EMBARKING ON THE SUSTAINABLE JOURNEY WITH CORPORATE GOVERNANCE

CHAI KER LI

CHOI KEE FONG

KEU LIAN WEN

KHOO WEI CHIN

LILY LOO

BACHELOR OF BUSINESS ADMINISTRATION
(HONS) BANKING AND FINANCE

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE

DEPARTMENT OF BANKING AND RISK MANAGEMENT

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BY

CHAI KER LI
CHOI KEE FONG
KEU LIAN WEN
KHOO WEI CHIN
LILY LOO

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DECLARATION

We hereby declare that:

(1) This undergraduate FYP is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the FYP.

(4) The word count of this research report is 22889 words.

Name of Student:	Student ID:	Signature:
1. Chai Ker Li	19ABB03141	
2. Choi Kee Fong	19ABB02380	
3. Keu Lian Wen	19ABB01791	
4. Khoo Wei Chin	20ABB01181	
5. Lily Loo	20ABB01484	

Date: 20 April 2023

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LIST OF ABBREVIATIONS

AC	Audit Committee
AQ	Audit Quality
ASEAN	The Association of Southeast Asian Nations
BI	Board Independence
BS	Board Size
CEO	Chief executive officer
CEOTE	CEO Tenure
CSR	corporate social responsibility
ECO	Economic sustainability
ENVIR	Environmental sustainability
ESG	Environmental, Social, and Governance
FEMALE	Female Board of Director
GDP	Gross Domestic Product
INFLA	Inflation Rate
LL	Leverage Level
MI	Marketing Intensity
OE	Operating Expenses
SDG	Sustainability Development Goals
SOCIAL	Social Sustainability
STATA	Statistical Software
UNEP-FI	United Nations Environment Programme Finance Initiative

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PREFACE

UBFZ3026 Research Project is submitted as a partial fulfilment of the requirement for the graduate student of Bachelor of Business Administration (Hons) Banking and Finance in Universiti Tunku Abdul Rahman (UTAR). This research paper is supervised by Mr. Cheah Chee Keong. The research is titled “Embarking on the Sustainable Journey with Corporate Governance”. The final year project was accomplished entirely by the authors themselves, with the assistance of cited external research and resources.

In the current era of globalization, sustainability has emerged as a critical issue of global concern, warranting heightened attention from stakeholders across diverse sectors. The authors believe that banking sector has a significant role to play in contributing to sustainable development goal. Against this backdrop, the authors wish to engage in the subject of the research study to explores the relationship between corporate governance practices in the banking industry and their impact on sustainability. The independent variables chosen are categorized into CEO power, board structure, audit, bank control, and economic factors. The study would like to generate a substantial contribution to the future studies on bank sustainability.

ABSTRACT

This research is aimed to investigate the relationship between corporate governance and sustainability of conventional banks among six ASEAN countries. The study examines the effect of corporate governance on sustainability by including the independent variables of CEO power, board structure, audit, firm control and economic. This research project's target sample consists of conventional banks within ASEAN countries which are Malaysia, Singapore, Vietnam, Indonesia, Philippines, and Thailand with a total number of 440 observations. Data from 2014 to 2021 are collected and analysed through various tests using STATA. The research project concluded that the independent variable has a significant impact on economic sustainability, followed by social sustainability, while environmental sustainability has no strong direct relationship with the independent variable. The study includes several limitations and suggestions to give better ideas for future studies and even conventional banks in ASEAN to improve the sustainability development goal and corporate governance framework.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The research delves into the overview of banking sustainability and corporate governance. Also, the chapter will establish the contemporary research problems, research objectives, and pertinent research questions for the present research. The concluding section will highlight the significance of the research to the concerned parties.

1.1 Research Background

Nowadays, the commitment to sustainable development and the adoption of sustainability challenges is crucial in the globally competitive economy. Sustainability refers to a diverse and demanding policy goal, which comprises three dimensions: economic, environmental, and social that are equally important (Spangenberg & Bonniot, 1998). In the 20th century, the changing in the environment moderate people to reconsider the growth towards sustainability. However, the mitigation of these issues is subject to global change as single-party changes might not be able to achieve sustainability. Thus, the United Nations set up Sustainability Development Goals (SDGs) to alleviate poverty, safeguard the planet, and achieve peace and prosperity by the end of 2030. The banking industry is a fundamental driver of the economy that undergoing fundamental changes such as market liberalism, stakeholder expectation, and environmental risk. Consequently, these changes can lead to a competitive and regulatory landscape in the financial services industry. Thus, banks must seek a way to improve banking business sustainability while monitoring regulatory changes.

According to Brundtland (1987), the United Nations Conference was conducted in discussing the environmental impact of human activities and economic development. The concept of sustainability was introduced and popularised in

Brundtland Report 1987 titled "Our Common Future", sustainability refers to "ability to meet needs of current generation's demand without compromising the ability of future generation to meet future needs" (Brundtland, 1987). The United Nations Conference on Environment and Development convened to develop plans and strategies for sustainable development (Whitfield, 2015). Since then, the sustainable development became one of the solutions to address environmental degradation. Thereafter, the United Nations has established numerous programs, organisations, and international agreements aimed at achieving global sustainable development.

Countries around the globe have made positive changes to protect the environment by focusing on sustainability. Most studies found that the rising threat of climate change and global pandemic issues cause the sustainability trend to escalate fast as people were more concerned about environmental issues (Newell & Dale, 2020; Selmi, Makhlouf, Kasmaoui, Errami, & Atta, 2022). The demand for sustainable products has risen, which was evidenced in 2021 research performed by World Wildlife Fund across 54 nations, revealing that the popularity of online searches for sustainable items has surged by a startling 71% in only five years (World Wildlife Fund, 2021). Moreover, there is a trend for several industries moving towards sustainable approach including recycling resources as a prototype for production and consumption. This practice can ensure a circular economy and sufficient resources such as food, water, energy, and prosperity available for future generations (Halog & Anieke, 2021). Besides, the ESG investments become important as they could bring long-lasting impacts on the environment. Furthermore, the European Union's 27 member states also contribute to net zero (climate-positive and carbon-negative) to reduce the net emissions through effort-sharing negotiations of the 2030 climate ambition (Steininger, Williges, Meyer, Maczek, & Riahi, 2022).

Moreover, those countries that score higher for total progress toward achieving all 17 SDGs are mostly Europe countries (Sustainable Development Report, 2022). According to Organisation for Economic Cooperation and Development (2014), although ASEAN has rapid economic growth, but its growth model is mostly attributed to unsustainable natural resource extraction, which causes significant environmental destruction. ASEAN lag in sustainable development because of the

challenges such as poverty, economic disparity, ecological footprint, urban pollution, and inter-country environmental cause difficult in developing the sustainability. The results from there are approximately 33% of the ASEAN population faced challenges in obtaining education, health care, and technology. Furthermore, extreme poverty exists in nations like Myanmar, Laos, Cambodia, and Vietnam, Brunei, and Singapore are dealing with growing inequality, a lack of governance, and a high frequency of natural disasters (Sadeka, Mohamad, & Sarkar, 2018). Thus, it is necessary to implement the strategy for further green growth.

Across the globe, all countries are working towards a greener environment. To thrive in financial and banking businesses that are competitive and stakeholder-pressured, the banks must strive to approach sustainability. In this context, Bhattacharya and Sen (2004) and Coupland (2006) found that banks throughout the world have faced significant pressure from their different stakeholders, prompting them to conduct their operations in a more responsible and ethical manner. The bank as a fundamental of the economy providing credit and allocating investment capital plays a vital role in mitigating those sustainability risks. Roy, Sarker, and Parvez (2015) further demonstrated that the banking industry occupies a unique position in terms of sustainable development due to its role as an intermediary between depositors and borrowers. Raut, Naoufel, and Kharat (2017) resonated with these circumstances which discovered that banks play a significant role in society and have greater product participation. At the same time, the banks advocate the economy grow and become more resilient to sustainability challenges (Alexander & Fisher, 2018). The growing knowledge and demand for sustainability, as well as greater social and environmental responsibility, will enable banks to recognise the importance of sustainable development in producing banking value in the future.

According to the United Nations Environment Programme (n.d.), United Nations Environment Programme Finance Initiative (UNEP-FI) is an alliance established by the UNEP and the global financial industry, which aims foster sustainable financing practices worldwide. This initiative has involved more than 200 members from both developed and developing nations, including banks, insurers, investors, collaborates to comprehend the present-day environmental, social, and governance

(ESG) issues. They work together to understand why ESG matters, and how to overcome the issues to attain sustainability goals.

Over the years, corporate governance become prominent following the financial scandals that resulted from the deficiency of transparency and accountability in governance (Babalola & Adedipe, 2014). Corporate governance refers to internal business arrangements that manipulate the relationships between management and shareholders (Adenikinju, 2012). According to a study by Naciti, Cesaroni, and Pulejo (2021), corporate governance includes relevant rules, decision-making processes, pathways to accomplish corporate objectives. Corporate governance is imperative to banks in pursuing sustainable banking since proper corporate governance is necessary for effective bank oversight for sustainability (Babalola & Adedipe, 2014). Governance is broadly employed in monitoring corporate activities related to society and the environment (Naciti et al., 2021). Thus, effective corporate governance is essential to ensure that banks implement sustainable practices and contributes to achieving the SDGs.

Collectively, the bank corporate governance is essential in achieving a balance between stakeholder value maximization as well as sustainable banking performance's issues (Fakoya & Nakeng, 2019). This is because internal governance determines whose best interest should a bank serve (Elkington, 2006). According to Hussain, Rigoni, and Orij (2018), proper governance in banks focusing on long-term sustainability can lead to sustainable performance. This involves economic, environmental, and social pillars. The ASEAN banks should prioritise the sustainability and give equal weight to these three dimensions. It shows that corporate governance structures play vital role in achieving the sustainability performance of banks.

1.2 Research Problem

In recent years, ASEAN's banks encounter difficulty in achieving profitable sustainability. This issue has resulted in several banks failures and crises in the

banking industry, raising questions about the causes of the issue. Banks act an important role in providing financial services to the public, and banks are not immune to failure. The lack of the ability to generate profit led to bank collapse. This issue happens because of the inability to satisfy the financial obligations or fulfil the regulatory capital requirements by the Central Bank. Bank failure brings significant consequences for the economy and public such as economic instability, reputation, damage, and systematic risk. When one bank failure can result in systemic risk to the entire banking industry if there is a relationship with other banks (Fan & Liu, 2021). This results in a loss of reputation, the confidence of the bank, and lower consumer spending causing a recession. The study by Man and Wong (2013) indicated that the reason for unsustainable profit is the poor corporate governance of a bank in managing and monitoring profitability.

Poor corporate governance is one of the encumbrances in the ASEAN bank, resulting in a low-profit sustainability achievement. This statement was justified by Darrat, Gray, Park, and Wu (2016), the poor corporate governance acted as the red flag for the bank's bankruptcy. Also, financial difficulty and insolvency are more likely to occur when there is a weak capital composition and the absence of sound corporate governance in bank. Besides, Coles, Daniel, and Naveen (2008) stated that the risk of bankruptcy can be reduced when the banks have better corporate governance monitoring. Research by Kanojia and Bindra (2018) also indicated that board characteristics help to oversee the sustainable practices in bank. The absence of strong corporate governance causes decision-making less transparency and accountability. This is because the banks may take excessive risk, engage in illegal activities, and have poor decision-making when the management and the board of directors fail to discharge their duties responsibly. Accordingly, it led to the ineffectiveness of banking, corruption, and, eventually, huge monetary losses.

According to Cox (2020), 1 Malaysia Development Berhad (1MDB) was first established in 2009 with the goal of financing both development projects and other business-related transactions in Malaysia. Palma (2019) stated that Najib Razak had transferred about $681 million into his AmBank personal account from the 1MDB bank account through various types of transactions. AmBank declared that there were inefficiencies in their reporting procedures and a lack of expertise in their

employees. This has resulted that the poor corporate governance of AmBank leading to banks engaged in illegal activity and experiencing huge losses (Ellis, 2020). Moreover, Silicon Valley Bank (SVB), a prominent financial institution for software entrepreneurs, failed owing to a $2 billion loss and had a bank run. The bank profit cannot sustain drove the collapse of Silicon Valley Bans, and corporate governance incentives played a part in heightening the danger of runs. The failure emphasises the significance of counterparty risk management and crisis management communication for businesses. Board members should ensure that the business is balancing asset allocation and preventing over-concentration in a single bank (Atkins, 2023; Listokin, 2023).

To deal with this issue, ASEAN banks should strengthen their governance structure in order to sustain profitability. Ruwanti, Chandrarin, and Assih (2019) stated that banks can enhance corporate governance to develop transparency management, reduce financial risk, and improve profitability. ASEAN banks encourage the development of a strong corporate culture as a strong corporate culture develops effective corporate governance and minimises the risk of collapse. Also, the implementation of standard practices and guidelines by banks for corporate governance can increase financial management and compliance with regulatory requirements. Despite that, there is a research gap where to the lack of a comprehensive review the correlation between corporate governance affects ASEAN bank profitability. There are studies that investigated part of governance's role in contributing to the profitability level of ASEAN banks (Al- Jaifi, 2020; Hunjra, Hanif, Mehmood, & Nguyen, 2021). To fill up the gap, this study has a comprehensive review of the corporate governance factors influencing bank economic sustainability in ASEAN countries.

Next, climate change is an environmental issue in the world including ASEAN. Climate change is mainly derived from human activities due to rapid development. As evidence, Wheeler and Von Braun (2013) stated that shifts in land usage and carbon emissions including the release of carbon dioxide and methane from human activities can alter climate change. It disrupts the equilibrium of ecosystems and influences the climate. Varrall (2020) stated that the effects of climate change have a significant influence on ASEAN's local sustainable growth issues. Owing to

climate change, reduced rain, and increasing ocean levels, the major sources of income derived from agriculture and natural resources are facing danger.

Banks provide a big impact on the environment and are essential to sustain the world financial system. Besides that, banks finance several businesses, including the use of fossil fuels, which is a significant cause of climate change. Since the Paris Agreement was signed in 2016, the largest banks in the world have financed the fossil fuels industry more than $3.8 trillion (Rainforest Action Network, 2021). This can demonstrate that the banks provide a significant contribution to climate change. Finance for climate-related businesses may expand when climate change issues receive more attention. Furthermore, growing pressure on banks to adopt sustainable practices could result in a decline in funding for projects that negatively impact the environment, for example, the construction industry that brings pollution. By addressing the climate change issues, the banks can protect their existing financing projects and minimize the consequences of natural disasters. For example, decreased flooding will result in less harm to the value of existing houses and a decline in financial losses. A strong governance framework that considers the risks related to climate change and offers instructions on how to manage these risks must be in place for banks.

Green finance can reduce the climate change issue in ASEAN banking. It refers to finance that supports environmentally friendly projects. It is an approach of granting funds towards sustainable practices, thus promoting sustainable economic growth while mitigating global climate effects (Mohd & Kaushal, 2018). According to Azhgaliyeva, Kapoor, and Liu (2020), in ASEAN, green finance initiatives are currently in the early development stage and have significant obstacles to overcome. Tao and Jindal (2018) indicated that for Singapore, although lack of consciousness could be one of the factors, the biggest obstacle would be the challenge of turning consciousness into action to implement green finance. Volz (2018) stated that the absence of professionals in evaluating climate change and environmental issues in the financial sectors is also the obstacles to the implementation of green finance.

However, poor governance and low awareness of sustainability issue are the main barriers to accomplishing environmental sustainability. This scenario has led to

insufficient risk management and disclosure of environmental risks (Ghalib, 2018). ASEAN banks have lesser monitory and supervision of environmental sustainability practices. A strong corporate governance is important to make sure the banks will concern the environmental issues during decision-making. It is because the banks may provide funding for damaging environmental activities such as deforestation due to inadequate governance. According to Rainforest Action Network (RAN) report (2019), it indicated that Singaporean banks such as DBS Bank, OCBC, and UOB have contributed to environmentally damaging activities such as deforestation and coal mining. Due to the poor corporate governance does not help the banks in making better decision to enhance the environmental sustainability. Therefore, it is important for ASEAN banks to develop strong corporate governance practices to clarify and reduce environmental risks as well as promote sustainable practices.

In this case, the banks should ensure that business operations are in the right direction by developing transparent and standard regulations to encourage the transparency and accountability of the banking system. To tackle the research gap in adopting green finance practices in promoting environmental sustainability, the present research will explore the governance issues in the ASEAN banks.

Besides, the reduction of employee welfare is one of the pressing issues in ASEAN banks from a social perspective. The issue of diminishing employee benefits, remuneration, and overtime compensation has occurred in various sectors including the financial services sector (Sija, 2021). Moreover, inadequate compensation, unpleasant working circumstances and low recognition for new initiatives issues are prevailing in the public sector of some ASEAN countries such as Vietnam and Cambodia (Apriliyanti, Kusumasari, Pramusinto, & Setianto, 2021). However, the private sector including the banking sector will provide lesser employee welfare as the bank emphasises financial goals in the short-term rather than investment in the long-term comprising employee benefits. The possible cause of diminishing employee welfare could be the bank intends to save costs for survival from aggressive competition thus the bank is unwilling to invest in employee welfare (Kadir, Hussin, & Hashim, 2019). The problem of employee welfare in the ASEAN

banks leads to a high turnover rate, poor job satisfaction, and low motivation among employees. This leads to a poor bank's social sustainability.

Furthermore, workplace stress and tension are more likely to take place when employers deprive the entitlement of the employees to welfare benefits (Odeku & Odeku, 2014). The cut-off of employee welfare will demotivate the employee and reduce employee job satisfaction which ultimately leads to a shrink in productivity. The worst outcome could be the turnover of employees increases. These situations will constitute a profit reduction for the bank due to decreasing competitiveness. The statement could be justified by Lasut (2018) that stated the performance of the bank highly rely on employee performance which is affected by employee welfare. Employee welfare acted as one of the crucial factors that should be considered during the sustainability practice of ASEAN bank from a social perspective (Das, Rangarajan, & Dutta, 2020). Apart from that, the current initiatives to mitigate the inadequate welfare issue entail the offering employee a reasonable compensation package and the provision of proper training related to employee responsibility to enhance employee competency (Sija, 2021; Fajriah, Muis, Yanti, & Halim, 2021).

Nevertheless, the current alternative is insufficient to promote social sustainability due to the poor corporate governance in ASEAN banks. The poor corporate governance will result in weak engagement between employees and banks. The banks are unable to satisfy the needs of employees which will affect the long-term survival of the bank (Fakoya & Nakeng, 2019). Consequently, the ASEAN bank will fail to exploit a long-term competitive advantage over rivals. Without effective corporate governance structures, ASEAN banks have negative consequences on social sustainability from employee perspectives. To fulfil the research gap, the study will examine how corporate governance influences will employee welfare and assist social sustainability achievement.

1.3 Research Objectives

1.3.1 General Objective

The study aims to investigate the correlation between corporate governance and ASEAN banks' sustainability. The six ASEAN countries comprise Malaysia, Singapore, Vietnam, Indonesia, Philippines, and Thailand.

1.3.2 Specific Objectives

The outlined goals of this study are:

1) To evaluate the interaction between CEO power and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

2) To investigate the correlation between board structure and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

3) To determine the link between audit and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

4) To analyse the association between bank control and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

5) To inspect the relationship between the economic and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

1.4 Research Questions

1) What is the relationship between CEO power and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries?

2) What is the relationship between board structure and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries?

3) What is the relationship between audit and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries?

4) What is the relationship between bank control and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries?

5) What is the relationship between the economic and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries?

1.5 Research Significance

The banking industry, policymaker, and investor will gain insight from this research.

1.5.1 Banking Industry

The present study is significant for the banking industry to reshape its role and responsibility in sustainability. The sustainability measure of banks will be enhanced as the banks will have a more comprehensive understanding of the sustainability issue and action could be taken under this study. Sustainable banking is indispensable in ameliorating people's lives and the environment. The statement substantiated by Rogers, Jalal, and Boyd (2012) endorsed sustainable banking as competent to remit environmental destruction to enhance the health and productivity of the ecosystems. It acts

as a long-lasting business model that creates a healthy environment and harmonious society. Also, it can minimise the negative outcome of climate change by investing more in green projects and socially responsible businesses that foster a future low-carbon economy (Hsiao & Wang, 2022). Furthermore, the banking industry's shift toward more eco-friendly activities also possesses the potential to ameliorate financial returns and reputation in the future (Jeucken & Bouma, 1999).

Moreover, the study is crucial for the banks to establish well-organized corporate governance for better supervision of bank operations and amelioration of sustainability development. Since the bank acted as the backbone of economic stability, hence it should possess good corporate governance. Good corporate governance will assist the bank in decision-making and solving management issues. On top of that, effective corporate governance could enable the bank to pursue its objectives that align with the interest of the bank and shareholders by establishing appropriate incentives for the board and management (Mülbert, 2009). As a result, better performance and sustainable business will be created under supervision.

Additionally, the study is imperative for banks to optimise awareness to promote sustainable products and services. The bank will recognise the development of sustainable banking which is green banking could provide long-term survival and competitive advantage to their operation through this study. Thus, the present study can intensify the awareness and knowledge of banks with the existing literature for the development of sustainable products and services for banks. For instance, banks with magnified sustainability awareness will strive to provide finance to climate change projects which are known as green finance (Park & Kim, 2020).

1.5.2 Policymaker

The ongoing study is essential for policymaker in policymaking pertinent to sustainability. This study reveals the problem derives from human activities and investigates the extent of variables in influencing the sustainability of banks. Hence, the policymaker could propose effective policies by reviewing the literature and identifying the possible gaps that can be overcome. In addition, the study serves as guidance for policymakers during they amend the existing policy or create policies. This is because the negative externalities to the environment and society should be taken into consideration in well-established policies (Bohnes, Hauschild, Schlundt, Nielsen, & Laurent, 2022). A wise policy and framework are critical for sustainable development as they can provide guidelines for the business model, strategies, practices, and operations that are consistent with sustainability objectives and vision (Geldres-Weiss, Gambetta, Massa, & Gelders-Weiss, 2021). In brief, the study is critical for policymaker during policymaking as the study will discover the significant components that should be considered to promote sustainability.

1.5.3 Investor

The current study is imperative to enrich the insight and knowledge for the investor to sustainable business or project. Nowadays, investor plays a vital role in promoting sustainability through investment. This reason is that the attitude of investors toward green businesses influences the bank to pursue sustainability (Choudhury, Salim, Al Bashir, & Saha, 2013). Notwithstanding investing in a sustainable business is competent to provide a long-term return as the three pillars of sustainability are crucial to preserving the profitability and reputation of banks, the sustainability businesses were undervalued by some investors. The underlying cause the inadequate awareness of the investor towards sustainability and the perception of investors that comprehend sustainable business is a less

profitable business. Thus, the current study is significant to deliver knowledge about sustainability and reveal the risk of negligence in the environment and social issues to investors.

The study enhances the trust and attitude of investor in sustainable investment by revealing the prospects and credibility of sustainable businesses to investor (Gamel, Menrad, & Decker, 2017). Also, this study advocates investor should not merely concern with the economic return but also the sustainability of society and the environment for future generations. Based on the study, investor could make investment decisions for sustainability-related businesses according to their risk preferences. The investor also could avoid supporting the business which will jeopardize sustainability. Accordingly, the growth of investment could alleviate the issue of deficiency of resources in the sustainable banking. At last, the sustainability issues could be mitigated through sustainable investment.

1.6 Conclusion

This chapter addressed the issues and challenges of bank sustainability, and it was able to establish the research objectives and questions by incorporating variables such as CEO power, board structure, audit, bank control, and economic factors, which are associated with the bank's sustainability in the ASEAN region. Additionally, the chapter discussed the significance of this research for three key stakeholders which are banking industry, policymaker, as well as investor.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This section presents a complete and detailed investigation of the association between banking sustainability and corporate governance. First, by linking to the existing literature, this chapter develops the hypotheses supported by the underlying theories. Following that, propose the theoretical framework discuss in detail as well.

2.1 Underlying Theories

2.1.1 Agency Theory

An agency theory is one of the oldest management and economic theories that emphasise reducing the moral hazard to monitor the agent's action and prevent the agency problem (Daily, Dalton, & Rajagopalan, 2003). Dalton, Daily, Ellstrand, and Johnson (1998) also highlighted the primacy of agency theory as the conceptual underpinning for corporate governance studies. The theory revealed the agency problem that derives from the agency relationship and its solution. An agency relationship is a contract between two parties named principal and agent. In the banking industry, the principal could be the shareholders, while the agent could be the bank's manager. The principal will hire the agent and allow the agent to run the business or perform tasks on the principal behalf for the decision-making process (Jensen & Meckling, 1979).

In addition, the separation of control from ownership creates an agency problem. The agents will consider their interests rather than the principals' interest because they were unsatisfied with the return or incentive plan given

to them according to ownership owned (Fama & Jensen, 1983). Also, it happened because the principal might have a distinct risk preference with the agent. Castillo, Petrie, and Torero (2010) mentioned that the agents who do not have ownership of the bank would be more risk-averse than those who own the bank. Information asymmetry is one of the reasons that cause agency problems. This is because the owners in the decentralized contemporary bank will utilise the specialized knowledge and experience of the manager in making an investment decision (Shibata, 2009). In general, information asymmetry problems often occur in the banking industry due to the complexity of banks (Kaur & Vij, 2017; Alam, Abbas, & Hafeez, 2020).

Hence, the principal must spend the agency cost, known as the residual cost, to control the relationship between agents and ensure the corporation's survival and profitability in the long-term. According to Jensen and Meckling (1979), agency costs are defined as the costs associated with residual loss, monitoring costs, and bonding costs among agents with conflicting interests. Monitoring cost is the expenses for the compensation, evaluation, and monitoring of the agent's achievement. Williamson (1988) stated that residual loss is the essential component in agency cost which is the loss incurred due to the inefficient managerial decision.

Besides agency cost, the current literature elucidated the agency conflicts comprising board of directors, managerial ownership, executive compensation, dividend distribution, and increment in the debt level of the bank (Panda & Leespa, 2017). The past study posited that the board's role is critical for the bank industry to monitor the manager and implement the strategies because of the complexity of bank (De Andres & Vallelado, 2008; Kaur & Vij, 2017). Alam et al. (2020) identified board is imperative to the regulated sector, such as the bank rather than the non-regulated sector in mitigating the agency problem. Indeed, agency theory acts as an essential framework in bank's corporate governance and sustainability. Nevertheless, agency theory still possesses controversy in other studies.

2.1.2 Stakeholder Theory

According to Parmar, Freeman, Harrison, Wicks, Purnell, and De Colle (2010), the stakeholder theory emphasises the interest of stakeholders comprising employees, consumers, shareholders, and the broad community while making the decision. Stakeholders are the party that will affect or be affected by the business activities or objectives of the business. Donaldson and Preston (1995) stated that the organisation's decision-maker should be concerned with the stakeholders' legitimate interest. Businesses widely apply stakeholder theory in pursuing long-term interests in sustainability from the aspect of economic, environmental, and social (Elkington, 1998). The bank thus should consider all stakeholders' interests when making any financial decision. The bank needs to focus on the operational business of the environment and community and the well-being. As a result, sustainability gradually became the mutual objective that most businesses desired to achieve (Perrini & Tencati, 2006; Elijido-Ten, 2007).

The revolution of business nature leads companies to realise their responsibility to address broader stakeholders' social or environmental problems as their operations exacerbate them (Elijido-Ten, 2007). In this regard, banks are dominant players in combating poverty and facilitating economic growth as well as providing the financial services that influence the economic health. Hence, banks must have a balanced relationship between economic sustainability and stakeholder responsibility. This statement indicates that banks should not neglect their social responsibility, namely providing job opportunities, allocating funds, and mitigating poverty instead of just being concerned about maximising financial profit (Ismail, 2021).

One of the obstacles banks encounter in maintaining stakeholder relationships and sustainability is that conventional banking needs to engage with the stakeholder's demands. For example, the banks provide loans to non-environmentally friendly industries, such as mining or oil and gas, that

will negatively affect the environment and customers (Javeria, Siddiqui, & Rasheed, 2019). Carroll (2015) postulated the organisations actively participate in social responsibility activities intended to advocate the relationship with the community obtain a competitive advantage and build a positive reputation. On the contrary, conventional banking did not concern about the social and environmental consequences, namely the carbon footprint issues. Hence, the banks start implementing approaches such as green banking to develop products or processes that enhance sustainability and achieve eco-friendly (Stauropoulou & Sardianou, 2019). In addition, banks disclose the sustainability report to assess bank sustainability performance for better interaction with the stakeholders. Therefore, the banks must achieve sustainability from economic, social, and environmental perspectives (Li, Gao, Chen, Zhao, Ujiyad, Huang, Han, & Bryan, 2021).

2.1.3 Stewardship Theory

Stewardship theory proposed the likelihood of goal congruence between the steward and principal (Davis, Schoorman, & Donaldson, 1997; Arthurs & Busenitz, 2003). The principal is the owner, while the steward is the management. This theory presumed that individuals in organisation would be motivated to pursue the organisation's goals after successfully identifying the objective of organisation (Qiao, Fung, Miao, & Fung, 2017). This statement indicated that the management is more likely to act in the organisation's best interest, presuming they recognise their responsibility to its sustainability. In contrast, the theory contradicts the agency theory because stewardship theory enforces intrinsic incentive instead of extrinsic incentives to motivate the management. For instance, intrinsic value entails self-esteem, achievement, self-actualisation, and affiliation (Aworemi, Abdul-Azeez, & Durowoju, 2011). The research of Walsh (2011) endorsed that those intrinsic values provided to an individual will intensify the sustainability development of the organisation because of the satisfaction of high-order needs.

Besides, the theory articulated that the behaviour of stewards is organisation oriented. Thus, the stewards opt for collective rather than individual-oriented behaviour (Zahra, Hayton, Neubaum, Dibrell, & Craig, 2008). Hernandez (2008) claimed that stewardship theory advocated the interest of a group in the long term rather than the interest of the individual itself. Rational resource allocation can revitalise the capital in human, financial and natural, which can maximise the long-term interest of stakeholders and ultimately intensity the sustainability of organisation (Hernandez, 2012). In this context, stewards are imperative in managing and protecting resource to preserve the organisation and social benefit. The study of Rezaee (2017) posited that stewardship theory originated from a psychology and sociology perspective, and it perceived the managements as the collectivist stewards that will protect the interest of organisation and stakeholders. In brief, the stewardship theory is widely applied in corporate sustainability in decision-making.

2.1.4 Resource Dependency Theory

Pfeffer (1972) provided the root of resource dependency, highlighting the significance of the interaction between power and exchange within and surrounding organisations and further elaborated by Pfeffer and Salancik (2003). As evidence, the banking industry widely applied the resource dependency theory in disclosure as the banking industry takes account of the environmental resource in the bank sustainability (Pathak & Tewari, 2017). In simple words, the banks require external assistance for superior proliferation.

Besides, the theory asserts that an organisation needs to rely on external actors to gain external resources to sustain itself from environmental contingencies (Pfeffer & Salancik, 2003). Banks have scarce resources; thus, they require external resources from the external environment, enabling the organisation to innovate and sustain itself long-term. The source, namely the

board of directors, also can be considered a crucial resource for the bank. This is substantial as Mamun and Badir (2013) stated that the board of directors provides two sources: human capital and relational resources.

Hillman, Cannella, and Paetzold (2000) proved the board of directors could transfer the resources such as knowledge, expertise, legitimacy, and linkage to essential stakeholders like the customers, and policymakers to the organisation. Apart from that, the board member is another resource provider for accomplishing the operation of the business (Afza & Nazir, 2014). However, the dependency on external resources might bring significant organisational risk. Consequently, various organisational operations were influenced by the organisation's dependency on crucial resources under the resource dependency theory, resulting in ambiguity and poor bank performance (Lutfi, Al-Khasawneh, Almaiah, Alsyouf, & Alrawad, 2022). In this context, to moderate the inequality, the organisation will cultivate an excellent inter-organisation relationship to prevent the inefficient operation of the business (Pfeffer & Nowak, 1976; Vermeulen & Barkema, 2001; Drees & Heugens, 2013). In brief, resource dependency theory advocates resource diversity from the external environment to the organisation.

2.2 Review of Variables & Hypotheses Development

2.2.1 Dependent Variable – Economic Sustainability

The return on assets (ROA) is a financial metric to evaluate banks' capacity on economic sustainability to derive income from the assets. It is one of the performance measures frequently used in banking performance research studies (Saadaoui & ben Salah, 2022). ROA is critical in demonstrating management's ability to utilise financial resources in profit generation. (Setyawati, Suroso, Suryanto, & Nurjannah, 2017). Furthermore, ROA arises as the important ratio in evaluating financial performance of banks because liquidity ratio is governed by regulatory, and it omits the risks related to a high degree of leverage. Therefore, this study using ROA as the dependent variable of economic sustainability.

2.2.2 Dependent Variable – Environmental Sustainability

In this paper, the utility expenses as the measurement of environmental sustainability to depict the usage. This is because the banks might view the excessive waste of fresh water, energy, and land as a failure to meet their fundamental commitments, and thus focus more on demonstrating the efficiency and effectiveness of their usage (Naidoo & Gasparatos, 2018). Furthermore, Papoutsi and Sodhi (2020) claimed that reducing water usage and energy consumption indicated the most established business sustainability practices. In short, dependent variable for environmental sustainability indicator in this research is utility expenses which include water consumption and energy consumption.

2.2.3 Dependent Variable – Social Sustainability

According to Lin, Efranto, and Santoso (2021), stakeholders including employees are essential to attain social sustainability on human well-being. Since difficulty of employee well-being achievement is a crucial problem impedes social sustainable development of bank, thus employee welfare is crucial in determining the characteristics and indicators of social sustainability at bank. The fulfilment of career development opportunities, employee rights and benefits, and employee happiness while working are all significant elements on employee well-being, leading to better bank social sustainability (Low, 2016). The study by Staniškienė and Stankevičiūtė (2018) contributed to the literature on measuring social sustainability from the viewpoint of the employees in a bank. Hence, the indicator used in this research to assess social sustainability is employee benefits.

2.2.4 Independent Variable – CEO Tenure

According to Darouichi, Kunisch, Menz, and Cannella (2021), CEO tenure defined as the duration of the CEO holds the position in a bank. CEO tenure is one of the proxies to show the CEO power and it influences employees to accomplish bank goals. The experienced CEO more likely to sustain their position for bank performance. Consequently, the CEO ability will improve the confidence of employee to the CEO. In this case, CEO tenure serves as a stand-in for CEO entrenchment and power (Ghardallou, 2022). Moreover, long-tenured CEO tends to involve in sustainability and act in the long-term interest. Also, a long-tenured CEO has greater relationships with external stakeholders to increase the business operation.

Fang, Lee, Chung, Lee, and Wang (2020) posited the high linkage between CEO's tenure and bank economic sustainability. CEO with the longer tenures outperform in terms of financial success as the CEO has greater

experience in expanding the profit to achieve financial sustainability. Longer tenured CEO has higher knowledge on bank operation and can provide approximate guidance and recommendations. It indicated that long-term CEO could leverage their knowledge, expertise, and experience to achieve greater bank performance. As a result, the past studies in ASEAN show CEO helps the bank by making appropriate strategic decision (Ting, Chueh, & Chang, 2017; Emestine & Setyaningrum, 2019; Triyani, Setyahuni, & Kiryanto, 2020).

Nevertheless, the long tenured CEO might involve in the agency slack due to the ineffective handling in conflict-of-interest issue. According to the studies on French by Ahmadi, Nakaa, and Bouri (2017), research showed CEO tenure has a significant and negative impact on company financial. The longer CEOs may focus more on building their own empires or pursuing personal goals, which can harm the company's financial performance (Kyereboah-Coleman & Osei, 2008).

Based on past studies, the research suggests the hypothesis as below.
H_{1a}: CEO tenure is significantly and positively related to economic sustainability.

Sumarta, Prabowo, Amidjaya, Supriyono, and Prameswari (2021) stated that the CEO of Indonesian banks has better environmental performance when the CEO work longer in the bank. The experienced CEO pursued higher ability in environmental practice that bring greater performance (Sannino, Di Carlo, & Lucchese, 2020).

In Oware and Awunyo-Vitor's (2021) study, CEO tenure is insignificantly with environmental disclosure. This study predicted that CEOs with longer tenures would recognise the need for ongoing assurance of the bank's commitment to addressing environmental problems, and that institutional constraints would require disclosure (Walls & Berrone, 2015).

The hypothesis has been proposed by reviewing to literature.

H_{1b}: CEO tenure is significantly and positively related to environmental sustainability.

Additionally, Duong, Tran, and Pham (2023) stated a significant negative relationship between CSR disclosure and CEO tenure in Vietnam commercial bank. The study aligned with stakeholder theory where the longer tenure CEO will reduce CSR due to agency cost. Besides, the authors stated that older CEO is less likely to prioritise CSR. In contrast, younger CEOs with a longer-term focus and those with shorter tenures who adopt a flexible management style are more inclined to support and invest in CSR initiatives to achieve long-term sustainability (Oh, Li, & Park, 2016; Ratri, Harymawan, & Kamarudin, 2021).

Furthermore, Choi, Kim, and Lee (2019) and Chen, Zhou, and Zhu (2019) found that CEO tenure is insignificantly to CSR as the CEO prioritise the job position instead of sustainability of firm in the early stage. This results in the decision made that are not always acts in the best interests of the organisation. CEO may emphasise on short-term objectives and be more preoccupied with own career prospects, leading to actions that are less concerned with CSR.

The research suggests the hypothesis as following based on the prior studies.

H_{1c}: CEO tenure is significantly and negatively related to social sustainability.

2.2.5 Independent Variable – Board Independence

Independent directors are an essential component of corporate governance. Independent director defined as someone without business or family ties to the senior management of a company (Mahmood, Kouser, Ali, Ahmad, & Salman, 2018). Independent directors provide guidance to safeguard the

stakeholders' interest and to reduce the agency problems. Independent director can also ensure the business run smoothly. Furthermore, the independent directors have greater potential to enhance the company's sustainability performance (Hu & Loh, 2018). The more independent director in a bank is expected to demonstrate greater levels of accountability and transparency.

The study by Zakaria, Purhanudin, and Wahidudin (2018) showed the independent directors on the board were significantly and positively related to bank's ROA. The independence board director will utilise the available resource more effectively due to less conflict of interest. The independent directors will give the more independent recommendations for decision making in achieving better corporate governance (Zakaria, 2021; Ben Abdallah & Bahloul, 2021).

Nevertheless, some past studies found that board independence has an insignificantly influence on ROA (Machdar, 2019; Uyar, Kilic, Koseoglu, Kuzey & Karaman, 2020; Nurlaily & Rahmi, 2021) One possible explanation could be the financial ratio is not sufficient to capture the value provided by board in firm.

The hypothesis has been formed by reviewing the overall past studies.
H_{2a}: Board independence is significantly and positively impact on economic sustainability.

The research by Khoiriawati and Nuswantara (2021) mentioned that environmental sustainability is significantly and positively associated with the board independence in ASEAN. The result demonstrated that having more independent directors will ensure management more effective at supervising, regulating, and disclosing environmental initiatives. This is because the independent director possessed qualifications and different viewpoints (Masud, Nurunnabi, & Bae, 2018; Nguyen, Elmagrhi, Ntim, & Wu, 2021).

Besides, Michelon and Parbonetti (2012) found the significant negative relationship between the independent directors and environmental performance. The outcome suggested the existence of independent directors lead to a reduction in non-financial transparency including environmental disclosure (Baalouch, Ayadi, & Hussainey, 2019).

The hypothesis below has been posited in light of past studies of ASEAN.
H_{2b}: Environmental sustainability is significantly and positively influenced by board independence.

In addition, Dunn and Sainty (2009) and Ahmad, Rashid, and Gow (2017) exhibited independent directors have a significant positive on social sustainability. Also, independent directors have brought outside viewpoint and concern social issues during decision making. Both studies were use in proposing the present research's hypothesis as explored the relationship at ASEAN area of studies.

However, Uyar et al. (2020) implied that the social pillar is irrelated to the board independence. This possible reason is they might perceive social issue as not important activities that shift them away from their main objective about upholding the interests of shareholders. The statement could be justified by the study of Machdar (2019) and Al-Jaifi (2020).

Based on the past studies, the hypothesis has been proposed as below.
H_{2c}: Board independence is significantly and positively related to social sustainability.

2.2.6 Independent Variable – Board Size

A board size is defined as a variable to measure the board effectiveness of bank by commissioners (Chong, Ong, & Tan, 2018). According to Saidat, Silva, and Seaman (2019), a larger board of directors can provide more

benefits to the company, particularly regarding the discussion. As a bank is a complicated financial institution, each board member has a responsibility and job. A large board can assist in decreasing agency issues and contribute positive signals on sustainable commitment. Gabrielsson (2007) claimed that a bigger board size is more beneficial than a smaller board size as more resources can be accessed. The more information that is shared, the greater the benefit to the shareholders in improving the company's efficiency.

Firstly, the study by Tjahjadi, Soewarno, and Mustikaningtiyas (2021) resulted in board size has significant positive related to economic sustainability. It is because a bigger board size has different ideas and messages to make better company decisions. This also explained that the more directors work together towards a long-term financial sustainability (Malik, Wan, Ahmad, Naseem, & Rehman, 2014; Gafoor, Mariappan, & Thiyagarajan, 2018). However, a converse result found by Galbreath (2011) and Hussain et al. (2018) concluded no correlation because the banks are unfamiliar with the sustainability dimensions.

The following hypothesis is presented based on past research.
H_{3a}: Board size is significantly and positively related to economic sustainability.

Besides, Khoiriawati and Nuswantara (2021) observed board size and environmental pillar has a substantial positive association as the directors have higher influence on the environmental sustainability reporting. The larger boards are more likely to enhance the accessibility and oversight in ESG practices and disclosure. The more directors can bring the creative and diverse ideas together in achieving better performance (Masud, Nurunnabi, & Bae, 2018). These studies are highly related with this study topic.

In contrast, Tjahjadi et al. (2021) stated that board size has an insignificantly effect on environmental sustainability performance as nowadays most board members still do not have the most effective way of measuring environmental sustainability performance. The board members do not put

the environment a priority since they think the environment cannot provide benefits to the company (Al-Jaifi, 2020).

According to the prior studies, the hypothesis has been developed.
H_{3b}: Board size is significantly and positively related to environmental sustainability.

Additionally, Cancela, Neves, Rodrigues, and Gomes (2020) and Rahman, Zahid, and Khan (2022) stated a significant positive relationship. The more directors in the board represent more different viewpoints and opinions based on the various knowledge and experience. It can ensure the better relationship to protect the stakeholders' interest. It also explained that the larger board size, the lesser workload for each member and enhance the quality of reporting (Husted & De Sousa-Filho, 2019).

Additionally, a study by Fernandes, Kuzey, Uyar, and Karaman (2022) found the effectiveness in achieving the sustainability depends on the board collaboration and working instead of board size. It means that the size of board does not have impact on social sustainability and the sustainable achievement mainly due to how the board in accomplishment the goals (Al-Jaifi, 2020; Cakti, Setiawan, & Aryani, 2022).

The following hypothesis has been established.
H_{3c}: Board size is significantly and positively related to social sustainability.

2.2.7 Independent Variable – Female Board of Director

According to Naeem, Karim, Nor, and Ismail (2022), female board members claimed to boost a bank's competitive edge compared to an all-male board, one with a diverse composition provides prospective job opportunities, attracts more talented people, and benefits the organisation. Gender diversity in senior management has a favourable impact on a company's

social performance in addition to financial performance (Veltri, Mazzotta, & Rubino, 2021). Women have contributed to significant improvements in environmental performance and taken a leading role in discussing critical global environmental issues in the early 21st century. Female directors make decisions prioritise on the stakeholders' interest rather than personal interest (Galletta, Mazzù, Naciti, & Vermiglio, 2022). According to this perspective, having more women on the board have better communication with external stakeholders to help governance be more successful since they help establish different ideas and typically tend to reduce risks.

Galletta et al. (2022) found the proportion of female directors has a significant positive relation with ROA. This result explained that female directors help to increase financial performance because their superior network and interpersonal abilities, female directors can be beneficial to banks in relation to lowering the uncertainties associated with their dependency on the outside world. Julizaerma and Sori (2012) highlighted women directors can make meaningful contribution and provide the positive financial returns. Also, according to some country government policy, there is a requirement that certain percentage of women should be involved in business sector decision-making (Naeem, Karim, Nor, & Ismail, 2022).

A contract result has been studied by Suciu, Paun, and Duma (2021) identified percentage of female directors has a weak impact on financial sustainability. It could be due to a lack of gender equality in the boardroom, preventing female directors from receiving the same level of recognition and empowerment as their male counterparts. Alternatively, the possibility that men and women directors may not behave differently than is often thought would support the findings (Setiyono & Tarazi, 2014; Zakaria, 2021).

The hypothesis has been formed.

H_{4a}: Female board of director is significantly and positively related to economic sustainability.

According to Khoiriawati and Nuswantara (2021) and Khatri (2022), board gender diversity is significant positive to environmental sustainability. This suggests to management that board gender diversity should be used as a resource when women's leadership is likely to have a significant influence. Study findings also have important policy implications, as they suggest businesses should increase women's directors on corporate boards due to their link to sustainability performance. This finding supported by Biswas, Mansi, and Pandey (2018), Naeem, Karim, Nor, and Ismail (2022). This is because women can pick up on subtle changes in their environment more quickly, which allows them to adjust their behaviours to better handle environmental challenges better than men.

However, Galletta et al. (2022) found the environmental has no linking to female directors. This suggests that female managers interact with stakeholders more often than female directors and hence require increased female managers' attention on formal climate change policies and governance initiatives instead of female directors. The women directors are often selected due to regulatory requirements rather than necessarily because of their strong experience. This can lead to a lack of expertise among female directors hence their influence on environmental performance is limited (Alazzani, Hassanein, & Aljanadi, 2017; Al-Jaifi, 2020; Nguyen et al., 2021).

Based on earlier research, the hypothesis has been developed.
H_{4b}: Environmental sustainability is positively and significantly influenced by female board of director.

Conversely, Alazzani et al. (2017), Kiliç, Kuzey, and Uyar (2015), and Naeem, Karim, Nor, and Ismail (2022) resulted a significantly and positively relationship between female director and social sustainability. This is because most of the women have effective communication and more socially sensitive. It can help the board have better communication between to work together towards same goals. With the effective communication can help the company achieve a better social sustainability. The psychological

characteristics of women make them more susceptible to social practices than those of men. However, Khan (2010) and Galletta et al. (2022) found no relationship impact.

The hypothesis has been developed as below.
H_{4c}: Female board of director is significantly and positively related to social sustainability.

2.2.8 Independent Variable – Audit Committee

Audit committee denotes a total of bank's audit committee. Kalbuana, Kusiyah, Supriatiningsih, Budiharjo, Budyastuti, and Rusdiyanto (2022) indicated that the audit committee is a group that usually focuses on the internal operations of the company. Yuhertiana, Patrioty, and Mohamed (2019) stated that providing high accurate reporting that cost the organisation revenue is the main concept of the audit committee. Furthermore, Smith (2003) indicated that the audit committee requires to have a minimum of three people on the board. Bank build up the audit team to solve agency issue. The audit committee will use the external resources on providing the accurate and transparency financial reporting to gain trust from stakeholders.

Salloum, Azzi, and Gebrayel (2014) and Kadarningsih, Pangestuti, Wahyudi, and Safitri (2020) found the more audit committee in a bank result better bank profitability. The study concluded that audit committee is significant to supervise a bank internally to ensure all the information disclose is true and fair. Also, the more committee in the audit department can increase the economic sustainable disclosure to increase the investor confidence (Suteja, Gunardi, & Auristi, 2017).

However, a negatively and significantly existed between audit committee and ROA has been examined by Irma (2019) and Musdalifah and Himmati

(2021). The relationship demonstrated that the more audit members in the board means there are different education background, consideration and monitoring viewpoint. Hence, it will be difficult in making decision and lead to ineffective financial performance in the company. It means that the more audit committee lead a more supervision of financial statement and resulting a decrease in ROA. These studies have studied on the ASEAN banking sample area that highly related to this study.

Based on the past studies, the hypothesis has been presented as below.
H_{5a}: Audit committee is significantly and negatively related to economic sustainability.

Besides that, Appuhami and Tashakor (2017), Buallay and AlDhaen (2018), Bicer and Feneir (2019), and Fuadah, Mukhtaruddin, Andriana, and Arisman (2022) concluded the larger size of audit committee can provide the required capacity, variety of knowledge and experience, as well as opinions on maintaining the proper supervision on environmental. On the other hand, Wang & Sun (2022) and Bamahros et al. (2022) have no correlation.

Drawing on prior studies, the hypothesis outlines below.
H_{5b}: Audit committee is significantly and positively related to environmental sustainability.

Moreover, Appuhami and Tashakor (2017) resulted a significant positive connection between the size of the audit committee and CSR disclosure. This result implies that a company with a larger size of audit committees is more successful at carrying out checking and reviewing duties, including enhancing CSR disclosure. It is because the audit committee will ensure the business's activities have an advantageous social impact (Mohammadi, Saeidi, & Naghshbandi, 2020). Jizi, Salama, Dixon, and Stratling (2014) found an insignificant relationship.

The hypothesis has been developed from past research.

H_{5c}: Audit committee and social sustainability is significantly and positively.

2.2.9 Independent Variable – Audit Quality

Audit quality represents whether the bank is using the Big Four audit firms include Deloitte, Ernst & Young, KPMG, and Price Waterhouse Coopers as the company's external auditors (Dakhli, 2022). Watkins, Hillison, and Morecroft (2004) stated that the Big Four audit firms possess a stronger motive to deliver superior audit services compared to the non-Big Four competitors. The advantages allow the Big Four audit firms to communicate with their customers in a more unbiased manner (Bacha, Ajina, & Ben Saad, 2020). The company rely on the external auditors to provide an accountable financial statement. Also, the quality of resources also impacts on the audit quality.

Afza and Nazir (2014), Buallay (2020), Dakhli (2022), and Phan, Lai, Le, and Tran (2020) proved a significant positive association on the economic dimension. This relationship demonstrated that the highly audit quality audited by the banks have provide reliable, transparency and trustworthy financial statement and improve the financial sustainability. The big audit firms can reduce the agency cost and support the higher efficiency in business operations in the company. As big audit firms perform high audit performance will ensure the credibility of information disclosed, thus will reduce other the audit fees. Hence, the high level of external quality, the higher financial sustainability. While Orazalin and Akhmetzhanov (2019) and Ugwu, Aikpitanyi, and Idemudia (2020) stated that the external auditors also can reduce the economic sustainability.

Based on literature, the hypothesis has been generated.

H_{6a}: The relationship between audit quality and economic sustainability is significantly and positively.

Besides, Buallay and AlDhaen (2018) stated the better external audit can resulted a higher ESG disclosure. It is because Big 4 provide the sustainability strategies and assess the risk. This can help the bank to identify the opportunities to sustain the environmental. Also, the better audit quality assist banks in sustainability reporting to enhance the bank reputation. However, Haniffa and Cooke (2002), Barako, Hancock, and Izan (2006), and Orazalin and Mahmood (2018) demonstrated an insignificant relationship. The researchers stated that the auditor does not assess on the environmental matter. It is because environmental sustainability includes many different area issues and auditor does not have much information in monitoring the environmental issue.

The hypothesis has been formed below by reviewing the past research.
H_{6b}: Audit quality is significantly and positively related to environmental sustainability.

Another study by Pucheta-Martínez, Bel-Oms, and Rodrigues (2018) concluded a significant positive association between the Big Four audit firms and the social sustainability disclosure. The study supported that the social sustainability can be improved when the banks hired the Big Four. Moreover, large audit firms require a stronger capacity to improve the standard of non-financial data, enhancing the reliability and accessibility of CSR disclosure. This is in line with Uwuigbe (2011), Białek-Jaworska and Matusiewicz (2015), and Tran, Lam, and Luu (2020).

Conversely, research by Barako et al. (2006), Lim, Talha, Mohamed, and Sallehhuddin (2008), and Purba (2016) concluded an insignificant relationship between the external auditor type and social dimension. This has explained that the companies think that the external audit cannot help in improving the quality of social sustainability, hence, the Big Four audit firms likely do not have impact. Also, the auditors in Malaysia are typically more interested in how well their customers adhere to mandated reporting than they are in information disclosure.

This study generates the hypothesis.

H_{6c}: Audit quality is significantly and positively related to social sustainability.

2.2.10 Control Variable – Leverage Level

Leverage level refers to the relationship between the proportion of liabilities and assets in a bank. When banks have a large amount of cash on hand, they will easily involve in too many investment activities (Zwiebel, 1996). Highly leveraged businesses will exercise additional precautions when making decisions regarding these expenses, including decarbonisation and safety precautions. Due to the small number of resources that each company owns, they must decide whether to utilise them to settle all debts or to undertake disclosure practices (Antara, Putri, Ratnadi, & Wirawati, 2020). The company can leverage their investments by using a range of instruments such as futures, forwards, and options accounts. According to Sonia and Khafid (2020), leverage level refers to a measurement of how businesses use borrowing as a form of financing for ongoing business operations. If the company is unable to pay back its debts, a high leverage level can cause a major issue.

Ofori, S-Darko, and Nyuur (2014) indicated a significant negative relationship between the leverage level and ROA of Ghana Banks. The inverse association between leverage level and the scoring system of sustainability disclosure demonstrates that businesses with higher debt in their cash holdings disclose significantly fewer details regarding their economic sustainability initiatives than businesses with lower debt. While Enekwe, Agu, and Nnagbogu (2014), Orazalin and Mahmood (2018), and Widyastuti (2019) indicated an insignificant association.

Another study by Ezejiofor and Emeneka (2022) resulted leverage level has significant positive on environmental reporting. The corporations may

concentrate their attention on acquiring a stronger grasp of the importance of sustainable environmental standards and reporting in reducing borrowing expenses and enhancing their profitability. While Orazalin and Mahmood (2018) resulted no relationship in between.

Purba (2016) investigated leverage level has a significant positive correlation with social sustainability, and stated the Indonesian corporations have enough resources to pay off long-term debts on average. This result is consistent with Khemir and Baccouche (2010) explained that the companies with a large number of debts revealed the CSR data to promote themselves as responsible businesses and to persuade both current and future investors. Consequently, the businesses are encouraged to reveal additional details regarding their CSR efforts as this can also present a positive perception among the financial institutions.

Kansal, Joshi, and Batra (2014), Chakroun, Matoussi, and Mbirki (2017), Orazalin and Mahmood (2018), and Pucheta-Martínez et al. (2018) observed an insignificant association between leverage level and social sustainability. The study proved that the leverage level is a financial matter, and the stakeholders of the company does not have much interest on the company's leverage level. Also, leverage level and social sustainability does not have direct impact where the studies cannot explain the association.

Kuzey and Uyar (2017) observed a significant effect between leverage level and sustainability reporting. Liu and Anbumozhi (2009) stated that the reason for this inverse relationship may be the shareholders not paying attention to the sustainability-related problems of the businesses. A further possible explanation is that the businesses with higher leverage level have limited funds and may be more concerned with short-term objectives. As a result, they may view sustainable development as an extravagance. This supported by Bhatia and Tuli (2017) and Sonia and Khafid (2020).

The leverage level used as a control variable in this research as it is an important measurement on the financial risks of a company.

2.2.11 Control Variable – Operating Expenses

Operating expenses are the costs incurred to conduct the bank's operational activities. Mohan, Khan, and Janjua (2005) measured the operational expenditure ratio by comparing the cost of operation to the revenue generated. Therefore, the operating expenses ratio provides a clear picture of the efficiency of a bank's operations. Furthermore, the long-term success of a bank is tied to the sustainability performance of its management (Yuliawati, Jensen, & Saputri, 2020). Therefore, the bank will need to use and monitor its operational costs when adopting sustainable activities. As a result, operational expenses play an essential role in influencing the bank's strategic plan execution and attaining sustainability, because the bank must implement the strategic plan and oversee the operating process in accordance with it (Stankeviciene & Nikonorova, 2014).

Research by Rahman and Mazlan (2014) showed the operating expenses ratio significantly adversely affects financial sustainability. However, reducing operating cost can increase the institution’s efficiency in utilising resources to generate profit and enhance the asset’s value. This was supported by Bogan (2012) and Tehulu (2013) illustrated the poor expense management can contribute to poor financial sustainability performance. Osazefua (2019) proved that operating with considering the operational cost could minimise working capital spending and enhance the firm’s economic sustainability due to the additional profit earned. Besides, Sheremenko, Escalante, and Florkowski (2017) also found that operating expenses have a significant negative relationship with the operating self-sufficiency as a measure for financial sustainability. The reason is that a portion of the institution's revenue is used to cover the additional cost of microfinance institutions' low operational efficiency. As a result, decreased operational efficiency may jeopardise the MFI's financial performance. The bank in this case should immediately perform the managerial oversight to increase efficiency. However, a study by Henock (2019) found a significant positive relationship.

According to the study by Abba, Said, Abdullah, and Mahat (2018), the environmental operational performance has a significant negative relationship with environmental performance. The researchers proved that if the firm fails to maximise resource utilisation, emission reduction, and environmental-friendly product innovation, it can negatively impact the environmental sustainability. Additionally, Guillamon-Saorin, Kapelko, and Stefanou (2018) posited a significant negative association between operational inefficiency with environmental as well as social sustainability. The results suggested that with a higher dynamic inefficiency, firm will engage lesser in the CSR activities. Most of the study claimed that operating cost is significantly related to economic, environmental, as well as the social sustainability. It refers to how efficiently the company uses resources to enhance its sustainability. The company also can identify the areas for improving the sustainability dimensions and the company's commitment to sustainability. Hence, the operating expense has a significant and linked relationship with sustainability.

Thus, operating cost will be a control variable in this study to test the relationship with bank sustainability.

2.2.12 Control Variable – Marketing Intensity

Marketing intensity is the ratio of total selling, general, and administrative expenditures deducted from R&D expenditure, thus divided by the total revenue (Luo, 2008; Krishnan, Tadepalli, & Park, 2009; Morgan & Rego, 2009). Besides that, marketing intensity depicts the elements of the promotional mix for the firm and acts as an important measurement to assess the firm sustainability. The reason is marketing has a pivotal role in a firm to interact with stakeholders so that the firm can produce value for the firm itself and society (Moorman & Rust, 1999). Peng, Qin, and Tang, (2021) stated that marketing innovations bring a positive linking on the sustainability and market innovation is one of the components of marketing

intensity. The marketing innovation for the study was considered as the change in the design of the product, promotion, pricing, and packaging, while technology advancement was not necessary. Apart from that, marketing innovation is critical to sustainability because the expansion of market share could occur in a short time depending on the innovative product or technology (Quaye & Mensah, 2019).

Moreover, a study carried by Jaisinghani, Kaur, Goyal, and Joshi (2020) posited a significant positive association between marketing intensity and economic sustainability. This indicated that the firms would enhance their economic sustainability when they spend more expenses in marketing. The result can be substantiated by the study of Xiao, Zhou & Mao (2022) claimed that the capability of a firm connects with customers is beneficial to the sustainability of the service sector during the turbulent circumstance. As a result, the market-linking capability might help the firm to gain competitive advantages and be able to compete with other competitors due to the boosting of customer satisfaction. Nowadays, the situation can be applied in the banking industry as the bank emphasises in cultivating banking relationships with customers. The banks not only should focus on service innovation, but also must utilise the market information and relationship with customers for the development of services or products (Song, Di Benedetto, & Nason, 2007; Markovitch, Huang, & Ye, 2020).

In addition, Yeh, Chu, Sher, and Chiu (2010) and Ural, Acaravci, Oypan, and Karaömer (2019) demonstrated a negative result because of an inefficient marketing strategy such as adopting a wrong business model or implementing an inappropriate advertising campaign (Oliya, Owlia, Shahrokh, & Olfat, 2012). The excessive marketing also will bring negative consequences to economic sustainability as the action will affect the reputation of the firm. Consequently, this will cause the least public awareness of the firm or product and lead to the profit gained through the marketing being incompatible with the marketing expenditures. Then, the marketing intensity will not assist the firm to add value and reduce the sustainability of the bank in terms of economics. Other than that, there are

some studies that claimed that marketing intensity is insignificant to economic sustainability (Ghosh, 2011; Pal & Nandy, 2019).

There are few studies discovered a significant positive relationship between marketing intensity, environmental sustainability, and social sustainability (Brower & Mahajan, 2013; Oh, 2014; Kang, Huh, & Lim, 2019). This can be supported by another study which postulated that innovation through marketing activities will improve the environmental sustainability of a firm (Lee & Kim, 2017). This is because higher marketing intensity indicated greater exposure of the firm to the public, and this situation will motivated the firm to retain the branding image and lead to the firm being more likely to invest and participate in more activities regarding sustainability (Roush, Mahoney, & Thorne, 2012). As a result, the firm might use CSR activities or campaigns that promote sustainability as a part of marketing strategies for the firm. In this context, the firm will gain trust and a positive reputation from the public and ultimately educate the customers about the importance of environmental and social sustainability. Nonetheless, Ural et al., (2019) asserted that marketing intensity is insignificant to environmental and social sustainability.

Additionally, most of the studies concluded a significant relationship. With the marketing, it can promote the sustainable products and services to public and lead to more sustainable practices. This can directly reduce in environmental issue and increase the social and economic sustainability.

In conclusion, marketing intensity uses as the control variables to test the relationship between sustainability in this study.

2.2.13 Control Variable – Gross Domestic Product (GDP) Growth

GDP growth defines as the annual change in GDP output produced by a country in one year (Agu, Onu, Ezemagu, & Oden, 2022). When GDP increase, investment activity will spike ultimately decreasing the operating cost (Memon, Akram, Abbas, Chandio, Adeel, & Yasmin, 2022). Moreover, the GDP growth rate used to measure the country's economic to assess economic health and well-being (Ahmad, 2020). The GDP growth is intertwined with the SDG variables such as education level, gender equality, emission of greenhouse gases, employment opportunity, poverty, and so on (Singh, Singh, Alam, & Agrawal, 2022). GDP growth and bank sustainability are interrelated with the economy cycle in a country.

Liyanagamage (2021) endorsed that GDP growth has a significantly and positively relationship with bank stability. Saksonova and Solovjova (2012) claimed bank stability is the competency of a bank to maintain its sustainability in different economic circumstances which share the same concept with economic sustainability. In this case, the study defined bank stability as the combination of positive and negative effects which is relevant to economic sustainability. Apart from this, the development of macroeconomics statistically influences the stability and sustainability of the bank sector. This statement can be substantiated by Fell and Schinasi (2005) alleged the degree of interaction in economic activities is one of the determinants of financial stability. The reason is macroeconomic conditions constitute the external risk to financial stability as macroeconomic variables ultimately affect the capability of financial actors comprising households, governments, and companies to their debt obligation (Yensu, Yusif, Tetteh, Asumadu, & Atuilik, 2021; Yitayaw, Mogess, Feyisa, Mamo, & Abdulahi, 2023).

Furthermore, a study carried out by Tan and Floros (2012) in China's banking industry posited that GDP growth is significant negative with banks'

profitability. The bank's economic sustainability could be dampened which is attributed to the higher economic growth will enhance the business circumstances thus reducing the entry barriers of banks. Then, this situation will encourage competition among banks and constitutes a reduction in profit (Phan, Anwar, Alexander, & Phan, 2019).

According to the study of Lu and Wang (2021) and Ong, Adedeji, Cheah, Tan, Teh, and Masoud (2021) showed that GDP growth as the control variable has a significant and negative relationship with environmental sustainability. Both studies' results are compatible with the study of Frankel and Rose (2005) that postulated the development of trade creates higher output production and worsens environmental pollution. The growth of domestic might cause the bank's environmental sustainability to decrease as most businesses including banks require environmental resources to operate. However, most of the countries' banks started to adopt green banking to reduce waste and endeavour for achieving the sustainability in future (Zhixia, Hossen, Muzafary, & Begum, 2018). Furthermore, Tan and Tsionas (2022) posited that GDP growth will bring negative consequences to environmental efficiency. This is because non-environmentally friendly sectors are still essential in the economy and the allocation of funds by banks to that sectors will deter environmental sustainability. Nevertheless, Zahan and Chuanmin (2021) elucidated that GDP growth has an insignificant relationship which environmental sustainability measures by clean energy consumption in the long run.

Additionally, Wu, Shen, and Chen (2017) and Chang, Chen, Lin, and Xu (2022) showed the growth of GDP will improve the economic sustainability of banks and enable them to have capability to achieve their social objectives such as help the poor household or support the small business, resulted a significant positive association (Ahamad, Al-Jaifi, & Ehigiamusoe, 2022). Nonetheless, a study refute that GDP growth did not have any significant relationship with ESG (El Khoury, Nasrallah, & Alareeni, 2023).

In conclusion, the studies' findings showed that GDP growth is important used as a control variable in testing the banking sustainability.

2.2.14 Control Variable – Inflation Rate

Inflation rate is concerning the assessment of how prices vary over time (Donovan, 2015). Due to the vary in the price level will resulting in a loss of buying power in an economy over time. This can lead to social and economic instability, as well as widen the gap between the rich and poor. Furthermore, inflation rate can cause banking system uncertainty because it is hard for investors or businesses to predict the value of their investments, which can lead to financial plan failure (Juhro, 2022). From a bank perspective, inflation rate caused increase borrowing costs, reduce loan demand, and decrease profits, all of which can have a negative impact on a bank's operations.

Aw (2019) found a significant negative impact of inflation rate on ROA. As inflation rate rises, it leads to an increase in the cost of production and operations for the company, resulting in a decrease in ROA. This decreased ROA will then lead to a decrease in the performance of the company overall (Din, Khan, Khan, & Nilofar, 2021). Besides, Benson and Fortune (2022) found a significant positive relationship that companies may lead to better financial performance when inflation rate rises because they can raise the pricing of their products or services to meet the growing inflation rate while also adjusting their production costs and expenses (Owoputi, Olawale, & Adeyefa, 2014; Senan, Noaman, Al-Dalaien, & Al-Homaidi, 2021).

Moreover, Kiganda (2014) found that inflation rate and ROA have insignificant relationship in Kenya banks. The study stated that the performance of a bank is not affected by external macroeconomic factors, such as inflation rate, real GDP, or exchange rates. Instead, the bank's performance is determined primarily by the decisions and actions taken by

the bank's internal management and board. Changes in the consumer price index (CPI), which measures inflation, may take longer to affect sustainable development than their direct impact on economic growth. This might explain why there is no relationship (Meher & Getaneh, 2019; Pardi, Abd Majid, & Junos, 2021; Benson & Fortune, 2022).

Musarat, Alaloul, Liew, Maqsoom, and Qureshi (2021) stated that a low inflation rate can serve to guarantee economic stability and enhance people's living standards, but it may not be the ideal option for preserving environmental sustainability. The study represented a significant positive impact on environmental and social performance (ESP) in Nigeria (Benson & Fortune, 2022). The researchers explained that inflation rate does significantly and negatively affect the firms' ESG score. This implies that the increase in CPI hinders ESG activities at the firm (Hamdi, Guenich, & Saada, 2022).

According to Aliedan (2020), the result suggested that inflation rate does not have a significant impact on environmental development. It is possible that when many new companies enter the market, the inflation rate will rise due to increased demand, resulting in those enterprises which run polluting facilities may find it difficult to maintain a healthy and sustainable environment. Nițescu and Cristea (2020) and Benson and Fortune (2022) supported the insignificantly relationship between inflation rate and ESG. This may be due to social responsibility scores are not yet widely integrated into the business activities. There may be less emphasis on quantifying the influence of a company's activities on the larger economy, and ESG efforts may be less widespread or well-developed.

Tandelilin and Usman (2022) examined the inflation rate has a significant negative relationship with firm performance. Using inflation rate as a control variable in the analysis can help researchers to account for inflation effects and better understanding on how other variables affect firm performance. Furthermore, Qureshi, Kirkerud, Theresa, and Ahsan (2020)

showed that companies are more likely to prioritise and convey their social responsibility activities when the overall price level is relatively stable.

Chalmers and Van Den Broek (2019), Neitzert and Petras (2021) and Saidane and Abdallah (2021) showed inflation rate had insignificant relationship with CSR. This may be explained by the employee benefits in ASEAN countries is designed to provide reasonable compensation and protection against inflation rate through the use of Minimum Wage Legislation (Singh, Korde, & Varkkey, 2016). This ensures that employees receive a fair wage even in times of inflation. In addition, collective bargaining is a common practice in ASEAN has been acknowledged as an effective approach to tackling inflation rate (Larion, 2016). By negotiating for higher wages and regular wage adjustments, workers can protect their wages from the long-term effects of inflation rate.

In summary, this study takes inflation rate as a control variable to test the correlation that affects the sustainability of banks in ASEAN countries.

2.3 Proposed Theoretical

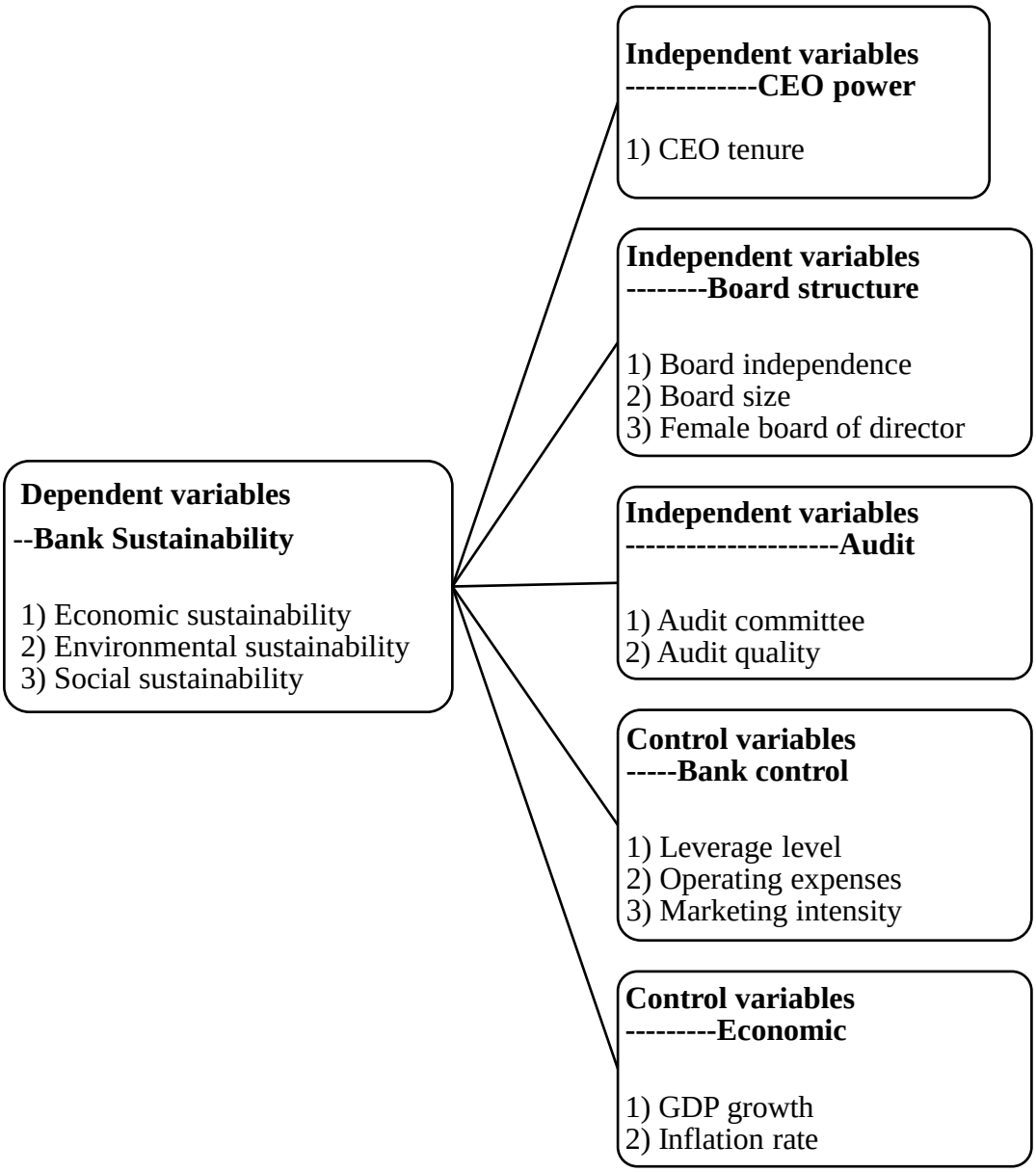

Figure 2.1. The Relationship Between Independent Variables and Control Variables with Dependent Variables.

Dependent variables are bank sustainability that includes economic, environment, and social. Meanwhile, the independent variable which are CEO tenure, board independence, board size, female board of director, audit committee, and audit quality and the control variables include the leverage level, operating expenses, marketing intensity, GDP growth and inflation rate in *Figure 2.1.*

2.4 Conclusion

At the end of this chapter, this study examined the comprehension of the connections between CEO power, board structure, audit, bank control and economic variables. The chapter discussed the prior findings that most related to the study topic, also the hypotheses have been supported by a detailed analysis of the prior findings. Moreover, after carefully investigating the relevant existing studies, the study formulated the theoretical framework.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This section goes into detail about the methodological framework. The research utilises secondary sources from six ASEAN countries between 2014 and 2021 to determine the relationship between the bank sustainability and CEO Tenure (CEOTE), Board Independent (BI), Board Size (BS), Female Board of Director (FEMALE), Audit Committee (AC), and Audit Quality (AQ). To examine the acquired data, quantitative research methods are used, with STATA serving as the primary tool for testing. The chapter also describes the various tests used to ensure accurate results. There are 4 econometric models, and 3 tests proposes in the section to represent the best model.

3.1 Research Design

The study layout maps out how researcher will begin from the research purpose and questions to the outcome (Abutabenjeh & Jaradat, 2018). Clark, Creswell, Green, and Shope (2008) highlighted the research design kinds including quantitative, qualitative, and mixed. The quantitative method employs the strategies such as correlation studies and experiments, and is more appropriate for post-positivist researchers, while qualitative approach involves participatory worldview, open-ended interviewing, and narrative design. Also, the qualitative approach executes through strategies of grounded theory studies, narrative research, phenomenology, and case study. Mixed method is a combination of both quantitative and qualitative strategies. The mixed method comprises simultaneous, serial mixed methods, and constructive mixed approach (Abutabenjeh & Jaradat, 2018).

The research uses quantitative research method due to its ability to generalise and represent data visually (Carr, 1994). The quantitative approach has been widely applied in similar past studies to run the statistical analysis by quantifying the data

on corporate governance (Siswanti, Salim, Sukoharsono, & Aisjah, 2017). Apart from that, qualitative research was not used due to difficulties in interpreting elusive data with stringent requirements (Rahman, 2020). In addition, various tests will be performed to ensure the validity of variables.

3.2 Sampling Design

3.2.1 Target Sample

Target population defines the complete group of people, events, or things of interest that have common and specific characteristics which related to the research topic (Sekaran & Bougie, 2010). Patton (1990) supported that population targeted refers to a group the researchers are interested and focused on measuring to the research topic. This research is to investigate the relationship between the sustainability and corporate governance of ASEAN conventional bank from the year 2014 to year 2021. Thus, the target population of this research is the conventional bank from ASEAN countries.

Saunders, Lewis, and Thornhill (2009) indicated that the sampling frame is a complete list of all the cases in the population from which a sample will be drawn. The targeted sample includes 11 conventional banks in Malaysia, 4 in Singapore, 9 in Vietnam, 12 in Indonesia, 9 in the Philippines, and 10 in Thailand. These banks were chosen based on their greater and sufficient resources, ranking as the top 70 banks in ASEAN countries in terms of total assets and their positive impact on the country's economy.

Table 3.1:

List of The Selected Conventional Banks of 6 Countries

a) Malaysia 1. Affin Bank Berhad 2. Alliance Bank Malaysia Berhad 3. Cimb Group Holdings Berhad 4. Hong Leong Bank Berhad 5. Malayan Banking Berhad 6. Public Bank Berhad 7. Rhb Bank Berhad 8. United Overseas Bank Malaysia 9. Oversea-Chinese Banking Corporation Limited (Malaysia) 10. Ammb Holdings Berhad 11. Citibank Berhad	b) Singapore 1. United Overseas Bank Singapore 2. Development Bank of Singapore 3. Standard Chartered Bank Singapore 4. Oversea-Chinese Banking Corporation Limited (Singapore)
c) Vietnam 1. Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank) 2. Vietnam Joint Stock Commercial Bank for Industry and Trade (Vietinbank) 3. Vietnam Technological and Commercial Joint Stock Bank (Techcombank) 4. The Joint Stock Commercial Bank for Investment and Development of Vietnam (BIDV) 5. Vietnam Prosperity Joint-Stock Commercial Bank (VP Bank) 6. Vietnam Bank For Agriculture And Rural Development (Agribank) 7. Tien Phong Commercial Joint Stock Bank (TPBank) 8. Asia Commercial Bank (ACB) 9. Saigon Thuong Tin Commercial Joint Stock Bank	d) Indonesia 1. Bank Mandiri 2. Bank Rakyat Indonesia 3. Bank Tabungan Negara (Persero) Tbk 4. Bank Negara Indonesia 5. Bank Central Asia Tbk 6. Bank BPD DIY Indonesia 7. Bank Cimb Niaga Tbk 8. PT Bank Danamon Indonesia Tbk 9. PT Bank Maybank Indonesia Tbk 10. PT Bank Permata Tbk 11. PT Bank Pan Indonesia Tbk 12. United Overseas Bank Indonesia
e) Philippines 1. BDO Unibank Inc. 2. Philippine National Bank 3. China Banking Corporation 4. Rizal Commercial Banking Corporation 5. Union Bank of The Philippines 6. Security Bank Philippines 7. Bank of Commerce 8. Philippine Bank of Communications 9. Bank of the Philippine Islands	f) Thailand 1. Bangkok Bank 2. Bank Of Ayudhya 3. ICBC Thai 4. Kiatnakin Phatra Bank 5. Krung Thai Bank 6. Land and Houses Bank 7. Standard Chartered Bank Thailand 8. Tisco Bank 9. TMBThanachat Bank 10. United Overseas Bank Thailand

Note. From *The Asian Banker.* (n.d.). Largest Banks Asia Pacific. Retrieved August 8, 2022, from https://www.theasianbanker.com/ab500/2018-2019/largest-banks-asia-pacific

This research focuses on ASEAN conventional banks because sustainability has become increasingly important in the business world, with European banks leading the way. ASEAN banks are encouraged to learn from European banks to promote better sustainability, as sustainability principles significantly impact the banking industry's operations and long-term strategy. By disclosing sustainability, the bank can communicate with different parties to deliver and receive signals to or from the market.

Besides, this research study on Malaysia, Singapore, Vietnam, Indonesia, Philippines, and Thailand because these 6 countries are ranked top 6 countries among ASEAN. The reason ASEAN countries being selected is the significant contribution of ASEAN in sustainability enhances the environmental policies at ASEAN's level. Recent year, the regional international environmental legal framework in ASEAN includes sustainable development as a key component (Pramudianto, 2018). The selected banks are also ranked as the top banks in ASEAN countries in terms of total assets, market capitalization, sales, and profit, and the banks have higher ability to significantly add value on the sustainability of respective countries. For example, the Development Bank of Singapore Limited is the largest top asset bank among ASEAN's bank and has doing on sustainability under three components including financial responsibility, ethical business conduct and social contribution. This research aims to examine ASEAN conventional banks respond to sustainability in their business operations.

3.2.2 Sampling Technique

The first technique is probability sampling ensures generalizability by giving each sample in a population an equal likelihood to be chosen. Secondly, non-probability sampling is the method that collecting sample randomly from a sampling frame. Probability sampling includes simple random sampling, systematic sampling, stratified sampling, and cluster sampling, while non-probability sampling includes convenience sampling,

voluntary response sampling, purposive sampling, and snowball sampling (Daniel, 2012).

This research uses stratified random sampling, which divides data into subgroups based on common characteristics such as country and obtains samples from each subgroup (Jafarpanah & Rezaei, 2020). This method is advantageous because it captures key characteristics of different subgroups and obtains an appropriate sample for the research. Take Malaysia as an example, there are 26 conventional banks while only 11 conventional banks are selected because these 11 banks are top banks among ASEAN countries.

3.2.3 Sample Size

According to Malone, Nicholl, and Coyne (2016) stated that sample size is crucial in research as it enables the researcher to make statistically sound judgments and obtain reliable results. This consistent by the study by Hill (1998) argued that the larger sample size can increase the likelihood of yielding statistically significant result. Based on the study by Roscoe (1975), the first rule of thumb has showed an appropriate sample size for research is more than 30 but less than 500. The sample size should be greater than 30 to ensure that the researcher reaps the benefits of the theorem of central limit, while a sample size of less than 500 ensures that sampling error does not exceed 10% of standard deviation, which occurs approximately 98% of the time. The number of samples for descriptive research is recommended to be derived from 10% of the population, but Alreck and Settle (1995) suggested that a sample size of less than 10% can yield more accurate results. Moreover, Krejcie and Morgan (1970) has formulated a sample size table that can be applied to specific populations. This table is easy for reference as it does not require any calculation.

Table 3.2:

Determining Sample Size

N	n	N	n	N	n	N	n	N	n
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	241	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384

N= population size, n= sample size

Note. From Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, *30*(3), 607–610.

The total population of top banks among ASEAN countries is 70 banks. According to the table 3.2, the size of the sample of 70 banks is 59 banks. However, the study excluded the banks with missing sustainability report information and those with lack of information or unavailable of access. Consequently, the study only obtained 55 sample banks from 6 ASEAN countries that have great reputation and impact on the countries and economy directly. Panel data analysis is preferred for this research, which includes cross-sectional and time series data, this analysis includes greater information and lead to more variability and efficiency results (Hsiao, 1985). Also, this topic is needed to study the relationship on duration effects. It is because the regulation and policy are always changing, and the time series analysis needed to examine the relationship and impact.

In conclusion, the 8 years' data collect for 55 banks to depict the changes and obtain more significant research contribution. Thus, this research has obtained 440 observations which consistently with the rules of past studies. Also, 440 observations are large enough to obtain accurate results that consistent with the past studies.

3.3 Data Collection Methods

Kabir (2016) stated that data collection is the process of acquiring and analysing information on variables of interest. The first type is primary data refers to information has been collected for first-time directly from participants via surveys, interviews, questionnaires, physiological measurements, or observation (Sadan, 2017). In contrast, Rabianski (2003) stated that secondary data is defined as information derived from published or unpublished secondary sources which is not directly collected by the researcher. Data collection is the most significant stage in completing research and evaluating outcomes in various fields of study such as business, social sciences, and humanities.

3.3.1 Secondary Data

Secondary data collection adopts to conduct the research as it is a time-saving and low-cost method. The reason is secondary data allow the researcher to a great idea, but the limited fund can examine their idea with existing data (Cheng & Phillips, 2014). Rew, Koniak-Griffin, Lewis, Miles, and O'Sullivan (2000) also claimed that secondary data collection is more appropriate to apply in the studies of correlation, descriptive and exploratory which samples are burdensome to collect directly. The secondary data involved in this study is panel data that combine time series data and cross-sectional data. The time series data of this study were collected by a yearly basis from 2014 to 2021. Besides that, the cross-sectional data is the corporate governance variables from six ASEAN countries.

To inspect the variables, useful information could be extracted from the elements in the annual report such as the Audit Committee Report, Profile of the Director, Statement of Corporate Governance, and other relevant reports. The data extracted from the annual report are reliable and adequate as the data were extracted from the official bank website and Bursa Malaysia which have been audited by the audit firm. The annual report sources are credible as it displays approximately all mandatory and voluntary information from transparent disclosure (Krisdayanti & Wibowo, 2019). In addition, this study collects economic data which are GDP growth rate and inflation rate through the World Bank database. Furthermore, the data extracted from the World Bank database is credible as it applies the internationally accepted standards in gathering and creating the data. Therefore, World Bank database has been applied as the source of various past studies from different countries.

3.4 Data Processing

The data processing for this research project displays in the flow chart below, *Figure 4.1.* Initially, assessment was made of various journals and articles relevant to the research topic. Internal data will be collected by reviewing the annual reports of each selected bank. While the external data collected from the World Bank database. The collected data will then be categorized and computed into values for each variable in Microsoft Excel.

In the following step, the data will be edited accordingly as this is to avoid any errors. Data editing is the process of identifying and correcting the data that are inaccurate, inconsistent, or not logical. The case study might be discarded whenever there was any empty column found. The inaccurate data will also be discarded if necessary (Sekaran & Bougie, 2010). According to Saunders et al. (2009), if this data editing progress is skipped, the results of the research project may not be accurate, and the conclusions made may be wrong.

Once the data is modified or edited, the data will be computed and run by STATA and EVIEW. The linear relationship between is analysed through the establishment of a regression model using STATA. Finally, the result obtained by using STATA was ready to interpret.

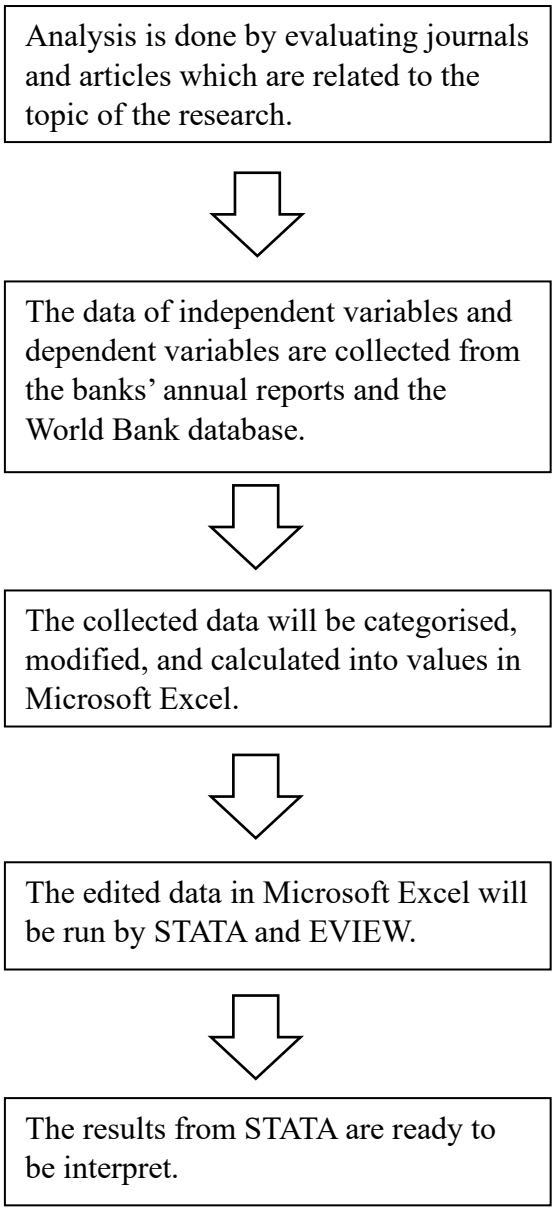

Figure 3.1. The Flow of Data Processing.

3.5 Proposed Data Analysis Tool

3.5.1 Panel Data Analysis

Panel regression is a statistical approach in which the dataset consists of multiple observations on each sampling unit (Pillai, 2016). It combines cross-sectional and time-series data in dataset. Kılıç and Kuzey (2018) suggested that panel data analysis is highly recommended to get rid of the multicollinearity, estimation bias, as well as the effect that varies with time between the independent and dependent variables. Sheikh, Wang, and Khan (2013) stated that the panel data set can identify and capture the effect. There are mainly 4 types of panel data regression.

3.5.1.1 Pooled Ordinary Least Squares (POLS)

POLS assumes no heteroscedasticity or autocorrelation of the error terms, similar to a standard regression equation. This was proved in Gujarati and Porter (2009), it is assumed that the explanatory variables are either fixed or no dependency from the error term. However, in panel data studies, the use of the POLS model can lead to autocorrelation of disturbances within each individual. This violates the independence assumption of the POLS model, leading to biased and inconsistent estimates. Besides, POLS ignores the heterogeneity that might exist between different individuals across time. Therefore, the biased and inconsistent result might arise when the error term is depends on other explanatory variables.

According to Podestà (2002), N spatial units and T time periods are combined to form a data set of N × T observations. This model is suitable for data that is relatively homogeneous in which the constant intercept and slopes across different countries or firms. The

assumption must satisfy, so that the POLS will not have serial correlation, multicollinearity, and heteroscedasticity issue.

3.5.1.2 Fixed Effect Model (FEM)

FEM determined the influence of individual attributes on panel data. By assuming that the intercept is time-invariant and captures unobserved individual heterogeneity, FEM represents individual disparities (Gujarati & Porter, 2009). To allow for variation in the intercept among individuals, dummy variable techniques can be introduced into the model. Besides, FEM is particularly useful when the explanatory variables are correlated with the unobservable individual effect. This is because FEM incorporates the group-specific intercept into the model or treats the unobserved effects as a parameter estimated to adjust for the category-specific bias, thereby providing more accurate estimates (Fernández-Val & Weidner, 2017).

The article by Rashid, Zobair, Chowdhury, Iqbal, and Islam (2020) highlighted the different model specifications and estimation techniques led to different conclusions about the relationship. The researchers stated that using a single-equation estimation when the ownership is endogenously determined will generate a biased result. Thus, it is suitable to use a FEM rather than a single equation model. According to Gujarati and Porter (2009), FEM can eliminate omitted variable bias, but introducing too many dummy variables can affect the degree of freedom and lead to insignificant result. Besides, multicollinearity problems will arise when multiple interaction between the variables.

3.5.1.3 Fixed Effect Model Robust Standard Errors Clustered by Banks (FER)

FER uses to deal with omitted variables bias and dependencies on the residuals. To obtain a more precise estimation of the standard error of a regression coefficient, robust standard errors are preferred due to their ability to handle heteroscedasticity and autocorrelation issues. According to Kézdi (2003), robust standard errors estimation is important as it helps to estimate the standard error when there is serial correlation in the error process.

According to Petersen (2008), clustered standard errors based on the firm produce unbiased estimates of standard errors and can accurately specify confidence intervals, irrespective of the impact of firm-specific effects. FER model is robust the unobserved heterogeneity that correlated with the independent variables and dependent variables. Hence, FER is powerful in panel data model to eliminate the problem and provide accurate estimates of the coefficients of the independent variables.

3.5.1.4 Random Effect Model (REM)

REM implies the model parameters drawn from a hierarchy of different populations as random variables. The random effects refer to the subject-specific effects, which are assumed to be unobserved (Gujarati & Porter, 2009). Besides, REM uses to deal with the unobserved heterogeneity when the heterogeneity is constant over the time and do not correlate with the independent variables. It presupposes the individual error components are no correlated over time and different units of analysis. If this assumption holds, it can generate more efficient estimators than the fixed effects model.

Matuszak, Różańska, and Macuda (2019) stated REM is the most appropriate model in explaining the unbalanced panel model. The REM allows for firm-specific heterogeneity that cannot be directly measured or controlled for in the regression analysis. However, the assumption of REM is the individual-specific effects has no correlation with independent variable, which may not hold in all cases.

The predicted models as below:

Model 1:

$$ECO_{it} = \beta_{1i} + \beta_2 CEOTE_{it} + \beta_3 BI_{it} + \beta_4 BS_{it} + \beta_5 FEMALE_{it} + \beta_6 AC_{it} + \beta_7 AQ_{it} + \beta_8 LL_{it} + \beta_9 OE_{it} + \beta_{10} MI_{it} + \beta_{11} GDP_{it} + \beta_{12} INFLA_{it} + \varepsilon_{it}$$

Model 2:

$$ENVIR_{it} = \beta_{1i} + \beta_2 CEOTE_{it} + \beta_3 BI_{it} + \beta_4 BS_{it} + \beta_5 FEMALE_{it} + \beta_6 AC_{it} + \beta_7 AQ_{it} + \beta_8 LL_{it} + \beta_9 OE_{it} + \beta_{10} MI_{it} + \beta_{11} GDP_{it} + \beta_{12} INFLA_{it} + \varepsilon_{it}$$

Model 3:

$$SOCIAL_{it} = \beta_{1i} + \beta_2 CEOTE_{it} + \beta_3 BI_{it} + \beta_4 BS_{it} + \beta_5 FEMALE_{it} + \beta_6 AC_{it} + \beta_7 AQ_{it} + \beta_8 LL_{it} + \beta_9 OE_{it} + \beta_{10} MI_{it} + \beta_{11} GDP_{it} + \beta_{12} INFLA_{it} + \varepsilon_{it}$$

Where,

ECO	Economic Sustainability
ENVIR	Environmental Sustainability
SOCIAL	Social Sustainability
CEOTE	CEO Tenure
BI	Board Independence
BS	Board Size
FEMALE	Female Board of Director

AC	Audit Committee
AQ	Audit Quality
LL	Leverage Level
OE	Operating Expenses
MI	Marketing Intensity
GDP	Gross Domestic Product Growth
INFLA	Inflation Rate
ε	Error Term

3.5.2 Panel Data Model Testing

3.5.2.1 Reluctant F-test

Reluctant F-test is used to select the best model between POLS and FEM. According to Croissant and Millo (2008), this test was to examine the hypothesis of data of different banks or the time in which were in constant coefficient. However, it is necessary to run the POLS regression in the form of group or by time before applying this test.

3.5.2.2 Breusch-Pagan Lagrange Multiplier test

This test used to check the heteroscedastic disturbances in the linear regression model to make decision on whether to choose between POLS and REM. It is used to determine whether the existence of heteroscedasticity in a regression model. POLS assumes that the assumption of homoscedasticity must be met to ensure the result is reliable.

3.5.2.3 Hausman Test

This is a statistical test that evaluates the validity of the exogeneity assumption by examining the correlation among the independent variables and the individual-specific effect. If there is exogeneity of the unobserved individual effect exist in the model, then REM will be preferred over FEM.

3.5.3 Diagnostic Checking

3.5.3.1 Normality Test: Jarque-Bera (JB) Test and Histogram

All statistical methods are correlation, regression as well as experimental design, in which they must follow the basic assumption, so called normality assumption. Normality assumption means that the population from where the samples are collected are normally distributed. If a regression does not meet the normality assumption, it led to inaccurate and invalid result. In general, the violation of normality assumption might lead to the inaccurate estimators, invalid inferential statements as well as inaccurate prediction.

There are two tests proposed to test the normality in this study. Firstly, the JB test is an analytical types of test procedures and it uses a descriptive measure which obtained first four moments of the sampling distribution of skewness and kurtosis. The normalisation is based on normality as S= 0 and K= 3 follow a normal distribution and the JB statistic value to be zero (Shenton & Bowman, 1975).

The second test is histogram which is a graphical method of checking the observation. A histogram is a straightforward type of graphical plot shows the frequency distribution of measured data,

indicating the shape of distribution. If a data is normally distributed, it will show in a bell shaped (Yazici & Yolacan, 2007).

3.5.3.2 Multicollinearity: Correlation-pairwise

In a multivariate regression analysis, detecting multicollinearity is an important test to ensure the accuracy of determining the linkage between independent variables and dependent variables. This analysis provides the estimates accuracy, leading to reliability issues. If the independent variables exhibit significant effects on each other, it can compromise the results.

According to Alin (2010), multicollinearity can cause errors in the signs of the correlation between the explanatory variables and the response variable, resulting in incorrect estimates for the regression coefficients b_i's for $i = 1, 2, 3, \ldots, k$. However, the most serious effect of multicollinearity is that the b_i's will have large standard errors ($\sigma_{b_i}^2$), for example the large sampling variability. b_i's refers to effect of one-unit change in x_i on y while holding all other explanatory variables constant. Daoud (2017) said that this can cause problems with the reliability of the parameter estimates, as the coefficients may not align with the prior expectations and can have large standard errors (small t-values). This will cause the estimated coefficients to be unreliable and inaccurate.

The method testing the correlation by using a pairwise correlation. It is a test to indicate the linear relationship between pairs of independent variables. According to Chang and Mastrangelo (2011), pairwise correlation is the simplest types of indicators for multicollinearity. If the absolute value is larger than 0.8 or 0.9, it should be taken into the consideration as the two involved regressors

are highly correlated. If it is between 0.7 and 0.8, it is considered mild collinearity.

3.5.3.3 Heteroscedasticity: Modified Wald test

Heteroscedasticity means there is an unequal variance or the variance of the disturbance term u_i for a given set of explanatory variables is not constant and can deviate from σ^2. According to Gujarati and Porter (2009), the arise of heteroscedasticity can be due to the presence of outlier, data collecting techniques that cause the σ_i^2 to decrease, incorrect specification of the model, and incorrect data transformation in the model. Heteroscedasticity can cause misleading in drawing the conclusion or inference. On the other hand, it is better for a model to be homoscedastic as the residuals follow a population with a constant variance, allowing for the assumption of POLS regression to be satisfied.

Modified Wald use to test whether the estimated coefficients for the panel fixed-effect model is homogenous or heterogenous. The test used to evaluate heteroscedasticity across group within a fixed effect model by considering the unique error variances associated with each cross-sectional unit (Sarkodie, Owusu, & Leirvik, 2020).

3.5.3.4 Autocorrelation: Wooldridge test

When the error terms are correlated, the occurrence of autocorrelation presents. It is important to detect the serial correlation in a panel data model regression as it might lead to biasness of the standard error which results in the estimation to be less efficient. Thus, the estimator will inefficient and causing the variance to be under or over estimated.

The Wooldridge test is a widely used method for detecting serial correlation in the error term. It is known for its simplicity and good performance in accurately sized samples with sufficient power. It is a robust test as it requires lesser assumption on the behaviour of the heterogeneous individual effects. If there is a correlation between X and μ, it is better to use a fixed effect model; on contrary, if such correlation equals to 0, then random effect model will be preferred. Thus, the estimators of the fixed and random effect rely on the absence of serial correlation (Drukker, 2003).

3.5.4 Inferential Analysis

3.5.4.1 R-squared

R-squared can better explain the movement of the dependent variable based on the movement of independent variables. Moreover, R-squared is the coefficient of determination that measure the extent of the model in predicting the outcome. The measurement of R-squared is based on a 0 to 1 scale. An R-squared value of 1 indicates that the model explains all of the variation in the dependent variable using the independent variables, whereas an R-squared value of 0 indicates that there is no linear relationship between the independent variables and dependent variable in the model.

3.5.4.2 Gradually Analysis

A gradually analysis is applied to study the relationship between each independent variables towards each category of determinants. It is important to note that the effect of one independent variable may be positive or negative depending on the values of other independent

variables (Andersson, Cuervo-Cazurra, & Nielsen, 2019). It highlights the significance of considering interactions between variables when interpreting regression results. The study by Lokuwaduge and Heenetigala (2017) and García-Sánchez (2019) evidenced it is crucial to investigate how the independent variables interact with each other and whether these interactions could have an impact on dependent variables. Overall, taking into account the possible interactions between independent variables can lead to a more comprehensive understanding of the factors that influence sustainability performance.

3.6 Construct Measurement

This research conducts with 3 dependent variables and 11 independent variables whereby there is 6 independent variables and 5 control variables. The construct of measurement is based on past studies. The following table 3.3 defines the dependent variables, table 3.4 defines the independent variables and table 3.5 defines the control variables that will be used to conduct the research.

Table 3.3:

Dependent Variables

Dependent Variable	**Proxy**	**Definition**	**Measure**	**Reference**
Economic Sustainability	ECO	Return on Assets	Net income to total assets	Setyawati, et al., 2017 Saadaoui & ben Salah, 2022
Environmental Sustainability	ENVIR	Utility Expenses	Difference between current year and previous year utility expenses divided by previous year utility expenses	Braam, Weerd, Hauck, & Huijbregts, 2016 Papoutsi & Sodhi, 2020
Social Sustainability	SOCIAL	Employee benefits	Short term employee benefit divided by total operating expense	Lin, Efranto, & Santoso, 2021 Bolis, Morioka, Brunoro, Zambroni-De-Souza, & Sznelwar, 2020

Table 3.4:

Independent Variables

Independent Variables	**Proxy**	**Definition**	**Measure**	**References**
CEO Tenure	CEOTE	The accumulation of expertise in the CEO role	The number of years an individual had been the CEO of a given bank	Ghardallou, 2022
Board Independence	BI	Proportion of independent non-executive directors on corporate boards	Number of independent directors divided by total number of boards of director	Hashim, Mahadi, & Amran, 2015 Machdar, 2019 Khan, Zahid, Saleem, & Sági, 2021
Board Size	BS	The total number of directors on the board of each sample bank	Total number of boards of director	Tjahjadi et al., 2021 Galletta, Mazzù, Naciti, & Vermiglio, 2022 Alazzani, Hassanein, & Aljanadi, 2017
Female Board of Director	FEMALE	The proportion of women who occupy board member positions	Percentage of female director divided by total number of boards of director	Naeem, Karim, Nor, & Ismail, 2022 Biswas, Mansi, & Pandey, 2018 Nguyen, Elmagrhi, Ntim, & Wu, 2021
Audit Committee	AC	Board of directors who in charge financial reporting and disclosure	The total number of audit committee	Khasanah, 2022 Adegboye, Ojeka, Alabi, Alo, & Aina, 2020 Aprianti, Susetyo, Meutia, & Fuadah, 2022
Audit Quality	AQ	A rigorous audit process that complies with laws, regulations and applicable standards	1, if external auditor is BIG 4; 0, otherwise	Nguyen, Elmagrhi, Ntim, & Wu, 2021 Buallay, & AlDhaen, 2018 Tumwebaze, Bananuka, Kaawaase, Bonareri, & Mutesasira, 2021

Table 3.5:

Control Variables

Control Variables	**Proxy**	**Definition**	**Measure**	**Reference**
Leverage Level	LL	Amount of debt bank uses to finance assets	Total debt to total capital	Verawati, 2019 Sonia & Khafid, 2020
Operating Expenses	OE	An expense incurs through normal business operations	Operating expense to total revenue	Khan, Butt, & Khan, 2017 Imhanzenobe, 2019
Marketing Intensity	MI	The degree of marketing strategies applied for promotion of organisation's products	Natural logarithm of total marketing expense divided by total revenue	Tülin, Acaravci, Oypan, & Karaömer, 2019 Bhatia & Tuli, 2017
GDP Growth	GDP	The percent change in real GDP which corrected for inflation	GDP growth of the country in percentage	Forcadell, Aracil, & Úbeda, 2019 El Khoury et al., 2023
Inflation Rate	INFLA	A general increase in prices or fall in the purchasing power	Annual changes rate in inflation rate percentage	Din, Khan, Khan, & Nilofar, 2021 Nizam, Ng, Dewandaru, Nagayev, & Nkoba, 2019

3.7 Conclusion

In conclusion, this chapter presented a thorough methodology study on the topic. It outlined the research design, encompassing the sampling design, data collection method, and data analysis tools, with the study utilising reliable secondary data from 55 conventional banks in the region between 2014 and 2021, obtained from trustworthy sources like annual reports and the World Bank database. In addition, the chapter elaborated on the diagnostic tests used to identify any potential economic issues in the model.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

Developing relevant results out of the information gathered for the study requires effective data analysis. The research questions and objectives can be driven by structures, correlations, and developments that can discover through a detailed analysis of data. The study explores the hypotheses and acquires the important ideas for the research topic by choosing and using the right tools for data analysis. This provides strong proof to support the conclusion. This chapter discusses the different data analysis methods and provides helpful advice on exploring the relevant studies most effectively.

4.1 Descriptive Analysis

55 banks from 6 ASEAN countries, Malaysia, Singapore, Vietnam, Indonesia, Philippines, as well as Thailand, covers the year 2014 until 2021 are used as the research sample. Table 4.1 and table 4.2 illustrates the average, median, standard deviation, skewness, and kurtosis for economic sustainability, environmental sustainability, and social sustainability. The respective explanatory variables namely CEO tenure, board independence, board size, female board of directors, audit committee, audit quality, leverage level, operating expenses, marketing intensity, GDP growth, and inflation rate. There are 440 observations for all datasets.

Table 4.1:

Descriptive Analysis Between Bank Sustainability and Corporate Governance

	ECO	ENVIR	SOCIAL	CEOTE	BI	BS	FEMALE
MEAN	0.016	0.057	0.427	4.973	0.450	9.630	0.154
MEDIAN	0.013	0.041	0.460	4.000	0.455	9.000	0.167
MAXIMUM	0.137	0.980	0.936	27.000	0.875	19.000	0.800
MINIMUM	-0.052	-0.999	-0.141	1.000	0.077	3.000	0.000
STD. DEV.	0.015	0.234	0.159	4.683	0.198	3.188	0.120
SKEWNESS	4.418	-0.039	-0.826	2.322	0.009	0.454	0.475
KURTOSIS	33.056	7.057	4.820	8.968	2.312	2.650	3.838
OBSERVATIONS	440	440	440	440	440	440	440

4.1.1 ECO

According to table 4.1, the average return for the ASEAN bank's ROA is 1.6%. The highest value of 0.137 and lowest value of -0.052. There are negative data means that some banks have experienced loss throughout the years.

4.1.2 ENVIR

The result interprets the ASEAN banks assessing the utility expenses on average score is 5.7%. The range value of environmental sustainability is between 0.980 to -0.999.

4.1.3 SOCIAL

The mean value of social sustainability is 0.427. In this result, the average social sustainability value for the bank in the ASEAN countries is 42.7%. The largest amount 0.936 and the smallest amount is -0.141.

4.1.4 CEOTE

Based on table 4.1, the mean for the CEOTE is 4.973. This means that the CEO of bank has 4 years of experience in the banks among the ASEAN countries. The highest CEO tenure is 27 years and the lowest is 1 year.

4.1.5 BI

There is an average about 45% of independent directors in ASEAN bank, which means almost half of the directors are independent. A highest number is 0.875 while the lowest number is 0.077.

4.1.6 BS

On average, most of the ASEAN banks have 9 board members in the board. The descriptive data shows that ASEAN bank have19 board members in the board at most, while there are 3 board members in the board at least.

4.1.7 FEMALE

The result shows that female board member has a 0.154 mean value. The proportion in the ASEAN banking industry still a limited average of only 15% female directors in the boards. From the result, there are only at most 8% female director in the board of directors and there are also banks did not have female directors in their boards.

Table 4.2:

Descriptive Analysis Between Bank Sustainability and Corporate Governance (Continued)

	AC	AQ	LL	OE	MI	GDP	INFLA
Mean	3.971	0.732	0.879	0.370	4.174	0.039	0.022
Median	4.000	1.000	0.888	0.357	4.154	0.050	0.021
Maximum	9.000	1.000	1.030	0.930	0.728	0.101	0.064
Minimum	2.000	0.000	0.490	0.010	-8.993	-0.095	0.011
Std. Dev.	1.160	0.444	0.062	0.153	1.343	0.037	0.018
Skewness	1.425	-1.047	-3.442	0.357	-0.533	-1.947	0.314
Kurtosis	5.186	2.095	19.759	3.416	3.678	6.617	2.958
Observations	440	440	440	440	440	440	440

4.1.8 AC

The average of 3.971 illustrates most of the banks have 3 audit members in supervising the financial reporting and internal control. This is consistent with the recommendation on the bank audit committee number.

4.1.9 AQ

The mean value of audit quality is 0.732, this can demonstrates that there are 73.2% of the ASEAN banks are using BIG 4 external auditors to ensure the high-quality audit services on oversee the bank performance.

4.1.10 LL

According to table 4.2, the mean of leverage level is 0.879. Most of the banks in ASEAN countries utilise 87.9% of the debt to finance asset. The highest value of leverage level is 1.030 and the lowest value is 0.490.

4.1.11 OE

Based on table 4.2 shows that operating expense has a mean value of 0.370. This variable possesses a peak value of 0.930 as well as the lowest value of 0.010. This indicate that the banks in the ASEAN countries are utilising at most 93% of their expenses through their normal business operation while there are also banks using only 1% of the expenses for their normal business operation.

4.1.12 MI

Most of the ASEAN banks are using 4 marketing strategies applied for the promotion of the products in the organisation. The uppermost value is 0.728 and the lowest value is -8.993. The negative value explains the banks are not conducting marketing promotion.

4.1.13 GDP

Based on the result generated, the mean value of the GDP growth is 0.039. It demonstrates that ASEAN GDP growth can average 3.9%. The maximum value is 0.101 while the minimum value is -0.095. The negative GDP growth rate indicates a reduction in the economic production.

4.1.14 INFLA

0.022 of an average of inflation had been detected and this means that the inflation rate in ASEAN countries is mostly 2.2% which the rate can be assumed considerably normal. The highest inflation rate can go up to 6.4% while the lowest is 1.1%.

4.2 Panel Data Analysis

4.2.1 Panel Data Regression Model

Table 4.3:

Testing for Panel Data Regression Model (p-value)

Variables	Reluctant F-test	BPLM test	Hausman test	Result
ECO	0.0000	0.0000	0.0000	FER
ENVIR	0.5108	1.0000	0.3851	POLS
SOCIAL	0.0000	0.0000	0.0000	FER

Three tests have been conducted to select the best model in Table 4.3. The ECO model has a p-value of 0.0000 in the reluctant F-test, which is lower than the significant levels of 10%, 5%, and 1%. It means the FEM is more appropriate to explain the ECO model compared to POLS. In the BPLM test a p-value of 0.0000 infers the REM is better than POLS. Besides, FEM chooses in ECO model as 0.0000 found in Hausman test. Therefore, FEM will be utilised to analyse the ECO model to estimate coefficients.

In ENVIR model, a 0.5108 p-value found in the reluctant F-test concludes the POLS is preferable. Next, the BPLM test comes out with a p-value of 1.0000 means the POLS is better. Since the reluctant F-test and BPLM test had been proven that POLS is more appropriate to the panel data, the Hausman test can be omitted. In short, this study will use POLS to interpret the coefficients of estimations of ENVIR model.

Lastly, the results of three testing of SOCIAL are 0.0000 which is similar with the ECO's results. Hence, all the null hypotheses will be rejected, and the FEM is the most suitable model to explain SOCIAL.

Although the FEM is selected for modelling the ECO and SOCIAL, another model known as FER will be used instead. FER provides accurate confidence intervals and unprejudiced standard errors by strengthening the

dependency form of data than FEM. In other words, unbiased parameter estimates may be obtained using robust estimators. There is no economic issue with the results since the data can pass all the tests for normality, multicollinearity, heteroscedasticity, and autocorrelation to demonstrate their quality (King & Roberts, 2015). As a result, FER is picked at the very end after being taken into account for its robustness to standard errors.

Table 4.4:

Economic Sustainability Models Analysis with Robust Standard Error

	(1)	(2)	**(3)**	(4)
	POLS	FEM	**FER**	REM
VARIABLES	ECO	ECO	**ECO**	ECO
CEOTE	0.00016	0.00036***	**0.00036****	0.00021*
	(0.00010)	(0.00014)	**(0.00018)**	(0.00012)
BI	-0.00715***	0.00163	**0.00163**	-0.00318
	(0.00255)	(0.00491)	**(0.00394)**	(0.00380)
BS	-0.00043**	-0.00024	**-0.00024**	-0.00040*
	(0.00018)	(0.00030)	**(0.00024)**	(0.00024)
FEMALE	-0.01020**	-0.00240	**-0.00240**	-0.00487
	(0.00411)	(0.00407)	**(0.00323)**	(0.00399)
AC	0.00027	-0.00073*	**-0.00073***	-0.00045
	(0.00042)	(0.00043)	**(0.00036)**	(0.00042)
AQ	-0.00054	-0.00208	**-0.00208****	-0.00039
	(0.00110)	(0.00295)	**(0.00102)**	(0.00189)
LL	-0.18587***	-0.07502***	**-0.07502**	-0.12450***
	(0.00871)	(0.01261)	**(0.05358)**	(0.01087)
OE	-0.00771*	-0.02618***	**-0.02618*****	-0.01161**
	(0.00393)	(0.00621)	**(0.00872)**	(0.00517)
MI	-0.00012	0.00215***	**0.00215***	0.00102*
	(0.00040)	(0.00077)	**(0.00111)**	(0.00059)
GDP	0.04074***	0.02233**	**0.02233****	0.02403**
	(0.01410)	(0.00932)	**(0.00881)**	(0.00985)
INFLA	-0.03326	0.06140**	**0.06140*****	0.06163**
	(0.03100)	(0.02444)	**(0.02227)**	(0.02513)
Constant	0.18832***	0.10289***	**0.10289***	0.13866***
	(0.00888)	(0.01316)	**(0.05195)**	(0.01147)
Observations	440	440	**440**	440
R-squared	0.59546	0.17576	**0.17576**	
Number of idc		55	**55**	55

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The FER model is the preferred choice for ECO with significant outcomes for 7 out of 11 variables in Table 4.4.

Firstly, CEOTE finds a significant positive relationship with ECO. To explain in detail, the longer the CEO hold the position, the better the ECO. This may be because an experienced CEO has more power in managing and controlling the banks' operations to solve problems. Also, more power on the board can help accelerate financial sustainability. This consistent with Emestine and Setyaningrum (2019), and Triyani et al. (2020).

Meanwhile, every one percent increase, on average, the ECO will decrease by 0.00073 and 0.00208 for AC and AQ respectively. Internal and external audits have an important role in ensuring better financial sustainability and are always related to each other. However, the audit will decrease the finances of the bank because the cost of hiring the audit can be expensive and significant for a bank (Orazin & Akhmetzhanov, 2019; Musdalifah & Himmati, 2021).

However, BI, BS, and FEMALE, representing the board structure, are insignificant towards ECO. This could be due to factors such as the presence of independent directors with financial knowledge may still lead to a free-rider problem, reducing the vigilance of each director. When there are more external directors present in a board, the redundant resources that are no longer valuable, rare, or unique, as per the resource-based theory. Larger boards may also face decision-making problems. The discrepancies between the findings of this study and studies carried out in developed nations may be reasonably attributed to the cultural and socioeconomic that prevent women from achieving higher management roles and excelling in them as compared to their male counterparts. These factors include a lack of decisiveness, leadership aptitude, ambition, resilience, and flexibility. (Setiyono & Tarazi, 2014; James & Joseph, 2015; Nor & Rahman, 2019).

Besides, LL is found insignificant on financial performance. There are three control variables statistically significantly and positively towards ECO which include MI, GDP, and INFLA; OE presents a significant negative at significance levels.

Table 4.5:

Environmental Sustainability Models Analysis with Robust Standard Error

	(1)	(2)	(3)	(4)
	POLS	FEM	FER	REM
VARIABLES	**ENVIR**	ENVIR	ENVIR	ENVIR
CEOTE	**-0.00006**	0.00175	0.00175	-0.00006
	(0.00243)	(0.00515)	(0.00424)	(0.00243)
BI	**-0.15886****	-0.14592	-0.14592	-0.15886***
	(0.06143)	(0.18694)	(0.17587)	(0.06143)
BS	**0.00227**	-0.00774	-0.00774	0.00227
	(0.00426)	(0.01147)	(0.00947)	(0.00426)
FEMALE	**-0.03716**	-0.01348	-0.01348	-0.03716
	(0.09915)	(0.15516)	(0.11672)	(0.09915)
AC	**-0.00068**	0.02827*	0.02827	-0.00068
	(0.01009)	(0.01628)	(0.01866)	(0.01009)
AQ	**-0.00176**	0.13046	0.13046	-0.00176
	(0.02649)	(0.11239)	(0.09377)	(0.02649)
LL	**0.12791**	0.27002	0.27002	0.12791
	(0.21010)	(0.48032)	(0.35764)	(0.21010)
OE	**0.00841**	-0.32692	-0.32692	0.00841
	(0.09478)	(0.23669)	(0.27429)	(0.09478)
MI	**0.01497**	0.06011**	0.06011**	0.01497
	(0.00972)	(0.02921)	(0.02817)	(0.00972)
GDP	**0.23692**	0.12075	0.12075	0.23692
	(0.34008)	(0.35509)	(0.35351)	(0.34008)
INFLA	**1.01792**	1.11187	1.11187	1.01792
	(0.74784)	(0.93116)	(0.95757)	(0.74784)
Constant	**0.03225**	0.08829	0.08829	0.03225
	(0.21426)	(0.50154)	(0.34088)	(0.21426)
Observations	**440**	440	440	440
R-squared	**0.03777**	0.03964	0.03964	
Number of idc		55	55	55

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Different from the previous panel model approaches, POLS is used to explain how independent variables impact environmental sustainability. According to Table 4.5, there is only BI shows a statistically significant

result at a 5% significance level while others result insignificant. The ENVIR decreases by 0.15886 percent, on average, BI increases by 1 percent.

This study observes ASEAN countries have insufficient environmental initiatives to encourage environmentally friendly banking practices and leads to an insignificant connection. Most ASEAN banks are unaware and have lacked knowledge of the environmental issue (Elder & Ellis, 2022). For instance, even though the CEO, board of directors, and auditors have a considerable impact on the bank's direction, they also have the right to offer suggestions. However, their recommendation might not be in line with environmental sustainability. Also, there is less studies on ASEAN banking and lower knowledge and awareness about environmental disclosure. In this case, the variables are insignificantly to ENVIR.

Table 4.6:

Social Sustainability Models Analysis with Robust Standard Error

	(1)	(2)	**(3)**	(4)
	POLS	FEM	**FER**	REM
VARIABLES	SOCIAL	SOCIAL	**SOCIAL**	SOCIAL
CEOTE	0.00004	0.00044	**0.00044**	0.00079
	(0.00138)	(0.00116)	**(0.00138)**	(0.00115)
BI	-0.01725	0.04628	**0.04628**	0.04347
	(0.03486)	(0.04226)	**(0.03200)**	(0.03944)
BS	-0.00066	-0.00366	**-0.00366**	-0.00268
	(0.00241)	(0.00259)	**(0.00263)**	(0.00242)
FEMALE	-0.02081	0.00767	**0.00767**	0.02299
	(0.05627)	(0.03507)	**(0.02021)**	(0.03544)
AC	0.02202***	0.00757**	**0.00757***	0.00806**
	(0.00572)	(0.00368)	**(0.00398)**	(0.00371)
AQ	0.12500***	-0.00966	**-0.00966**	0.02725
	(0.01504)	(0.02540)	**(0.01421)**	(0.02175)
LL	0.81155***	-0.29372***	**-0.29372*****	-0.15000
	(0.11924)	(0.10858)	**(0.07173)**	(0.10509)
OE	-0.19330***	-0.22332***	**-0.22332*****	-0.24225***
	(0.05379)	(0.05350)	**(0.05838)**	(0.05113)
MI	0.01157**	-0.00745	**-0.00745**	-0.00245
	(0.00552)	(0.00660)	**(0.01531)**	(0.00613)
GDP	0.03481	0.14581*	**0.14581****	0.14175*
	(0.19300)	(0.08027)	**(0.05907)**	(0.08306)
INFLA	-1.91323***	-0.13998	**-0.13998**	-0.26666
	(0.42441)	(0.21049)	**(0.15402)**	(0.21610)
Constant	-0.28796**	0.72205***	**0.72205*****	0.58529***
	(0.12159)	(0.11337)	**(0.10076)**	(0.11154)
Observations	440	440	**440**	440
R-squared	0.33533	0.10600	**0.10600**	
Number of idc		55	**55**	55

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The FER model is the best model to explain how independent factors impact social sustainability. Table 4.6 displays the empirical results, which indicate that 4 out of 11 variables are strong association with SOCIAL. Variables that

include AC, LL, OE, and GDP showed a statistically significant result. The AC significant positive relationship means that large number of audit members help stimulating the social sustainability. Also, the auditor makes sure compliance with the social standards of a bank such as employee rights, community development (Appuhami & Tashakor, 2017). Both LL and OE have a significant negative and GDP has a significant positive impact on SOCIAL at significance level.

Then other variables including CEOTE, BI, BS, FEMALE, AQ, MI, and INFLA do not have impact on the social sustainability of the bank and not the major concern. It is because banks are more focus and prioritise their financial sustainability rather than social sustainability. The results indicate the social sustainability is not the primary factors in banks on promoting the sustainable business practices (Hassan & Harahap, 2010).

4.3 Diagnostic Checking

4.3.1 Normality Test

Table 4.7:

Jarque-Bera Test for Normality

Variables	Jarque-Bera test for normality (p-value)
ECO	0.0000
ENVIR	0.0000
SOCIAL	0.0002

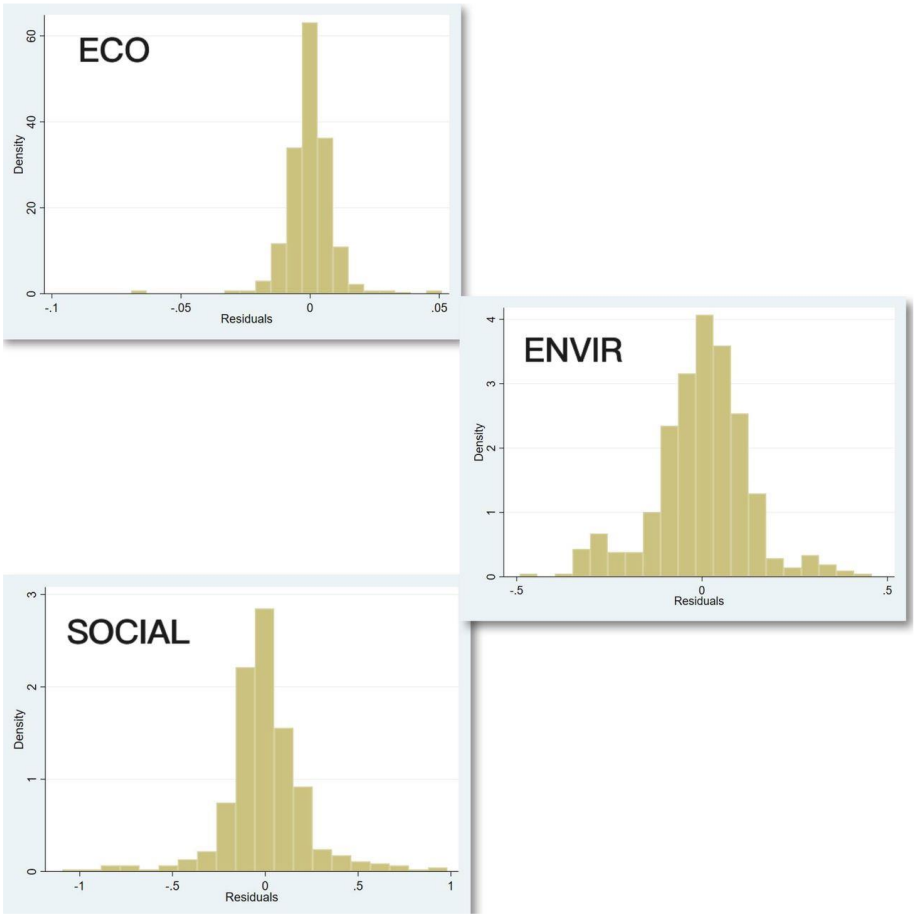

Figure 4.1. Histogram of Economic Sustainability, Environmental Sustainability, and Social Sustainability. Adapted from Stata.

Table 4.7, the p-value of ECO and ENVIR, 0.0000 rejects the hypothesis. The study reveals the ECO and ENVIR model do not follow a normal distribution at 1%, 5%, and 10% significance levels. The SOCIAL p-value of 0.0002 draws the conclusion that the error term in the model is not normally distributed.

In conclusion, the p-value of ECO, ENVIR, and SOCIAL imply there is not normally distributed. The reason may be because there is a very large sample size on the data and able to detect even a relatively minor departure from normality. Thus, it causes the data is rejecting the null hypothesis with a very low p-value. Based on the Central Limit Theorem theory, the error terms assumed to have a normal distribution when the sample size is more than 100 observations. There are 440 observations in this study which has fulfiled the assumption. Thus, it can conclude that the error terms have normal distribution even it has rejected the null hypothesis of the Skewness Kurtosis test for normality (Gujarati & Porter, 2009).

Kline (2005) stated that the skewness value ranges from -3 to +3 and the kurtosis value ranges from -10 to +10. It is considered a good result for a normality test. The skewness and kurtosis values fulfiled the requirements by referring table 4.1 and table 4.2. Thus, the normality test result within the guidelines rates from the normal distribution can demonstrate that this study is acceptable from a normal distribution.

4.3.2 Multicollinearity

Table 4.8:

Correlation-Pairwise Between Independent Variables and Control Variables

	CEOTE	BI	BS	FEMALE	AC	AQ	LL	OE	MI	GDP	INFLA
CEOTE	1.0000										
BI	0.0764	1.0000									
BS	0.1479*	-0.2117*	1.0000								
FEMALE	-0.0412	-0.0079	0.2461*	1.0000							
AC	0.0212	0.1877*	0.0402	0.0478	1.0000						
AQ	-0.0200	0.0588	-0.3072*	-0.0234	-0.0907	1.0000					
LL	0.0315	-0.0378	0.0832	0.2233*	0.0807	-0.0528	1.0000				
OE	0.0256	0.0571	0.2798*	-0.0701	-0.0294	-0.1315*	-0.4240*	1.0000			
MI	0.0371	0.1067*	0.2039*	-0.0182	-0.1223*	-0.0875	-0.0616	0.4344*	1.0000		
GDP	-0.0920	-0.1729*	-0.0874	-0.0131	0.0453	-0.0029	0.1493*	-0.1921*	-0.1473*	1.0000	
INFLA	-0.1382*	-0.1397*	-0.2126*	-0.1232*	0.1406*	0.0108	0.0574	-0.1910*	-0.3147*	0.4344*	1.0000

Based on Table 4.8, the outcomes indicate that OE and MI as well as GDP and INFLA are the pairs that have the highest correlation with each other, at a value of 0.4344. It shows the positive relationship between each pair of them. However, it is low collinear as they are not exceeding 0.8 as stated by Gujarati and Porter (2009). Besides, the pair of LL and OE rank second after OE and MI as well as GDP and INFLA, as it has a correlation coefficient of -0.4240. It shows a negative relationship between LL and OE. Yet, they still do not exceed 0.8.

Other than these few pairs, MI and INFLA has a correlation of -0.3147 which rank after LL and OE. This shows a negative relationship between each other. Following that, BS and AQ carries a correlation of -0.3072, which indicates a low negative relationship between each other. These few pairs are the top 5 pairs which have the highest correlation, and the rest have a correlation of less than 0.3. This indicates that all of the pairs tested have low collinearity or insignificant relationship between each other. Thus, the study concludes that there is no significant multicollinearity issue exist as each pair does not exceed collinearity of 0.8.

4.3.3 Heteroscedasticity Problem

Table 4.9:

Modified Wald Test for Heteroscedasticity

Variables	Modified Wald test for heteroskedasticity (p-value)
ECO	0.0000
ENVIR	0.0000
SOCIAL	0.0000

Table 4.9 shows all the variables ECO, ENVIR, and SOCIAL have a p-value of 0.000, representing there is a heteroscedasticity issue present in three models. It is because the p-value lower than significant level tends to reject the hypothesis.

4.3.4 Autocorrelation Problem

Table 4.10:

Wooldridge Test for Autocorrelation

Variables	Wooldridge test for autocorrelation (p-value)
ECO	0.0150
ENVIR	0.8406
SOCIAL	0.0152

According to Table 4.10, this study is using Wooldridge test to investigate the autocorrelation problem using panel data. Based on the findings, the p-value for ECO, ENV, and SOCIAL is 0.0150, 0.8406, and 0.0152 respectively. The p-value for ECO and SOCIAL is less than 0.05 which means it is below the level of significance. This can be concluded that the study should reject the hypothesis of no correlation problem, in which the ECO and SOCIAL models suffer the autocorrelation problem. However, the p-value for ENVIR is higher than 0.05, hence the ENVIR model does not have an autocorrelation problem since this study does not reject the null hypothesis.

In short, in the ECO and SOCIAL model exist heteroscedasticity and autocorrelation problems in the models. Hence, FER model is used to solve the problems for ECO and SOCIAL models.

4.4 Inferential Analysis

4.4.1 R-square

Table 4.11:

Result of R-squared

Variables	R-squared
ECO	0.5955
ENVIR	0.0378
SOCIAL	0.3353

The R-square of ECO is 0.5955 explains that there is 59.55% of the variation in economic sustainability is explained by the variables from the year 2014 to 2021. Additionally, there are 3.78% of the variations in environmental sustainability and 33.53% of the variation in social sustainability could be explained by the CEO power, board structure, audit, bank control, and economic between the years 2014 and 2021.

4.4.2 Gradually Analysis

Table 4.12:

The Revelation of Granting Factors of Bank's Economic Sustainability, Environmental Sustainability, and Social Sustainability

DV	(1) ECO					(2) ENVIR					(3) SOCIAL				
VARIABLES	CEO Power	Board	Audit	Bank Control	Economics	CEO Power	Board	Audit	Bank Control	Economics	CEO Power	Board	Audit	Bank Control	Economics
CEOTE	0.000168	0.000175	0.000182	0.000262	0.000363**	-0.00314	-0.00320	-0.00334	0.000398	0.00175	0.000603	0.000637	0.000539	0.000335	0.000436
	(0.000219)	(0.000218)	(0.000220)	(0.000196)	(0.000175)	(0.00334)	(0.00342)	(0.00333)	(0.00392)	(0.00424)	(0.00133)	(0.00135)	(0.00133)	(0.00145)	(0.00138)
BI		-0.000744	-0.000162	-0.00162	0.00163		-0.188	-0.221	-0.183	-0.146		0.0548	0.0482	0.0385	0.0463
		(0.00428)	(0.00424)	(0.00423)	(0.00394)		(0.181)	(0.174)	(0.169)	(0.176)		(0.0369)	(0.0355)	(0.0317)	(0.0320)
BS		-0.000367	-0.000262	-0.000291	-0.000241		-0.00447	-0.00952	-0.00805	-0.00774		-0.00192	-0.00322	-0.00395	-0.00366
		(0.000289)	(0.000281)	(0.000269)	(0.000245)		(0.0102)	(0.00971)	(0.00922)	(0.00947)		(0.00269)	(0.00272)	(0.00268)	(0.00263)
FEMALE		-0.00320	-0.00313	-0.00289	-0.00240		-0.0474	-0.0285	-0.0180	-0.0135		0.0164	0.0129	0.00577	0.00767
		(0.00366)	(0.00370)	(0.00364)	(0.00323)		(0.116)	(0.120)	(0.117)	(0.117)		(0.0220)	(0.0209)	(0.0202)	(0.0202)
AC			-0.000655	-0.000713*	-0.000728*			0.0310	0.0282	0.0283			0.00816*	0.00777*	0.00757*
			(0.000434)	(0.000392)	(0.000364)			(0.0192)	(0.0191)	(0.0187)			(0.00477)	(0.00403)	(0.00398)
AQ			-0.000995	-0.00194**	-0.00208**			0.160*	0.133	0.130			-0.000426	-0.00964	-0.00966
			(0.000790)	(0.000861)	(0.00102)			(0.0872)	(0.0950)	(0.0938)			(0.00897)	(0.0127)	(0.0142)
LL				-0.0700	-0.0750				0.345	0.270				-0.294***	-0.294***
				(0.0505)	(0.0536)				(0.382)	(0.358)				(0.0722)	(0.0717)
OE				-0.0294***	-0.0262***				-0.364	-0.327				-0.231***	-0.223***
				(0.00928)	(0.00872)				(0.266)	(0.274)				(0.0616)	(0.0584)
MI				0.00247**	0.00215*				0.0626**	0.0601**				-0.00593	-0.00745
				(0.00113)	(0.00111)				(0.0262)	(0.0282)				(0.0152)	(0.0153)
GDP					0.0223**					0.121					0.146**
					(0.00881)					(0.354)					(0.0591)
INFLA					0.0614***					1.112					-0.140
					(0.0223)					(0.958)					(0.154)
Constant	0.0151***	0.0194***	0.0214***	0.106**	0.103*	0.0730***	0.208	0.0295	0.102	0.0883	0.424***	0.415***	0.399***	0.741***	0.722***
	(0.00109)	(0.00400)	(0.00437)	(0.0503)	(0.0520)	(0.0166)	(0.149)	(0.181)	(0.373)	(0.341)	(0.00662)	(0.0361)	(0.0423)	(0.101)	(0.101)
Observations	440	440	440	440	440	440	440	440	440	440	440	440	440	440	440
R-squared	0.004	0.009	0.014	0.135	0.176	0.001	0.005	0.018	0.034	0.040	0.001	0.008	0.020	0.098	0.106
Number of idc	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4.12 testes and categorises into five types which are CEO power, board structure, audit, bank control, and economic variables to bank sustainability.

Under the category of CEO power variables, the result indicates that CEOTE has an insignificant relationship with all sustainability dimensions when the variable was individually tested. However, significant correlation found when CEOTE is tested together with board variables, audit variables, bank control variables, and economic variables in ECO model. This result could be justified by the fact of the CEO tenure is able to influence the audit quality through the timeliness of audit reporting. Baatwah, Salleh, and Ahmad (2015) highlighted that a longer CEO tenure enables the CEO more familiar with financing reporting procedures and speeds up the time taken by the auditor to generate the accounting report. Consequently, the audit quality will be enhanced, and the excessive operating expenses could be prevented. In this situation, it will bring a positive impact on economic sustainability. A recent study also stated that longer CEO tenure can better influence the operational decision and performance because the CEO empower to make the right decision through successful experience and tactics (Ghardallou, 2022).

Under board structure, BI, BS, and FEMALE have an insignificant relationship with ECO, ENVIR and SOCIAL. It is because the board did not concern more on sustainability as it is not their primary goal of preserving the interests of shareholders. Moreover, the situation might be due to the board members are lacked knowledge on sustainability.

Under the category of audit variables, the outcomes reveal that AC and SOCIAL are significant positive within each other. This justified by Cancela et al. (2020) stated the existence of audit committees and board structure including board size positively influence the social performance of the bank. The audit committees perform a crucial duty in monitoring the bank performance. For instance, the audit committee assists the shareholder to confirm the reporting presented by the director is fair and appropriate.

Trotman and Trotman (2015) stated that the audit committee assists the organisation board by regularly assessing the risks and performance of CSR. Good CSR performance creates a positive reputation for the bank. As an implication, this will improve the economic and social sustainability of the bank as more likely to gain public support and reduce risk in business operations. Besides, the AC is negative significant with the ECO.

Besides that, the result shows that AQ under audit variables and ENVIR is positive significant within each other. The presence of BIG4 auditors is believed will enhance the audit quality as they are well-known companies in the accounting field and possess professional background. Fitriany, Anggraita, Kurrohman, and Aulia (2022) mentioned that the external auditor with professional skepticism, integrity, and knowledge is more capable to enhance the quality of financial reports as the high audit quality. Then, good audit quality can constituted a significant impact on environmental sustainability. The reason is a professional auditor capable to assist in the implementation plan for climate change. The auditors play a critical role in advocating the public or private sector to act responsibly for the development of climate goals and targets (Fitriany et al., 2022). Therefore, auditor quality acts significantly in protecting the justice and fairness of financial reporting to prevent corruption and fraud increase. Additionally, AQ has a positive significant effect on ECO when tested together with the CEO power variables, board variables, bank control variables, and economic control variables. The result could be supported by the study of Jin, Kanagaretnam, and Lobo (2011) enforced that high audit quality is likely to mitigate the probability of a bank failure and assure the credibility of the bank's financial information.

According to Popli, Akbar, Kumar, and Gaur (2017), the leverage level of a corporation serves as a useful measurement to achieve the greater sustainability of a bank in long-term. The result indicates LL and SOCIAL have a significant negative association when tested with the available independent variables. Apart from that, the OE has a significant negative relationship with ECO and SOCIAL. Previous research showed the

operating deficiency will reduce the profitability and economic sustainability of a bank (Tehulu, 2013; Hossain & Khan, 2016; Osazefua, 2019). Also, MI indicates a significant positive association with ECO and ENVIR. A study by Cui and Lui (2005) stated marketing intensity able to boost the profitability and market share of the bank. Additionally, great marketing strategies enable the bank to gain a competitive advantage and stand out in the market (Jaisinghani et al., 2020). Higher marketing intensity signifies greater exposure of the bank to the public to retain the branding image and lead to the bank being more likely to engage in more sustainability activities (Roush et al., 2012).

In addition, GDP has a significant positive association to ECO and SOCIAL. Since GDP is a indicator of economic growth. The increase in GDP growth will bring an economic boom and this situation is beneficial to the financial sustainability of banks. When banks obtain financial sustainability, it increases the probability of banks boosting their social sustainability as they play a significant role in giving back to society. Besides that, Aman (2019) proved the macroeconomic factors are other factors that will influence bank financial distress and not only bank-specific factors. This study can also elucidate the result of inflation rate has a significantly positive association with economic sustainability. On the contrary, the GDP and INFLA have an insignificant influence on environmental.

4.5 Conclusion

Proper data analysis is crucial for this project to be successful. Every research project must include data analysis, and the strategies discussed in this chapter give a strong basis for accomplishing this regardless of either qualitative or quantitative statistics. This study can develop a broader grasp of the research topic and evaluate the ideas by properly choosing the right methodologies that match the research objectives and questions. Lastly, this study will be well-prepared to accomplish by using the methodologies and best practices described in this chapter.

CHAPTER 5: DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.0 Introduction

This section delves the results of the study on the relationship between the corporate governance variables and banking sustainability. Besides, a summary of the results will be presented, followed by an implication of the research. Additionally, the study assesses on the study's limitations and suggestions for upcoming scholar.

5.1 Discussions of Major Findings

5.1.1 CEO Power

The first objective has been achieved in this research is to investigate the relationship between CEO power and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

Table 5.1:
The Relationship of CEO Tenure and Economic Sustainability, Environmental Sustainability, and Social Sustainability

Variables		Hypothesis	Result	Decision Making
CEO Tenure (CEOTE)	ECO	Significant, Positive	Significant, Positive	Do not reject H_0
	ENVIR	Significant, Positive	Insignificant	Reject H_0
	SOCIAL	Significant, Negative	Insignificant	Reject H_0

The study does not reject the ECO null hypothesis. The experienced CEOs prioritised the economic success of the bank compared to shorter tenure CEOs (Emestine & Setyaningrum, 2019). Furthermore, this study rejects the

ENVIR null hypothesis since the result indicates an insignificant relationship between them. The finding suggests that the experienced CEOs have low knowledge of environmental concerns cause CEO tenure has no impact on environmental sustainability practices (Oware & Awunyo-Vitor, 2021). Conversely, this study rejects the null hypothesis on the correlation between CEOTE and SOCIAL as the data analysis shows an insignificant relationship between these two variables. It can explain that the duration of CEO does not interest in the social sustainability investment in long term with uncertain returns (Choi et al., 2019).

5.1.2 Board Structure

The objective has been reached to evaluate the association between board structure and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

Table 5.2:

The Relationship of Board Independence and Economic Sustainability, Environmental Sustainability, and Social Sustainability

Variables		Hypothesis	Result	Decision Making
Board Independence (BI)	ECO	Significant, Positive	Insignificant	Reject H_0
	ENVIR	Significant, Positive	Significant, Negative	Reject H_0
	SOCIAL	Significant, Positive	Insignificant	Reject H_0

The board independence reveals an insignificant correlation between board independence and economic sustainability; hence, this study rejects the hypothesis proposed. Prior research by Machdar (2019) and Nurlaily and Rahmi (2021) also showed that the independent board no relationship, indicating the bank management's indifference towards sustainability reporting. After, this study rejects the ENVIR null hypothesis. This result is supported by Michelon and Parbonetti (2012) and Baalouch et al. (2019). The authors observed that the directors do not have the responsible to

improve the non-financial reporting. Moreover, this study rejects the SOCIAL null hypothesis, which evidenced with the expectation from earlier studies by Machdar (2019) and Al-Jaifi (2020). These findings suggested the independent directors are not prioritising social sustainability as the directors focus more on bank operation rather than social achievement.

Table 5.3:

The Relationship of Board Size and Economic Sustainability, Environmental Sustainability, and Social Sustainability

Variables		Hypothesis	Result	Decision Making
Board Size (BS)	ECO	Significant, Positive	Insignificant	Reject H_0
	ENVIR	Significant, Positive	Insignificant	Reject H_0
	SOCIAL	Significant, Positive	Insignificant	Reject H_0

The results of the study reject all the null hypothesis. This finding aligns with Galbreath (2011) and Hussain et al. (2018) research, which explains that size of the bank's directors has no larger impact on affecting the financial performance. Moreover, Al-Jaifi (2020) and Tjahjadi et al. (2021) suggested that most board members lack the requisite knowledge to evaluate environmental sustainability, supporting the hypothesis rejection between board size and environmental sustainability. Furthermore, Al-Jaifi (2020) and Cakti, Setiawan, and Aryani (2022) observed no correlation between board size and social benefit as there is no just one factor impact the social achievement.

Table 5.4:

The Relationship of Female Board of Director and Economic, Environmental, and Social Sustainability

Variables		Hypothesis	Result	Decision Making
Female Board of Director (FEMALE)	ECO	Significant, Positive	Insignificant	Reject H_0
	ENVIR	Significant, Positive	Insignificant	Reject H_0
	SOCIAL	Significant, Positive	Insignificant	Reject H_0

In the context of the female board of directors, this study rejects the ECO null hypothesis as it finds an insignificant correlation between the female board of directors and economic sustainability, inconsistent with the study by Setiyono and Tarazi (2014) and Zakaria (2021). These studies indicated that in future the banks should equal gender diversity in the workplace to result a positive outcome. The results demonstrate an insignificant correlation, causing the study rejects the ENVIR and SOCIAL null hypothesis. Regarding these three insignificant results, Suciu, Paun, and Duma (2021) have suggested that gender bias on boards may impede women's recognition and sustainability to the same degree as men. Additionally, Nguyen, Elmagrhi, Ntim, and Wu (2021) have proposed that regulatory limitations may be imposed on female directors, despite their vast expertise.

5.1.3 Audit

The third goal has been accomplished is to examine the correlation between audit and sustainability (economic, environmental, and social) of the banking industry in six ASEAN countries.

Table 5.5:

The Relationship of Audit Committee and Economic Sustainability, Environmental Sustainability, and Social Sustainability

Variables		Hypothesis	Result	Decision Making
Audit Committee (AC)	ECO	Significant, Negative	Significant, Negative	Do not reject H_0
	ENVIR	Significant, Positive	Insignificant	Reject H_0
	SOCIAL	Significant, Positive	Significant, Positive	Do not reject H_0

The study does not reject the ECO null hypothesis. This outcome suggests having an audit committee with diverse educational backgrounds and supervision perspectives bring effect on the bank profitability (Musdalifah & Himmati, 2021). Similarly, the result of SOCIAL implies that larger audit committees can perform better in improving CSR disclosure (Mohammadi, Saeidi, & Naghshbandi, 2021). Besides, the hypothesis regarding the association between the AC and ENVIR is rejected reveals an insignificant relationship. Previous studies have shown that audit committees focus mainly on evaluating financial statements and selecting external auditors, which may limit their ability to focus on sustainability dimensions (Hasanuddin & Suryani, 2019; Kalbuana et al., 2022).

Table 5.6:

The Relationship of Audit Quality and Economic Sustainability, Environmental Sustainability, and Social Sustainability

Variable		Hypothesis	Result	Decision Making
Audit Quality (AQ)	ECO	Significant, Positive	Significant, Negative	Reject H_0
	ENVIR	Significant, Positive	Insignificant	Reject H_0
	SOCIAL	Significant, Positive	Insignificant	Reject H_0

All hypotheses related to the audit quality variable have been rejected based on the results of the data analysis. The relationship between audit quality and economic variables is significant negative, which implies that larger audit companies can ensure the legitimacy of information and reduce audit fees through stronger audit performance. This is inconsistent with the study's expectation with Phan, Lai, Le, and Tran (2020). However, audit quality is not significantly related to environment sustainability and social sustainability, indicating that audit quality may not possess the necessary knowledge to assess environmental and social issues. This is likely due to the wide range of challenges involved in these issues, which may be beyond the scope of the audit committee's expertise (Haniffa & Cooke, 2002; Lim et al., 2008).

5.2 Implications of the Study

The first implication to the bank is the study can enhance the risk management of the bank. The reason is the bank could build a holistic view of risk management strategies after studying as the bank can determine risks and potential opportunities to bank sustainability. With good risk management, the bank could minimise the risk before it becomes a substantial issue in the sustainability of the bank. After undergoing this study, the bank can comprehend well the consequences of some determinants of sustainability when the bank did not utilise them appropriately. For instance, the overall findings prove that marketing intensity can influence the reputation and ultimately affect the economic sustainability of banks. Therefore, the banks execute comprehensive marketing planning as one of the initiatives in risk

management to control the reputational risk of the bank. Also, the banks could execute better lending policies and decisions to prevent default risk that will affect the whole financial system.

Apart from this, employees are crucial assets for a bank. If the employees only consider earning profit and neglect the social and environmental aspects, the bank is difficulty balancing three dimensions sustainability. To further enhance the risk management of the bank, the bank should provide more sustainable training to employees to avoid employees unwilling to contribute to sustainability improvement (Govindarajulu & Daily, 2004). Sustainable training enables the employee aware of the risk and knows how to accomplish their task while considering the benefit to the economy, environment, and society. This can be substantiated by the study of Akinseye and Mugri (2022) endorsed employee performance is being affected by the training of employees. Consequently, employees can identify issues of sustainability and increase their engagement in sustainability-related activities (Pellegrini, Rizzi, & Frey, 2018). For example, the employee of the bank could perform better in promoting green products of the bank after the training as the employee gain personal skills and knowledge of sustainability from the training.

Besides that, the second implication of the study is the improvement of the quality of sustainability reporting. The banks will know which sustainability action should be emphasised to boost sustainability and sustainability reporting results after identifying the uncertainty. In this context, the banks could establish a meaningful sustainability goal in the reporting and provide stakeholders more comprehensive view of the bank's sustainability. Also, the banks can know which component should disclose in the sustainability report to build public trust. However, some of the ASEAN banks lacked and mandatory sustainability reporting requirements such as Indonesia, Vietnam (Husnaini & Basuki, 2020; Pham, Jung, & Lee, 2020). This situation causes the banks in these countries can be voluntary to disclose the information, thus some banks might not transparent enough in their disclosure.

Hence, another implication of the study is it emphasises the importance of setting a stronger regulatory framework for sustainability reporting to policymakers or

government. The study continuously emphasises the importance of sustainability. Therefore, it is important to have a comprehensive sustainability report for assessing the sustainability performance of the bank. Namely, the ASEAN countries' policymakers or governments should implement mandatory sustainability reporting standards. Then, the sustainability reporting disclosure will become mandatory for the banks and advocate the transparency of sustainability reporting in the banks. This study makes a valuable contribution to the implementation of effective corporate governance practices. This research inspires banks to adopt the best practices. Specifically, this study sheds light on which corporate governance mechanisms significantly impact sustainability, providing a clearer picture of how to boost sustainability performance in real-world applications. Policymakers can leverage these findings to identify the direction of causation and develop appropriate guidelines and standards to enhance sustainability performance. Banks are also more likely to implement effective governance structures when there is strong correlation. For instance, CEO power has a strong impact on economic sustainability, suggesting that banks and banks should hold a CEO in the position longer to guide bank's strategy and decision-making more effectively, can better navigate complex regulatory environments as well as stakeholders' expectations to help balancing the sustainability considerations (Javeed, Latief, Jiang, Ong, & Tang, 2021). Besides, CEO with strong power can drive innovation and adapt to changing market conditions, which contributes overall sustainability and competitiveness. With the CEO as a critical element for corporate governance, governments and policymakers can work with banking regulators to revise existing governance to align positively with sustainability performance. The guidelines and standards can include specific metrics and targets related to sustainability, as well as requirements for regular reporting and disclosure of sustainability performance.

Furthermore, this study contributes to the sustainability culture of not only commercial banks in the region, but also for non-listed commercial banks and non-banking financial institutions, especially those that are subject to similar central bank regulations and have similar institutional features. This study highlights the significance of good corporate governance practices in promoting sustainability in financial institutions. The financial institutions can promote sustainability by implementing environmental and social policies, reporting on sustainability metrics,

and engaging with stakeholders on sustainability issues. By providing insights into best practices that financial institutions can adopt to promote sustainability, it can encourage banks and non-bank financial institutions to adopt such practices and contributes to sustainability culture. Besides, this study can create awareness and encourage different stakeholders to work together to achieve the common goals. For instance, this study shows the crucial role of board of directors in overseeing the sustainability performance as well as ensuring that the bank's operation is conducted in environmentally and socially responsible manner. Thus, this can be applied to those non-listed commercial banks and non-banking financial institutions as well. Hopt (2021) suggested that non-listed commercial banks and non-bank financial institutions should have an independent board of directors with expertise in sustainability, environmental, and social issues to ensure effective oversight and act in best interests of business and its stakeholders. Additionally, it is suggested that a sustainability committee can be established within their board of directors to oversee sustainability strategy and implementation as well as maintain accountable management for sustainability performance (Birindelli, Dell'Atti, Iannuzzi, & Savioli, 2018; Dicuonzo, Donofrio, Iannuzzi, & Dell'Atti, 2022).

5.3 Limitations of the Study

The research has outlined some constraints and future research may be able to withstand. Firstly, incomplete financial reporting can pose a problem in the form of data collection, since annual reports may not fully show the banks' financial data. Furthermore, certain financial reports are hidden from the public or are not accessible, which makes it impossible to collect data on variables. Due to limited data availability, this study finally got 55 banks as a sample. The sample size is not large enough, so the findings can only be generalised to countries with similar financial and economic development. Besides, the data for each variable in this study was gathered using the annual reports of specific conventional banks. However, this form of data collection may result in a problem with erroneous data. It is at the discretion of the domestic banks to alter and reorganise the data contained within their annual reports before they are published. This could lead to mistakes in

the data which could in turn lead to inaccurate results in the study. In order to guarantee that the findings are accurate, it is essential to take into consideration the potential for errors when utilising data collected in this manner.

Secondly, there is little past study in the sustainability of ASEAN. This is likely due to the ASEAN region being largely overlooked when it comes to research finding, as well as the lack of awareness about the importance of sustainability in the region. As a result, there is a lack of awareness in ASEAN about the need for more research into sustainability. This lack of awareness has contributed to the under-investment in sustainability research in the region, making it difficult for researchers to access the finding and resources needed to carry out the studies. Furthermore, the Sustainability Performance Index also combines a variety of economic, environmental, and social factors without assuming how they are related to one another. Based on previous literature, the study selected representative indices to examine the impact of three aspects of sustainability of ASEAN banks. Other indices of sustainability performance, such as sustainable products and processes, social investment, and compliance management are not included. Research could consider making these indices dependent variables for future studies.

Lastly, the study's limitation is the absence of comprehensive and precise variables to describe environmental and social indicators. The study's reliability and validity may suffer as a result of its failure to capture the full scope of the link between corporate governance and banking sustainability. Moreover, depending on limited variables to describe complex environmental and social factors may result in incomplete or erroneous results. Assessing a bank's social sustainability, for example, may entail taking into account aspects other than employee welfare, such as community participation and customer satisfaction. Unfortunately, these disclosure index variables are not included in the banks' annual reports. As a result, it is critical for researchers to recognise and overcome such limitations when interpreting and reporting their study's findings.

5.4 Recommendations for Future Research

There are few limitations have been found during the research process. Thus, this study has provided suggestions for future research. This study utilises statistical models to examine the panel data, which will confront an endogeneity problem. This can result in inaccurate estimates and make understanding the causal link between variables difficult. A dynamic model can be utilised in the future to tackle such a challenge. Dynamic models take into consideration effect persistence, which suggests that impacts from one period might transfer over to following periods. Researchers can establish the direction of causality between variables and get valid coefficient estimates by employing instrumental variables approaches in dynamic panel data analysis. Moreover, future studies may use a combination of qualitative and event study research designs. This may entail conducting interviews or focus groups with important stakeholders such as shareholders, customers to get insights regarding the bank sustainability practices. Crucially, such investigations will provide useful information.

Moreover, this study recommends that future researchers should investigate more sustainability banking in ASEAN to provide diverse and informative results for analysis. This is due to different studies focusing on varying scopes and methodologies, providing diverse perspectives and ideas for the analysis as well as the conclusion generalisation. By having more studies on this topic, the researchers are able to compare previous studies and arrive at a comprehensive result. Besides, it is imperative that the research community refers to more journals and research papers to support the study. Furthermore, this study also suggests that the future researchers should also acquire knowledge about sustainability topics as there are few studies in this area. This is because the selection of appropriate variables among the multiple variables requires a wide study of the topic. This is to ensure the variables are significant and relevant to the study. In short, future researchers should study more on the sustainability-related topic.

Additionally, it may be valuable to investigate the influence of country-level disparities on bank sustainability on future study. It might entail looking into governance indices including rule of law, corruption, political and regulatory quality, and government effectiveness. It is possible that the legal and regulatory systems in many nations may differ significantly from one another, which will have a big impact on how corporate governance is carried out and how it affects sustainable banking practices. Political instability and corruption, for example, may impair banks' capacity to execute sustainable banking practices and enforce corporate governance standards. Future studies take into account these variables may offer new information about the connection between corporate governance and sustainability of bank.

5.5 Conclusion

In summary, this study explored the extent and nature of sustainability in the banking sector in ASEAN and investigated the influences of corporate governance on the sustainability performance (economic, environmental, and social) for the period between 2014 and 2021. The variables include CEO power, board structure, audit, bank control, as well as the economic variables on the three pillars of sustainability. Despite some of the limitations, the study’s research objectives were achieved, as the relationship between each variable with bank sustainability performance was presented clearly. This study contributed to future research on bank sustainability in ASEAN and provides policymaker, investor, and the public with valuable insights. Additionally, limitations and recommendations are highlighted for future researchers who will be working on the relevant issue.

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APPENDICES

Appendix 4.1: Descriptive Statistics. Adapted from EViews 12.

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

	ECO	ENVIR	SOCIAL	CEOTE	BI	BS	FEMALE	AC	AQ	LL	OE	MI	GDP	INFLA
Mean	0.015915	0.057357	0.426717	4.972727	0.449580	9.629545	0.153635	3.970455	0.731818	0.879292	0.369849	-4.173836	0.038619	0.022070
Median	0.013008	0.040633	0.459940	4.000000	0.454545	9.000000	0.166667	4.000000	1.000000	0.888128	0.357262	-4.154379	0.050000	0.021000
Maximum	0.136915	0.979544	0.936003	27.00000	0.875000	19.00000	0.800000	9.000000	1.000000	1.029492	0.930331	-0.728441	0.101000	0.064000
Minimum	-0.052161	-0.998656	-0.140749	1.000000	0.076923	3.000000	0.000000	2.000000	0.000000	0.490434	0.010023	-8.992849	-0.095000	-0.011400
Std. Dev.	0.014924	0.233471	0.159420	4.682559	0.198180	3.188324	0.119936	1.159899	0.443517	0.061829	0.152455	1.343046	0.036914	0.017775
Skewness	4.417679	-0.039353	-0.826144	2.321990	0.008675	0.454329	0.474561	1.425392	-1.046553	-3.441997	0.356466	-0.532776	-1.946819	0.313879
Kurtosis	33.05601	7.056646	4.819951	8.968128	2.311850	2.650307	3.838397	5.185713	2.095273	19.75902	3.415777	3.678076	6.617442	2.958262
Jarque-Bera	17992.83	301.8138	110.7751	1048.394	8.687274	17.37896	29.40194	236.5790	95.32643	6017.992	12.48762	29.24510	517.8489	7.256744
Probability	0.000000	0.000000	0.000000	0.000000	0.012989	0.000168	0.000000	0.000000	0.000000	0.000000	0.001942	0.000000	0.000000	0.026559
Sum	7.002707	25.23715	187.7556	2188.000	197.8153	4237.000	67.59957	1747.000	322.0000	386.8887	162.7334	-1836.488	16.99240	9.710700
Sum Sq. Dev.	0.097777	23.92937	11.15707	9625.673	17.24181	4462.616	6.314907	590.6159	86.35455	1.678214	10.20349	791.8561	0.598215	0.138710
Observations	440	440	440	440	440	440	440	440	440	440	440	440	440	440

Appendix 4.2: Reluctant F-test of Economic Sustainability. Adapted from STATA.

```
Fixed-effects (within) regression               Number of obs      =       440
Group variable: idc                             Number of groups   =        55
```

ECO	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	.0003633	.0001352	2.69	0.008	.0000974	.0006293
BI	.0016295	.004907	0.33	0.740	-.0080193	.0112782
BS	-.0002405	.000301	-0.80	0.425	-.0008324	.0003514
FEMALE	-.0024024	.0040728	-0.59	0.556	-.0104109	.0056061
AC	-.0007284	.0004273	-1.70	0.089	-.0015686	.0001117
AQ	-.0020831	.0029501	-0.71	0.481	-.0078839	.0037176
LL	-.0750169	.0126081	-5.95	0.000	-.0998086	-.0502253
OE	-.0261769	.0062131	-4.21	0.000	-.0383938	-.01396
MI	.0021533	.0007667	2.81	0.005	.0006457	.0036608
GDP	.0223335	.009321	2.40	0.017	.0040055	.0406616
INFLA	.0613962	.0244424	2.51	0.012	.0133344	.1094579
_cons	.1028909	.013165	7.82	0.000	.0770042	.1287776
sigma_u	.01182133					
sigma_e	.00609456					
rho	.79001524	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(54, 374) = 12.79                     Prob > F = 0.0000
```

Appendix 4.3: Reluctant F-test of Environmental Sustainability. Adapted from STATA.

Fixed-effects (within) regression — Number of obs = 440
Group variable: idc — Number of groups = 55

ENVIR	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	.0017537	.0051523	0.34	0.734	-.0083774	.0118848
BI	-.1459247	.1869373	-0.78	0.436	-.5135046	.2216551
BS	-.0077373	.0114671	-0.67	0.500	-.0302854	.0148108
FEMALE	-.0134828	.1551587	-0.09	0.931	-.3185757	.29161
AC	.0282662	.0162769	1.74	0.083	-.0037396	.060272
AQ	.130459	.1123858	1.16	0.246	-.0905283	.3514463
LL	.2700165	.4803203	0.56	0.574	-.6744504	1.214483
OE	-.3269237	.2366939	-1.38	0.168	-.7923413	.1384939
MI	.0601097	.029208	2.06	0.040	.0026772	.1175422
GDP	.1207482	.3550928	0.34	0.734	-.5774804	.8189768
INFLA	1.111873	.931161	1.19	0.233	-.7190936	2.942841
_cons	.0882923	.5015357	0.18	0.860	-.897891	1.074476
sigma_u	.13035394					
sigma_e	.2321794					
rho	.23966555	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 374) = 0.98 — Prob > F = 0.5108

Appendix 4.4: Reluctant F-test of Social Sustainability. Adapted from STATA.

Fixed-effects (within) regression — Number of obs = 440
Group variable: idc — Number of groups = 55

SOCIAL	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	.0004358	.0011647	0.37	0.708	-.0018543	.002726
BI	.0462818	.0422569	1.10	0.274	-.0368091	.1293727
BS	-.0036589	.0025921	-1.41	0.159	-.0087558	.0014381
FEMALE	.007666	.0350734	0.22	0.827	-.0612998	.0766318
AC	.0075727	.0036794	2.06	0.040	.0003379	.0148076
AQ	-.0096644	.0254046	-0.38	0.704	-.0596183	.0402894
LL	-.2937218	.1085757	-2.71	0.007	-.5072171	-.0802264
OE	-.2233247	.0535043	-4.17	0.000	-.3285317	-.1181178
MI	-.0074455	.0066024	-1.13	0.260	-.020428	.005537
GDP	.1458098	.0802682	1.82	0.070	-.0120237	.3036434
INFLA	-.1399837	.2104875	-0.67	0.506	-.5538711	.2739037
_cons	.7220492	.1133714	6.37	0.000	.4991239	.9449744
sigma_u	.1547043					
sigma_e	.0524838					
rho	.89678684	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 374) = 42.93 — Prob > F = 0.0000

Appendix 4.5: Hausman Test of Economic Sustainability. Adapted from STATA.

```
. . hausman FEM REM,constant sigmamore
```

	Coefficients (b) FEM	(B) REM	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
CEOTE	.0003633	.0002133	.00015	.0000768
BI	.0016295	-.0031769	.0048064	.0036014
BS	-.0002405	-.0004003	.0001598	.0002146
FEMALE	-.0024024	-.0048718	.0024694	.0017262
AC	-.0007284	-.0004465	-.000282	.0001847
AQ	-.0020831	-.0003851	-.001698	.0025173
LL	-.0750169	-.1244997	.0494828	.0079138
OE	-.0261769	-.0116083	-.0145687	.0041464
MI	.0021533	.0010158	.0011375	.0005654
GDP	.0223335	.0240267	-.0016932	.0013709
INFLA	.0613962	.0616344	-.0002382	.0069333
_cons	.1028909	.1386574	-.0357666	.0080976

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 61.42
Prob > chi2 = 0.0000
(V_b-V_B is not positive definite)

Appendix 4.6: Hausman Test of Environmental Sustainability. Adapted from STATA.

```
. . hausman FEM REM,constant sigmamore
```

	Coefficients (b) FEM	(B) REM	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
CEOTE	.0017537	-.0000571	.0018108	.004535
BI	-.1459247	-.1588566	.0129319	.1763539
BS	-.0077373	.0022657	-.0100031	.0106358
FEMALE	-.0134828	-.0371628	.0236799	.1191386
AC	.0282662	-.00068	.0289463	.0127533
AQ	.130459	-.0017567	.1322157	.1091011
LL	.2700165	.1279058	.1421107	.4313884
OE	-.3269237	.0084062	-.33533	.2166275
MI	.0601097	.0149741	.0451356	.0275106
GDP	.1207482	.2369159	-.1161677	.1008992
INFLA	1.111873	1.017918	.0939552	.553204
_cons	.0882923	.0322462	.0560461	.4529027

b = Consistent under H0 and Ha; obtained from xtreg.
B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 11.72
Prob > chi2 = 0.3851
(V_b-V_B is not positive definite)

Appendix 4.7: Hausman Test of Social Sustainability. Adapted from STATA.

```
. . hausman FEM REM,constant sigmamore
```

	Coefficients (b) FEM	(B) REM	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
CEOTE	.0004358	.0007859	-.0003501	.0003799
BI	.0462818	.0434681	.0028137	.0191974
BS	-.0036589	-.0026829	-.0009759	.0011704
FEMALE	.007666	.0229887	-.0153227	.008334
AC	.0075727	.008064	-.0004913	.0008994
AQ	-.0096644	.0272536	-.036918	.0149048
LL	-.2937218	-.1499965	-.1437253	.0407098
OE	-.2233247	-.2422536	.0189289	.0216841
MI	-.0074455	-.002447	-.0049985	.0030556
GDP	.1458098	.1417522	.0040576	.0065537
INFLA	-.1399837	-.2666594	.1266756	.0322593
_cons	.7220492	.5852934	.1367558	.0375249

```
                b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

   chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            =  40.99
Prob > chi2 = 0.0000
(V_b-V_B is not positive definite)
```

Appendix 4.8: Breusch-Pagan Lagrange Multiplier Test (BPLM Test) of Economic Sustainability. Adapted from STATA.

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ECO[idc,t] = Xb + u[idc] + e[idc,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                 --------+------------------------------
                     ECO |   .0002227        .014924
                       e |   .0000371       .0060946
                       u |   .0000427       .0065329

        Test: Var(u) = 0
                                chibar2(01) =   326.94
                            Prob > chibar2 =   0.0000
```

\

Appendix 4.9: Breusch-Pagan Lagrange Multiplier Test (BPLM Test) of Environmental Sustainability. Adapted from STATA.

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ENVIR[idc,t] = Xb + u[idc] + e[idc,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                ---------+-----------------------------
                   ENVIR |    .0545088       .2334712
                       e |    .0539073       .2321794
                       u |          0               0

        Test: Var(u) = 0
                                  chibar2(01) =      0.00
                              Prob > chibar2 =    1.0000
```

Appendix 4.10: Breusch-Pagan Lagrange Multiplier Test (BPLM Test) of Social Sustainability. Adapted from STATA.

```
Breusch and Pagan Lagrangian multiplier test for random effects

        SOCIAL[idc,t] = Xb + u[idc] + e[idc,t]

        Estimated results:
                         |       Var     SD = sqrt(Var)
                ---------+-----------------------------
                  SOCIAL |    .0254147         .15942
                       e |    .0027545       .0524838
                       u |    .0134062       .1157853

        Test: Var(u) = 0
                                  chibar2(01) =    837.14
                              Prob > chibar2 =    0.0000
```

Appendix 4.11: Normality Testing of Economic Sustainability. Adapted from STATA.

```
Skewness and kurtosis tests for normality
                                                        ------ Joint test ------
    Variable |        Obs   Pr(skewness)   Pr(kurtosis)   Adj chi2(2)  Prob>chi2
-------------+-------------------------------------------------------------------
 myResiduals |        440        0.0000         0.0000        127.41      0.0000
```

Appendix 4.12: Normality Testing of Environmental Sustainability. Adapted from STATA.

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test Adj chi2(2)	Joint test Prob>chi2
myResiduals	440	0.3956	0.0000	43.75	0.0000

Appendix 4.13: Normality Testing of Social Sustainability. Adapted from STATA.

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test Adj chi2(2)	Joint test Prob>chi2
myResiduals	440	0.0836	0.0000	16.95	0.0002

Appendix 4.14: Modified Wald Test of Economic Sustainability. Adapted from STATA.

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (55)  =   71569.34
Prob>chi2 =      0.0000
```

Appendix 4.15: Modified Wald Test of Environmental Sustainability. Adapted from STATA.

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (55)  =   23044.76
Prob>chi2 =      0.0000
```

Appendix 4.16: Modified Wald Test of Social Sustainability. Adapted from STATA.

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (55)  =   23795.67
Prob>chi2 =      0.0000
```

Appendix 4.17: Wooldridge Test of Economic Sustainability. Adapted from STATA.

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      54) =      6.317
           Prob > F =      0.0150
```

Appendix 4.18: Wooldridge Test of Environmental Sustainability. Adapted from STATA.

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      54) =      0.041
           Prob > F =      0.8406
```

Appendix 4.19: Wooldridge Test of Social Sustainability. Adapted from STATA.

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      54) =      6.285
           Prob > F =      0.0152
```

Appendix 4.20: R-Squared of Economic Sustainability. Adapted from STATA.

```
. regress ECO CEOTE BI BS FEMALE AC AQ LL OE MI GDP INFLA
```

Source	SS	df	MS	Number of obs	=	440
				F(11, 428)	=	57.27
Model	.058222324	11	.005292939	Prob > F	=	0.0000
Residual	.039554233	428	.000092416	R-squared	=	0.5955
				Adj R-squared	=	0.5851
Total	.097776557	439	.000222726	Root MSE	=	.00961

ECO	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	.0001552	.0001009	1.54	0.125	-.0000431	.0003535
BI	-.0071473	.0025462	-2.81	0.005	-.0121519	-.0021427
BS	-.0004306	.0001764	-2.44	0.015	-.0007773	-.000084
FEMALE	-.0102024	.0041096	-2.48	0.013	-.0182799	-.0021248
AC	.0002714	.0004181	0.65	0.517	-.0005504	.0010931
AQ	-.0005448	.0010981	-0.50	0.620	-.0027031	.0016135
LL	-.1858701	.0087082	-21.34	0.000	-.2029862	-.168754
OE	-.0077106	.0039283	-1.96	0.050	-.0154317	.0000105
MI	-.0001236	.000403	-0.31	0.759	-.0009157	.0006685
GDP	.0407368	.0140953	2.89	0.004	.0130323	.0684414
INFLA	-.0332634	.0309957	-1.07	0.284	-.0941862	.0276593
_cons	.1883232	.0088804	21.21	0.000	.1708686	.2057778

Appendix 4.21: R-Squared of Environmental Sustainability. Adapted from STATA.

```
. regress ENVIR CEOTE BI BS FEMALE AC AQ LL OE MI GDP INFLA
```

Source	SS	df	MS	Number of obs	=	440
				F(11, 428)	=	1.53
Model	.903837626	11	.082167057	Prob > F	=	0.1186
Residual	23.0255285	428	.053797964	R-squared	=	0.0378
				Adj R-squared	=	0.0130
Total	23.9293661	439	.054508807	Root MSE	=	.23194

ENVIR	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	-.0000571	.0024343	-0.02	0.981	-.0048418	.0047276
BI	-.1588566	.0614328	-2.59	0.010	-.2796042	-.038109
BS	.0022657	.0042554	0.53	0.595	-.0060983	.0106298
FEMALE	-.0371628	.0991534	-0.37	0.708	-.232051	.1577255
AC	-.00068	.0100873	-0.07	0.946	-.0205069	.0191468
AQ	-.0017567	.0264936	-0.07	0.947	-.0538304	.050317
LL	.1279058	.2101044	0.61	0.543	-.285059	.5408706
OE	.0084062	.0947783	0.09	0.929	-.1778827	.1946951
MI	.0149741	.0097235	1.54	0.124	-.0041376	.0340859
GDP	.2369159	.3400802	0.70	0.486	-.4315193	.9053511
INFLA	1.017918	.7478422	1.36	0.174	-.4519821	2.487819
_cons	.0322462	.2142596	0.15	0.880	-.3888857	.4533781

Appendix 4.22: R-Squared of Social Sustainability. Adapted from STATA.

```
. regress SOCIAL CEOTE BI BS FEMALE AC AQ LL OE MI GDP INFLA
```

Source	SS	df	MS	Number of obs	=	440
				F(11, 428)	=	19.63
Model	3.74127931	11	.340116301	Prob > F	=	0.0000
Residual	7.41579009	428	.017326612	R-squared	=	0.3353
				Adj R-squared	=	0.3182
Total	11.1570694	439	.025414737	Root MSE	=	.13163

SOCIAL	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
CEOTE	.0000372	.0013815	0.03	0.979	-.0026782	.0027525
BI	-.0172549	.0348638	-0.49	0.621	-.0857805	.0512706
BS	-.0006626	.002415	-0.27	0.784	-.0054093	.0040841
FEMALE	-.0208146	.0562706	-0.37	0.712	-.1314157	.0897865
AC	.0220199	.0057247	3.85	0.000	.0107679	.0332718
AQ	.1250042	.0150354	8.31	0.000	.0954519	.1545566
LL	.8115516	.1192364	6.81	0.000	.5771897	1.045913
OE	-.1933006	.0537877	-3.59	0.000	-.2990215	-.0875797
MI	.0115724	.0055182	2.10	0.037	.0007263	.0224185
GDP	.0348063	.1929991	0.18	0.857	-.3445377	.4141504
INFLA	-1.913231	.4244083	-4.51	0.000	-2.747415	-1.079047
_cons	-.2879586	.1215945	-2.37	0.018	-.5269553	-.0489618