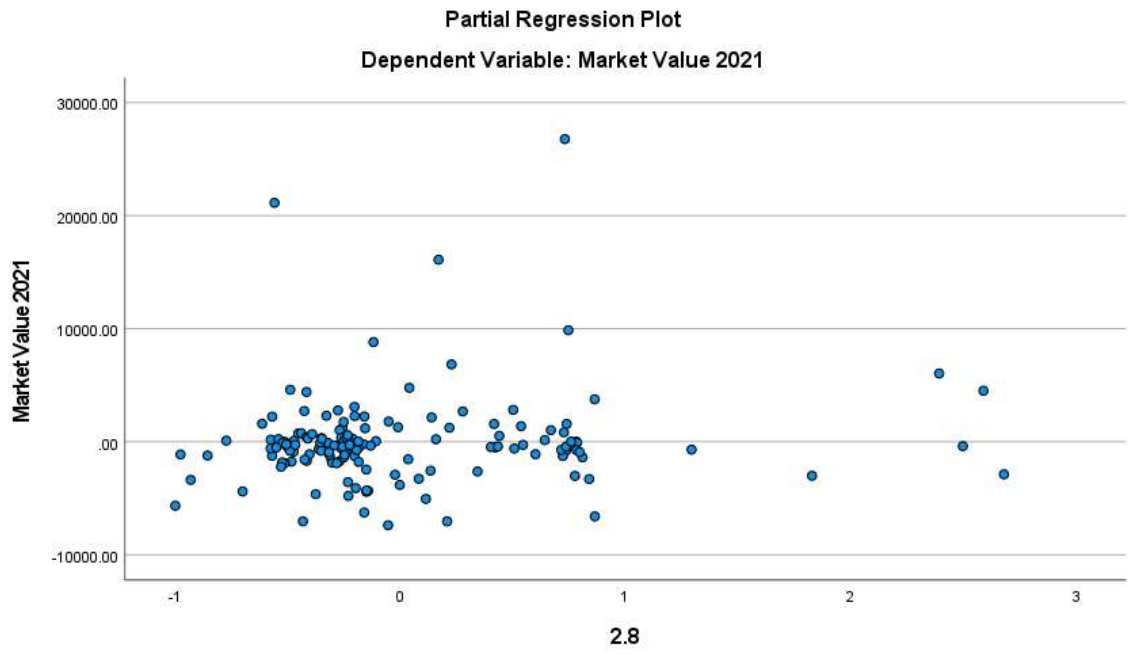
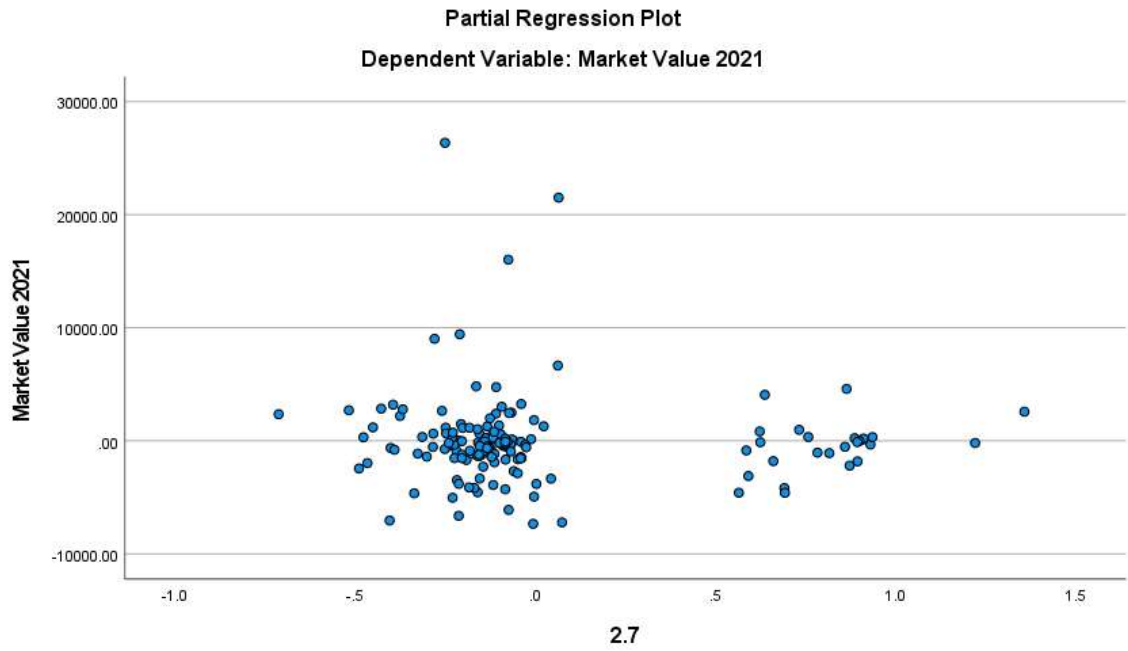


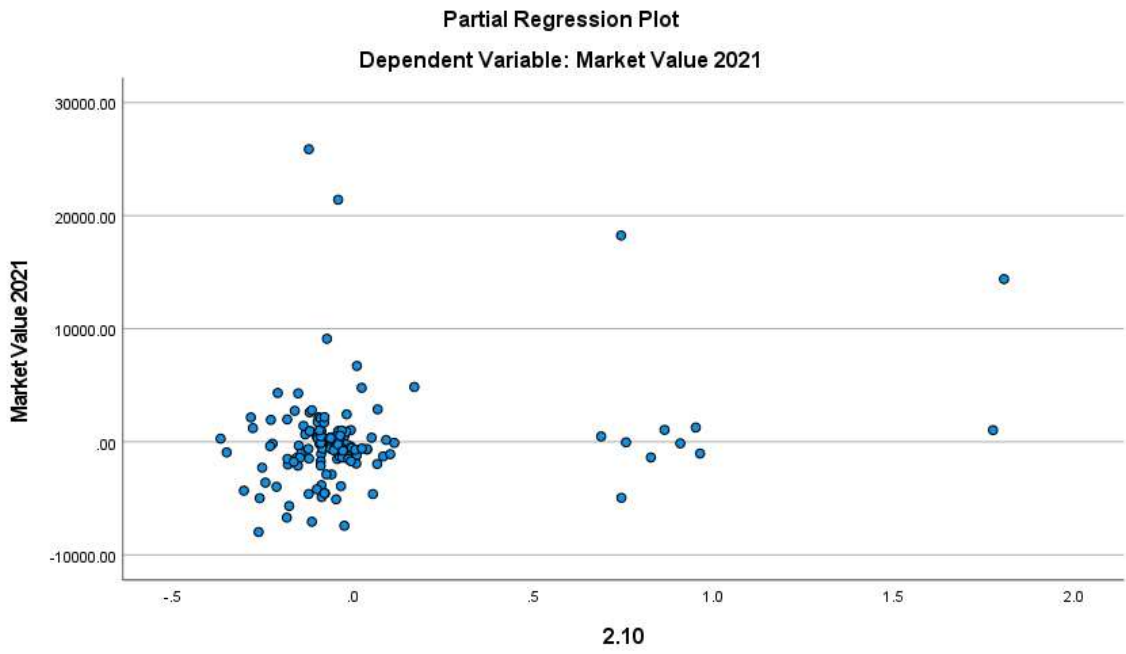
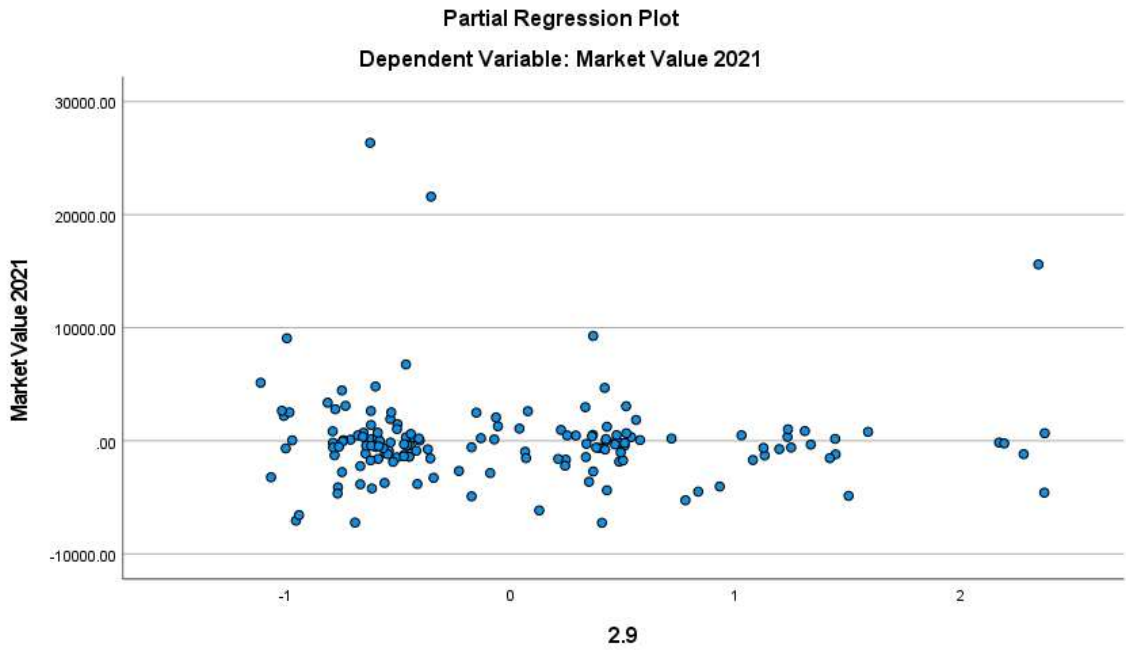


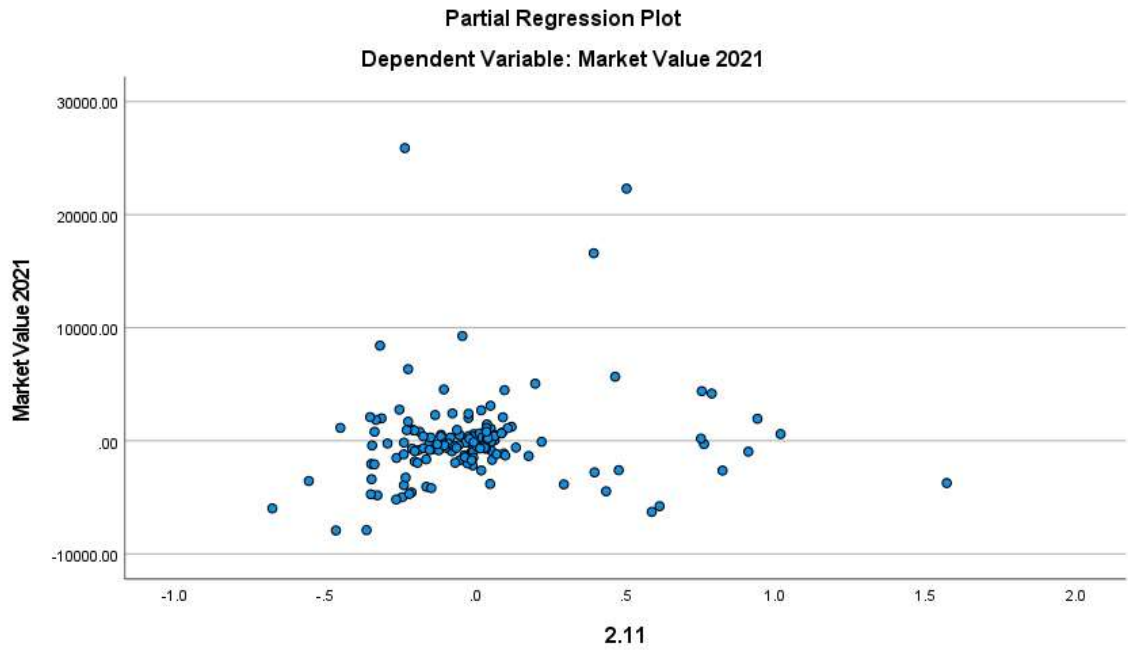












H2a Factor Analysis

The below are the KMO and Bartlett's Test and factor analysis result

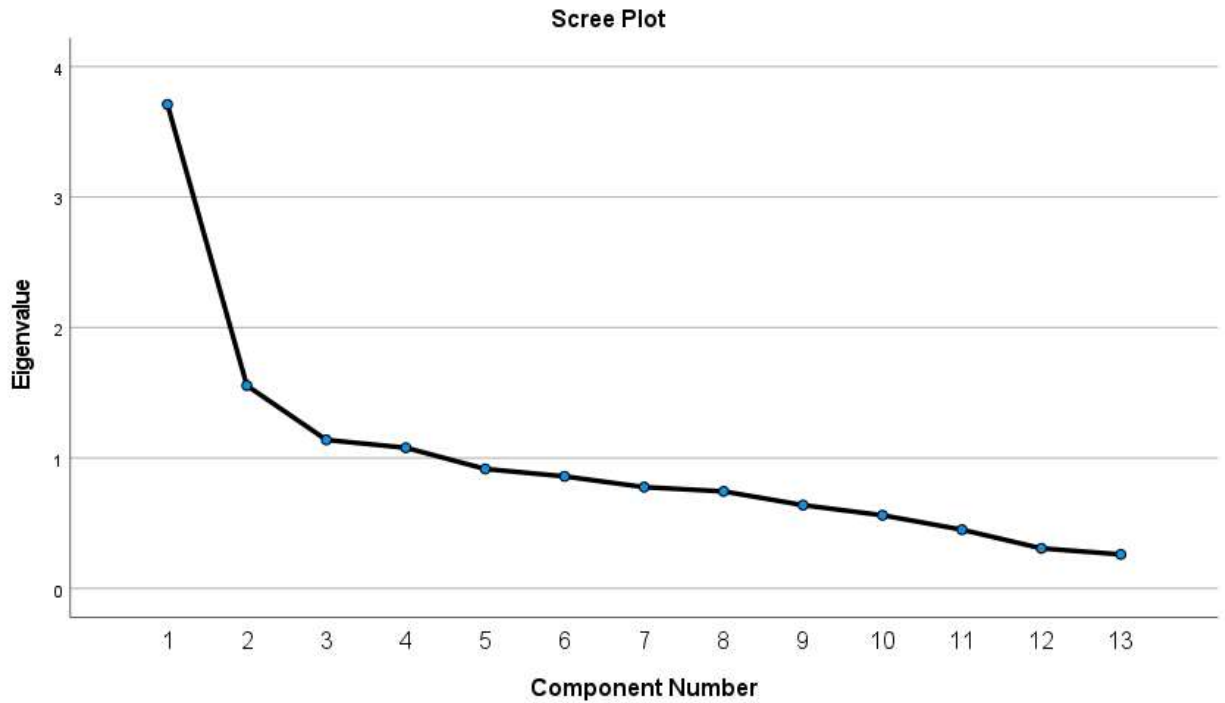
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.787
Bartlett's Test of Sphericity	Approx. Chi-Square	472.198
	df	78
	Sig.	<.001

Communalities		
	Initial	Extraction
2.1.1	1.000	.686
2.1.2	1.000	.641
2.1.3	1.000	.602
2.2	1.000	.542
2.3	1.000	.691
2.4	1.000	.673
2.5	1.000	.580
2.6	1.000	.446
2.7	1.000	.457
2.8	1.000	.594
2.9	1.000	.463
2.10	1.000	.712
2.11	1.000	.395

Extraction Method:
Principal Component
Analysis.

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.711	28.544	28.544	3.711	28.544	28.544	3.524	27.104	27.104
2	1.555	11.964	40.509	1.555	11.964	40.509	1.571	12.086	39.191
3	1.139	8.760	49.269	1.139	8.760	49.269	1.212	9.320	48.511
4	1.079	8.298	57.567	1.079	8.298	57.567	1.177	9.056	57.567
5	.916	7.048	64.616						
6	.859	6.609	71.225						
7	.777	5.978	77.203						
8	.744	5.725	82.928						
9	.639	4.915	87.843						
10	.561	4.317	92.160						
11	.451	3.466	95.625						
12	.308	2.366	97.991						
13	.261	2.009	100.000						

Extraction Method: Principal Component Analysis.



Component Matrix^a
Component

	1	2	3	4
2.1.1	.757	-.324	.090	.022
2.1.2	.785	-.152	-.015	-.032
2.1.3	.564	-.240	-.239	.412
2.2	.722	.084	.084	-.084
2.3	.792	.056	-.028	-.244
2.4	.713	.171	-.180	-.319
2.5	.332	.293	.127	.607
2.6	.233	.605	.159	-.018
2.7	.104	.660	-.076	.065
2.8	.196	.443	-.550	.240
2.9	.050	.401	.319	-.445
2.10	.168	.077	.754	.329
2.11	.548	-.282	.112	-.048

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Rotated Component Matrix^a

	Component			
	1	2	3	4
2.1.1	.778	-.142	-.189	.160
2.1.2	.788	.036	-.123	.066
2.1.3	.493	.113	-.582	.091
2.2	.698	.178	.075	.134
2.3	.805	.163	.123	-.039
2.4	.726	.277	.167	-.204
2.5	.138	.454	-.292	.520
2.6	.126	.517	.342	.215
2.7	-.026	.641	.205	.059
2.8	.060	.684	-.258	-.238
2.9	.078	.125	.662	.059
2.10	.078	-.062	.130	.828
2.11	.586	-.177	-.088	.114

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

Component Transformation Matrix

Component	1	2	3	4
1	.961	.218	-.091	.143
2	-.170	.869	.453	.104
3	.002	-.344	.474	.811
4	-.218	.281	-.750	.558

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

H2a Regression analysis (factors extracted)

The below are the H2a regression analysis (using FA components)

Descriptive Statistics			
	Mean	Std. Deviation	N
Market Value 2021	2023.4775	4928.80528	155
Avg AS Econ	.472043010752688	.332151234503964	155
Avg AS SG	.804692082111436	.388438908584307	155
REGR factor score 1 for analysis 1	.0000000	1.00000000	155
REGR factor score 2 for analysis 1	.0000000	1.00000000	155
REGR factor score 3 for analysis 1	.0000000	1.00000000	155
REGR factor score 4 for analysis 1	.0000000	1.00000000	155

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1, Avg AS Econ, Avg AS SG ^b	.	Enter

a. Dependent Variable: Market Value 2021

b. All requested variables entered.

Whereby,

REGR factor score 1: Regulatory practice

REGR factor score 2: Industry practice

REGR factor score 3: Standard compliance practice

REGR factor score 4: Beyond compliance practice

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.497 ^a	.247	.217	4361.84506	1.939

a. Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1, Avg AS Econ, Avg AS SG

b. Dependent Variable: Market Value 2021

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	925338248.244	6	154223041.374	8.106	<.001 ^b
	Residual	2815802461.434	148	19025692.307		
	Total	3741140709.678	154			

a. Dependent Variable: Market Value 2021

b. Predictors: (Constant), REGR factor score 4 for analysis 1, REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1, Avg AS Econ, Avg AS SG

Model	Coefficients ^a										
	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta				Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	3394.559	991.947		3.422	<.001						
Avg AS Econ	-709.061	1439.643	-.048	-.493	.623	.083	-.040	-.035	.540	1.851	
Avg AS SG	-1287.913	1289.271	-.102	-.999	.319	.145	-.082	-.071	.493	2.030	
REGR factor score 1 for analysis 1	2474.606	436.249	.502	5.672	<.001	.424	.423	.405	.649	1.540	
REGR factor score 2 for analysis 1	-405.611	374.494	-.082	-1.083	.281	-.113	-.089	-.077	.881	1.135	
REGR factor score 3 for analysis 1	-561.212	354.285	-.114	-1.584	.115	-.127	-.129	-.113	.984	1.016	
REGR factor score 4 for analysis 1	877.144	353.927	.178	2.478	.014	.165	.200	.177	.986	1.014	

a. Dependent Variable: Market Value 2021

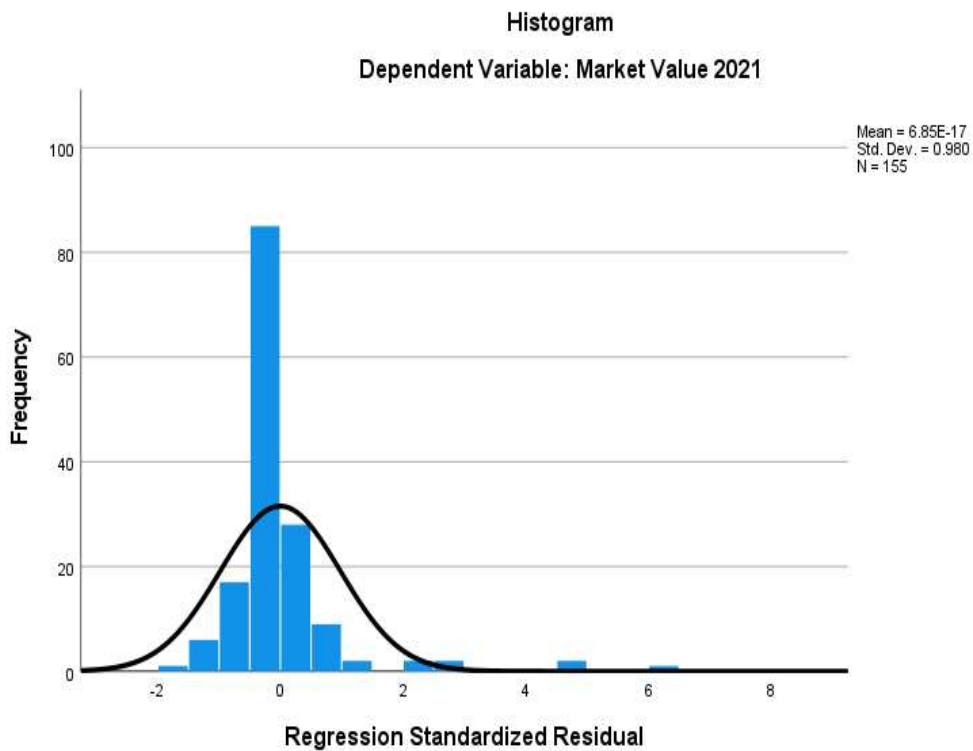
Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions					
					Avg AS Econ	Avg AS SG	REGR factor score 1 for analysis 1	REGR factor score 2 for analysis 1	REGR factor score 3 for analysis 1	REGR factor score 4 for analysis 1
1	1	2.804	1.000	.01	.02	.01	.01	.00	.00	.00
	2	1.008	1.668	.00	.00	.00	.02	.77	.04	.00
	3	1.000	1.674	.00	.00	.00	.28	.00	.51	.02
	4	1.000	1.674	.00	.00	.00	.00	.00	.03	.95
	5	1.000	1.674	.00	.00	.00	.30	.08	.40	.01
	6	.129	4.656	.25	.88	.04	.13	.14	.01	.01
	7	.059	6.915	.72	.10	.95	.26	.01	.01	.01

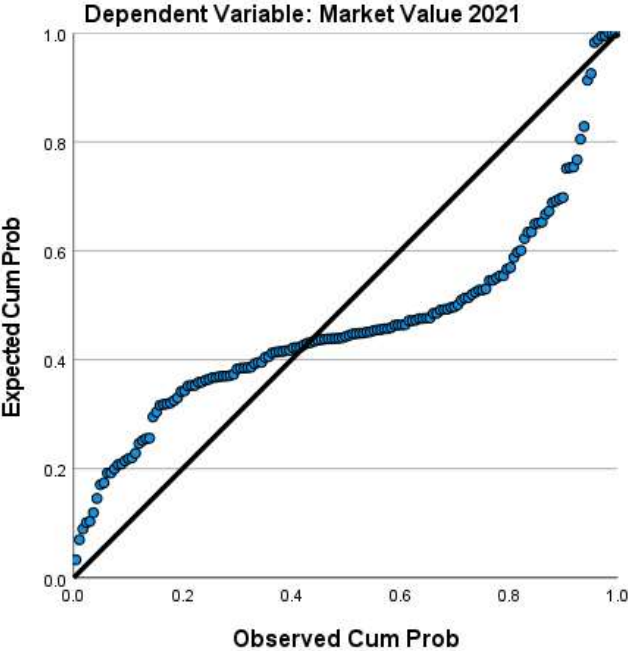
a. Dependent Variable: Market Value 2021

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-2351.6072	11541.5156	2023.4775	2451.26292	155
Residual	-8030.87012	28199.12891	.00000	4276.02988	155
Std. Predicted Value	-1.785	3.883	.000	1.000	155
Std. Residual	-1.841	6.465	.000	.980	155

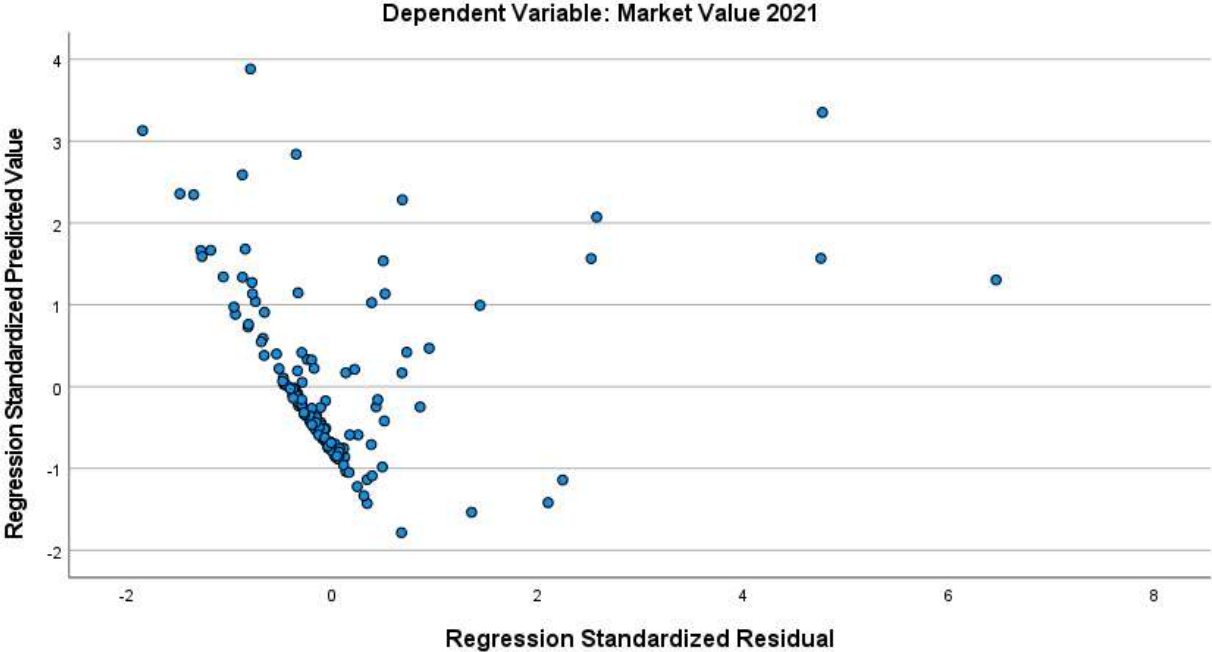
a. Dependent Variable: Market Value 2021

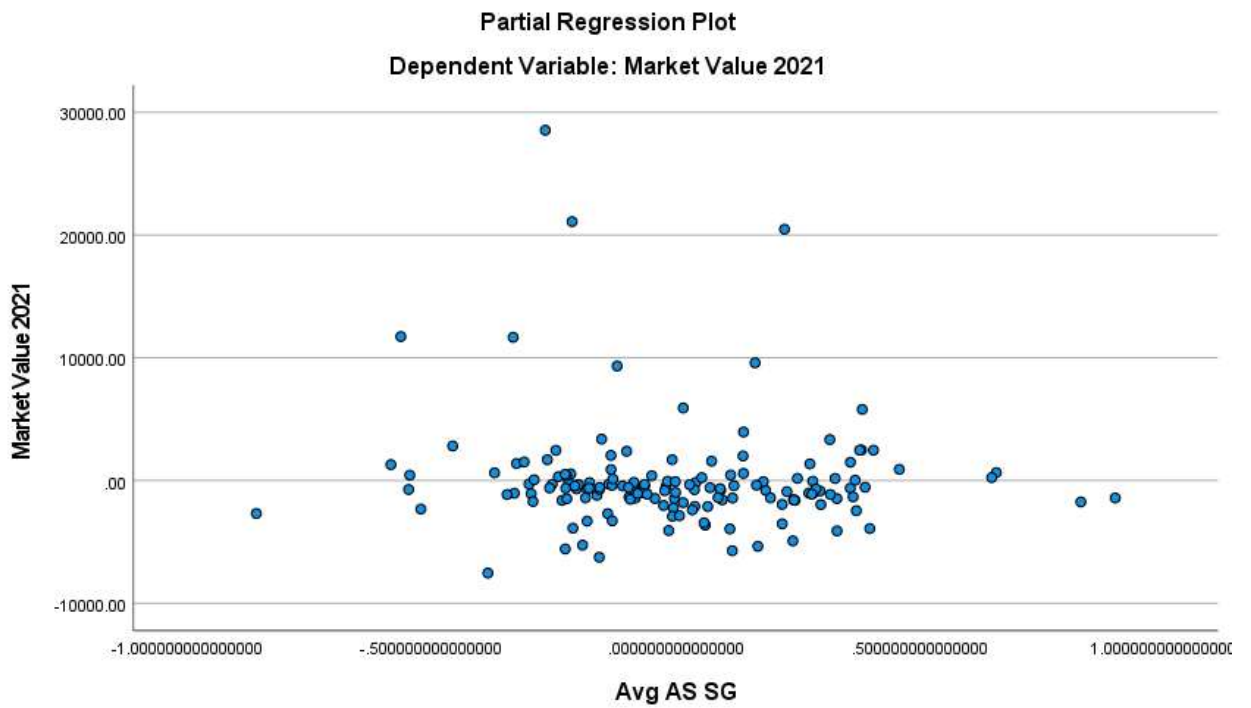
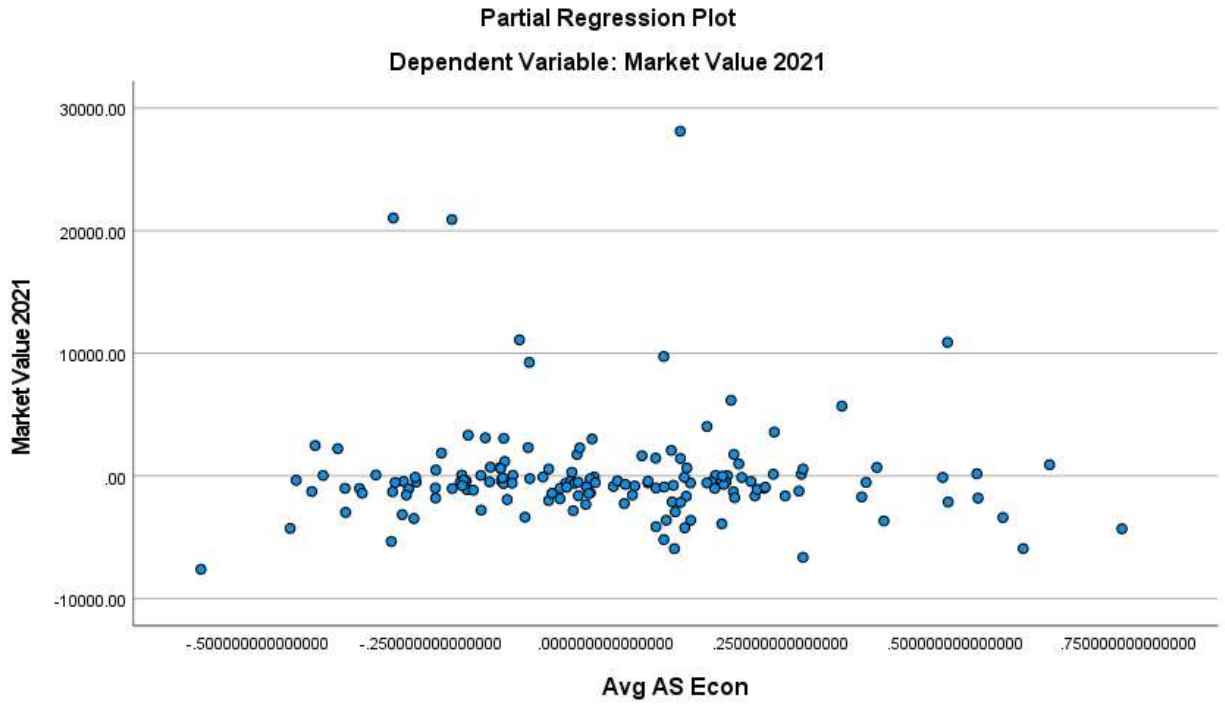


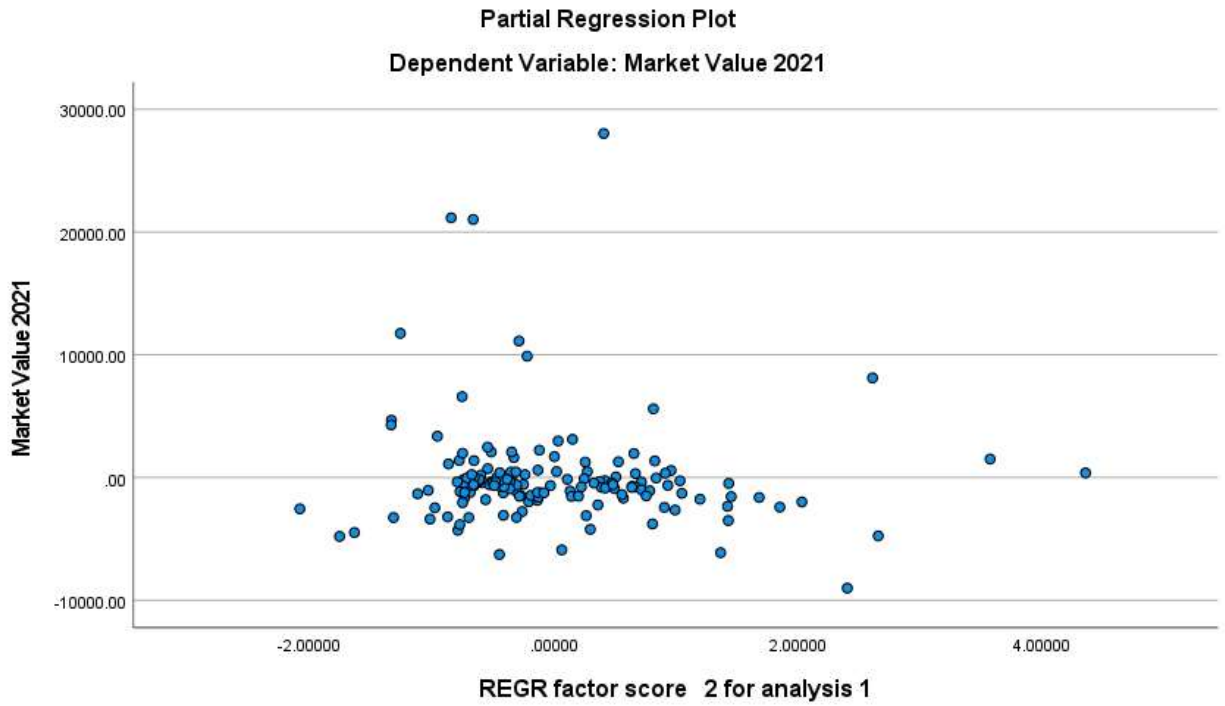
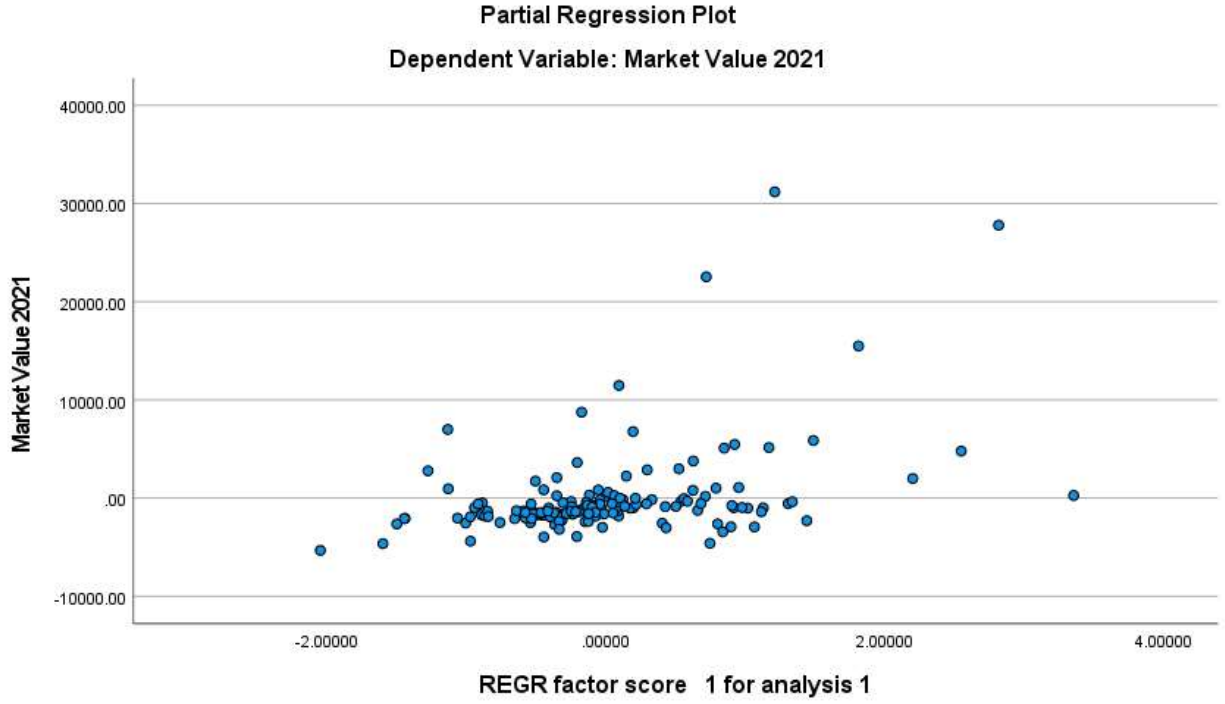
Normal P-P Plot of Regression Standardized Residual

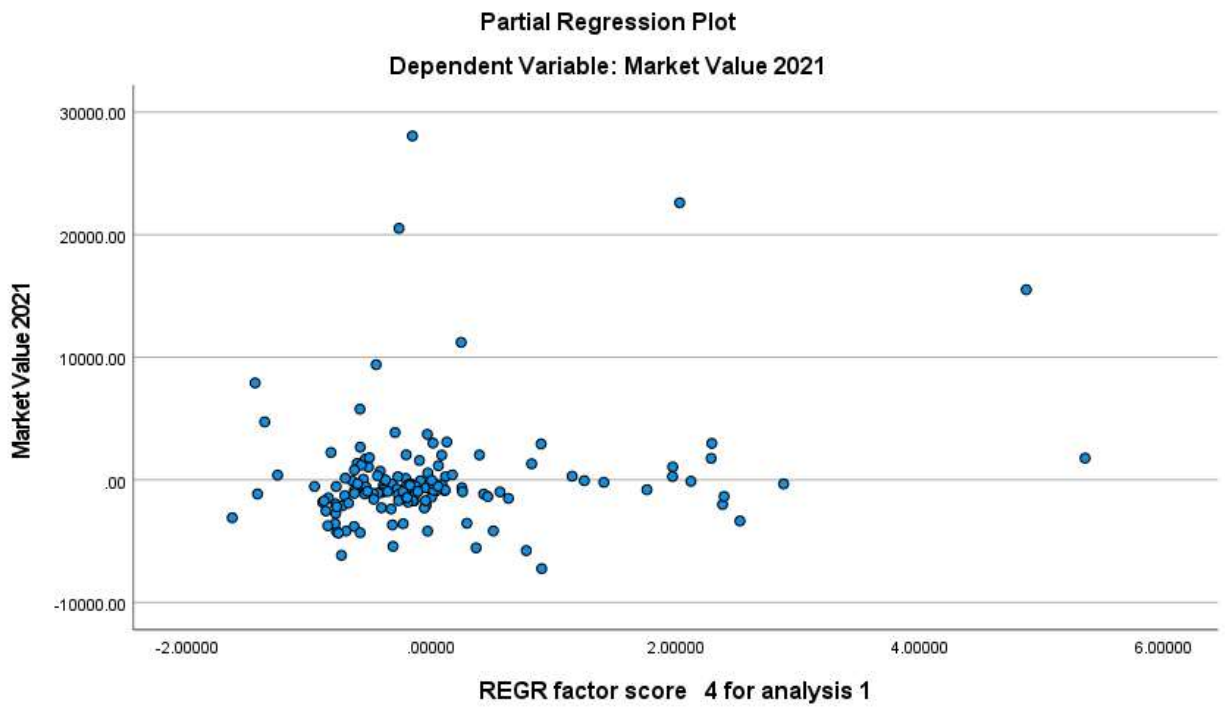
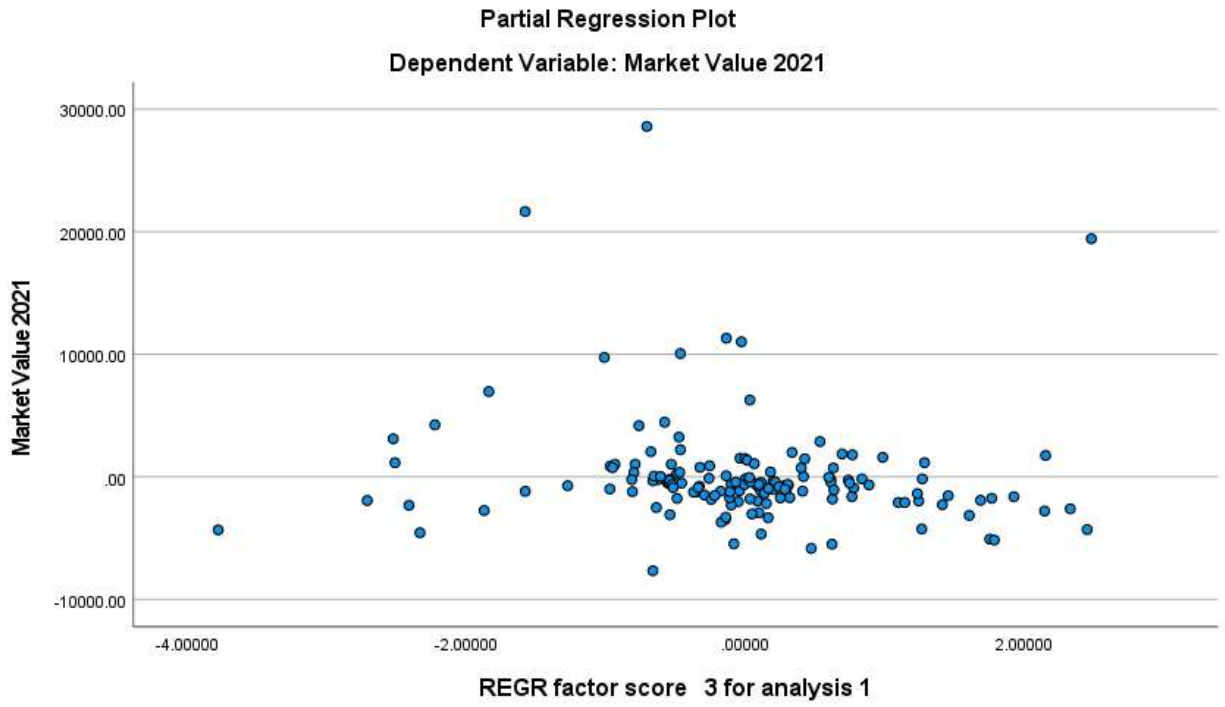


Scatterplot









Appendix 8 Full SPSS output for H3

The below are the H3 Full analysis output

H3a results:

Group Statistics					
	Stakeholder engagement	N	Mean	Std. Deviation	Std. Error Mean
Avg As ENV	1	117	.713120213120	.545971179228	.050475053375
			213	383	217
	0	38	.386876281613	.302690680419	.049102912340
			124	179	637

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Avg As ENV	Equal variances assumed	15.224	<.001	3.508	153	<.001	<.001	.326243931 507089	.093012893 965555	.14248855 9018170	.50999930 3996008
	Equal variances not assumed			4.633	115.405	<.001	<.001	.326243931 507089	.070418939 310127	.18676277 3924554	.46572508 9089624

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Avg As ENV	Cohen's d	.498152182223 312	.655	.281	1.027
	Hedges' correction	.500610844810 355	.652	.279	1.022
	Glass's delta	.302690680419 179	1.078	.632	1.513

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

H3b results:

		Group Statistics			
Target setting		N	Mean	Std. Deviation	Std. Error Mean
Avg. As ENV	1	5	1.59350649350	.813058583630	.363610852537
			6494	300	410
	0	150	.601125541125	.474951514005	.038779628729
			541	460	190

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	Lower	Upper
						One-Sided p	Two-Sided p				
Avg. As ENV	Equal variances assumed	3.261	.073	4.484	153	<.001	<.001	.9923809523 80953	.2212975299 00248	.5551876955 75539	1.4295742 09186367
	Equal variances not assumed			2.714	4.091	.026	.052	.9923809523 80953	.3656729572 81990	-.0139979841 26650	1.9987598 88888556

Independent Samples Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Avg As ENV	Cohen's d	.486789664818 345	2.039	1.116	2.955
	Hedges' correction	.489192246959 622	2.029	1.110	2.941
	Glass's delta	.474951514005 460	2.089	1.164	3.008

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

H3c results:

Descriptive Statistics

	Mean	Std. Deviation	N
Target setting	.03	.177	155
Stakeholder engagement	.75	.432	155

Correlations

		Target setting	Stakeholder engagement
Target setting	Pearson Correlation	1	.104
	Sig. (2-tailed)		.198
	N	155	155
Stakeholder engagement	Pearson Correlation	.104	1
	Sig. (2-tailed)	.198	
	N	155	155

Appendix 9 Test of normality

The below are the normality of data test result

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Avg AS Econ	.184	155	<.001	.923	155	<.001
Avg AS ENV	.171	155	<.001	.884	155	<.001
Avg AS SG	.119	155	<.001	.959	155	<.001

a. Lilliefors Significance Correction

Test of Normality for Economic, Environmental and Social Governance variables. Null hypothesis of normality test was rejected for all variables at 5% significance level. The data collected is not normally distributed as all data are collected in ordinal measurement.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.257	155	<.001	.657	155	<.001

a. Lilliefors Significance Correction

Test of Normality for residual (model 1). Null hypothesis of normality test was rejected at 5% significance level. The residual is not normally distributed as data are collected in ordinal measurement.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.205	155	<.001	.702	155	<.001

a. Lilliefors Significance Correction

Test of Normality for residual (model 2). Null hypothesis of normality test was rejected at 5% significance level. The residual is not normally distributed as data are collected in ordinal measurement.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
2.1.1	.412	155	<.001	.631	155	<.001
2.1.2	.441	155	<.001	.614	155	<.001
2.1.3	.538	155	<.001	.252	155	<.001
2.2	.298	155	<.001	.857	155	<.001
2.3	.268	155	<.001	.785	155	<.001
2.4	.251	155	<.001	.877	155	<.001
2.5	.477	155	<.001	.447	155	<.001
2.6	.529	155	<.001	.348	155	<.001
2.6.1	.	155	.	.	155	.
2.7	.499	155	<.001	.466	155	<.001
2.8	.417	155	<.001	.581	155	<.001
2.9	.317	155	<.001	.756	155	<.001
2.10	.532	155	<.001	.280	155	<.001
2.11	.515	155	<.001	.414	155	<.001

a. Lilliefors Significance Correction

Test of Normality for Environmental Performance variables. Null hypothesis of normality test was rejected for all variables at 5% significance level. The data collected is not normally distributed as all data are collected in ordinal measurement.

Appendix 10 Number of companies that attempted category 2.11 in each industry

Type of Industry	No. of Company
Construction	1
Consumer Product and Service	12
Energy	2
Financial Service	6
Health Care	3
Industrial Product and Service	9
Plantation	6
Property	2
REIT	1
Transportation and Logistic service	4
Technology	4
Telecommunication and Media	1
Utilities	2
Total	53