THE IMPACT OF BOARD DIVERSITY ON COMPANY PERFORMANCE: PANEL DATA EVIDENCE FROM PUBLIC LISTED COMPANIES IN MALAYSIA

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DECLARATION

I hereby declare that:

(1) This Research Project is the end result of my 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 research project 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) The word count of this research report is 17451.

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This dissertation is dedicated to:

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Who leads me and provides me precise knowledge throughout the whole process of this research study.

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For providing me the opportunity to carry up this research project.

Families and friends,

For money support, spirit support, motivation and encouragement.

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LIST OF ABBREVIATION

AGE	Age Diversity
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
DOSM	Department of Statistics Malaysia
ETHNIC	Ethnic Diversity
GENDER	Gender Diversity
ICDM	Institute of Corporate Directors Malaysia
MCCG	Malaysian Code on Corporate Governance
PLCs	Public Listed Companies
ROE	Return of Equity
SC	Securities Commission
SKILL	Skill Diversity
TENURE	Tenure Diversity
TOBINQ	Tobin's Q
WHO	World Health Organisation

PREFACE

The research study is necessary to be conducted in my course, Master of Business Administration (Corporate Governance). In today's dynamic and rapidly evolving corporate landscape, the role of board diversity has garnered significant attention as a potential catalyst for enhancing company performance. This study delves into the intricate relationship between board diversity and company performance within the context of Malaysia's business environment. The objective of this research is to explore the relationship between board diversity and company performance in Malaysia, as well as to explore the difference of board diversity before and during COVID-19 pandemic.

In the research study, five (5) variables have been selected that have a positive relationship towards company performance which are gender diversity, age diversity, ethnic diversity, skill diversity and tenure diversity. ROE and Tobin’s Q will be the proxies of company performance. At the same time, the research also takes firm size and leverage to be the control variables.

ABSTRACT

In the current era, the case of graduate unemployment (GU) keeps on increasing due to the structural changes in the labour market and mismatch happens between employers' expectations on graduates' capability in education and employability skills compared to graduates' actual capability and expectation on a job. Throughout the whole research, the main objective of this study is to investigate the determinants of graduate unemployment in Malaysia through employability skills (ES), quality of education (QE), job expectations (JE) and market demand (MD). It is predicted that employability skills, quality of education, job expectations and market demand have a significant relationship with graduate unemployment.

The research study is conducted using quantitative research designs in terms of descriptive research. It is decided to use a secondary data collection method to collect data information from the secondary platform such as Refinitiv, company's annual report and etc. The sample comprise of 90 public listed companies in Malaysia from manufacturing industry, service industry as well as mining and quarrying industry from 2017 to 2022. Data collected is being examined through independent t-test, collinearity test and lastly the panel data regression analysis. The result shows that there is a significant positive relationship between gender diversity, age diversity and skill diversity with company ROE, on the other hand age diversity is positively significant to company Tobin's Q performance. Also, it is found that gender diversity and age diversity show a significant difference before and during COVID-19 pandemic.

With that, the companies, board of directors, policymakers, as well as regulators should be more aware on the values of accepting diversified gender, age and skill of the directors which will enhance company performance through strategic board decision making. It is also important to notice that organizations had to rapidly adapt to changing circumstances in terms of board diversity to stay competitive in the evolving market.

CHAPTER 1: INTRODUCTION

1.0 Introduction

The research starts with the research backstory, problem statement, objectives of the study, research questions, and significance of the research. This proposed research is designed for the purpose to study board diversity relationship with company performance in the context of Malaysia. Besides, the study also like to assess the difference of board diversity before and during COVID-19 pandemic.

1.1 Research Background

1.1.1 Corporate Governance

The concept of corporate governance is a basic part of modern business revolves around the systems, principles, and practices by which companies are directed, controlled, and regulated. It plays a pivotal position in developing the behaviour of businesses, ensuring transparency, accountability, and fairness in their operations. Corporate governance framework encompasses a set of guidelines, rules, and regulations that aim to maintain the balance of power between a company's management and its shareholders. It delineates the board of directors, executives, and other key decision-makers' functions and responsibilities. Additionally, it emphasizes the importance of ethical conduct, risk management, and the adoption of best practices to achieve sustainable growth and profitability.

Evolution of Corporate Governance

Historically, corporate governance can be traced back to ancient times when traders and merchants formed early business entities. However, its contemporary significance began to emerge in the late 20th century as corporations grew in size and influence, becoming powerful global entities. The concept of corporate governance has gained immense importance in recent decades due to a series of high-profile corporate scandals and financial crises that shook public trust in corporate entities and their leadership. In recent years, corporate governance has been influenced by the rise of socially responsible investing and stakeholder capitalism. This shift in perspective has prompted a deeper examination of corporate purpose, sustainability, and corporate social responsibility (CSR) within governance structure.

COVID-19 Impact

COVID-19 pandemic has had a deep and far-reaching influence on enterprises and society all around the world, making the study of corporate governance more relevant than ever before. As the pandemic unfolded, it exposed vulnerabilities and shortcomings in the governance structures of many companies, amplifying the need for robust and resilient governance practices. For example, the pandemic triggered widespread economic disruptions, causing businesses to face financial challenges, supply chain disruptions, and liquidity concerns. Corporate boards faced unprecedented decision-making challenges, such as managing employee safety, maintaining business continuity, and addressing ethical concerns related to product pricing and supply, demanded effective governance to uphold company values and safeguard the well-being of all stakeholders. The pandemic has also caused a focus changed from shareholder-centric model to stakeholder-centric model. It emphasized the importance of stakeholder engagement while companies should not only consider shareholders but also employees, customers, suppliers, and the broader community. Effective governance practices that prioritize stakeholder engagement and ethical decision-making became essential for companies to navigate the pandemic successfully. It also accelerated the adoption of digital technologies and remote work. This shift exposed companies to new cybersecurity risks and data privacy concerns. Corporate governance needs to address these emerging challenges and ensure that companies have robust cybersecurity measures and data protection policies in place. Other than that, the pandemic increased shareholder scrutiny and activism. Investors and stakeholders demanded greater transparency and accountability from companies during the crisis.

In conclusion, corporate governance is a dynamic field that continues to evolve in response to changing business environments and societal expectations. Different countries and regions have developed their own corporate governance models, reflecting cultural, legal, and economic variations.

1.1.2 Malaysia Code of Conduct Governance

The Malaysian Code on Corporate Governance (MCCG) was first introduced in 2000 by the Securities Commission Malaysia (SC). It was developed in response to the Asian financial crisis in the late 1990s, which highlighted weaknesses in transparency and risk management. Its goal is to improve corporate governance practices, attract investments, and instil investor confidence. The MCCG aimed to strengthen corporate governance standards, enhance transparency, and promote investor confidence in Malaysian companies.

MCCG 2000

The MCCG 2000 was the initial version of the code and laid the foundation for corporate governance principles in Malaysia. It emphasized the role of the board of directors in ensuring effective corporate governance, called for the separation of the chairman and chief executive officer (CEO) positions, and advocated for the establishment of independent board committees, such as the audit and remuneration committees.

MCCG 2007

In 2007, the MCCG was revised to reflect changes in corporate practices and international best practices. This revision introduced several improvements, including the recommendation for companies to have at least two independent directors and the requirement to establish a nomination committee. Additionally, the code emphasized the importance of risk management and internal control systems.

MCCG 2012

The MCCG was updated again in 2012, with a focus on promoting sustainability, encouraging greater gender diversity on boards, and enhancing shareholder rights. The 2012 revision introduced recommendations for board diversity, including a target for women's representation on boards and the formation of a sustainability committee to oversee environmental and social issues.

MCCG 2017

In 2017, the MCCG underwent another significant revision, aligning it with global governance trends and evolving business landscapes. The 2017 edition emphasized the application of the "Comply or Explain" principle, where firms were asked to disclose their adherence to the code's principles as well as explain any deviations. It also stressed the importance of board effectiveness evaluations and the establishment of an independent chairman for large companies.

MCCG 2021

The latest update to the MCCG was released in 2021, and it builds upon the foundation of the previous versions while introducing several new features to further enhance corporate governance practices in Malaysia. There are many key changes have been made in this code including whistle blowing mechanism, stakeholder-centric, sustainable practices etc. Other than that, board independence and diversity has also become one of the spotlights of the government, aiming to foster inclusive governance in Malaysia. MCCG 2021 emphasize the board independence, suggesting the tenure of an independent director should not exceed a term limit of nine years. Upon completion of the nine years, an independent director may continue to serve on the board as a non-independent director. Justification should be given and seek annual shareholders' approval through a two-tier voting process if a board intend to retain an independent director for more than nine years, as stated in Practice 5.3. MCCG 2021 also emphasizes the need for a balanced board with a mix of skills, experience, and age diversity, including gender diversity as stated in Practice 5.5.

Overall, the evolution of the MCCG over the years reflects Malaysia's commitment to strengthening corporate governance practices and aligning them with international standards. The MCCG 2021 continues to enhance transparency, accountability, and sustainability in

Malaysian companies, thereby fostering investor confidence and driving long-term value for all stakeholders.

1.1.3 Board Diversity

Gender Diversity

Gender diversity refers to the representation of both men and women in various roles within an organization. It has gained significant attention in recent years due to its potential impacts on organizational performance, innovation, and workplace culture. It is suggested that gender-diverse teams can offer a broader range of perspectives and problem-solving approaches, leading to enhanced decision-making processes and creativity. However, despite increased awareness and efforts to promote gender equality, many organizations still face challenges in achieving balanced gender representation across all levels.

According to The Malaysia Board Diversity Study & Index (2021), there are 19% of the board seats are held by women out of a sample of 312 companies, which increased by 14% from 2016 in Malaysia. The Securities Commission (SC) has set a target for 30% women on board of top 100 listed companies by end of 2020. In 2021, there are 19% of the listed companies have more than 30% women on boards, which is increased by 9% from 2016. It shows that the public listed companies (PLCs) are following the steps of regulator to enhance gender diversity in the boards.

Age Diversity

Age diversity pertains to the presence of individuals from different age groups within the workforce. This diversity factor can contribute to improved team dynamics by leveraging the varied experiences, skills, and knowledge that different age cohorts bring. Age-diverse teams have the potential to foster cross-generational learning, where younger employees can benefit from the wisdom of more experienced colleagues, while senior employees can learn from the fresh perspectives of their junior counterparts. Effectively managing age diversity requires understanding generational differences and harnessing them to create a more collaborative and innovative work environment.

According to The Malaysia Board Diversity Study & Index (2021), the average age of directors is around 60 years old. 34% companies are with two or more directors below 50 years old, which has dropped by 4% compared to 2016. There are only 4% of the PLCs have board of directors below 40 years old. It reflects that the board in Malaysia currently is more concentrated with older age of directors and lack of young directors in the boards to provide fresh and new perspectives.

Ethnic Diversity

Ethnic diversity encompasses the inclusion of individuals from various ethnic backgrounds within an organization. It acknowledges the importance of representation and equal opportunities for people of different races and cultural origins. Ethnically diverse workplaces can offer a broader range of viewpoints, which can lead to more comprehensive problem-solving and a richer organizational culture. Encouraging ethnic diversity is not only a matter of social justice but also a strategic approach to tapping into a diverse pool of talents and perspectives to drive innovation and growth, and therefore optimize team performance and organizational success.

Referring to The Malaysia Board Diversity Study & Index (2021), there are 52% of the PLCs are with only two ethnic groups represented on boards. There are 26% of the companies consisted of 3 ethnics in the boards, 14% companies are with one ethnic and only 8% of the companies are with four or more ethnic groups in their boards. This shows that there is still improvement in enhancing the board ethnic diversity since Malaysia multi-ethnic country with a diverse population consisting of three major ethnic groups: Malays, Chinese, and Indians.

Skill Diversity

Skill diversity, which also known as functional diversity or expertise diversity, refers to the variety of skills, expertise, and capabilities present within a team or organization. A workforce with a wide range of skills can contribute to enhanced problem-solving and adaptability, especially in fast-paced and rapidly evolving industries. Combining technical skills, soft skills, and domain-specific expertise can lead to well-rounded teams capable of addressing multifaceted challenges. Skill diversity recognizes that different tasks require different skills, and a balanced blend of talents can optimize team performance and organizational success.

Referring to The Malaysia Board Diversity Study & Index (2021), the expertise of the directors has been classified into 10 categories which are business and management, finance and accounting, legal, investment banking, technology, public relations and marketing, merger and acquisition. human resource, risk and others. Study found that majority of the companies involved more directors with business and management skills which consist of 44%, followed by finance and accounting which has 37% and legal with 9%. There are only 5% of the companies owns directors with technology skill. Hence, it is found out that PLCs nowadays are concentrated in business related skills and lack of the diversity of non-business-related skills to enhance their resource and knowledge pool in the boards. However, it is getting to demand for the board to have non-business-related skills, especially technology skills after COVID-19 pandemic to cope with the business model changes.

Tenure Diversity

Tenure diversity relates to the distribution of employees with varying lengths of service within an organization. This diversity factor acknowledges that both long-tenured and newer employees bring distinct insights and contributions to the table. Long-term employees possess institutional knowledge and historical context, while newer employees often offer fresh perspectives and ideas. Effective utilization of tenure diversity involves creating a collaborative environment where experience is valued without stifling new ideas, and where fresh perspectives are welcomed without ignoring the lessons of the past.

Based on The Malaysia Board Diversity Study & Index (2021), there are 25% companies are with non-executive directors serving a tenure of more than 9 years with a sample of 312 companies. 14% are with 6 to 9 years of board tenure, while 20% of the board of directors are with 3 to 6 years of board tenure service. 42% of the companies have new directors that are less than 3 years board tenure. It shows that majority of the PLCs are changing directors within 3 years time. However, the concerns of having 25% companies with more than 9 years board tenure should not be ignored as the regulator do not recommend PLCs to have board of directors with tenure service more than 9 years. It is to avoid their independence position being affected and boards with overly long tenure tend to adversely impact company financial performance.

1.2 Problem Statement

The significance of corporate governance has been elevated in the wake of the COVID-19 pandemic. (Paine, 2020). Due to globalization, there is a rise of complexity in the world with growing risks and uncertainties. It leads to the necessity of strong governance framework that promotes transparency and accountability, in which board diversity plays a vital role. Diverse perspectives and talents on a board will improve decision-making by avoiding groupthink and encouraging inclusivity. Such diversity is consistent with justice and legitimacy, enhancing robust corporate governance systems and the resilience of an organization in a rapidly evolving world.

There are numerous studies have been conducted in the past, examining various aspects of board diversity. However, the results are inconclusive. There are past studies showed that board diversity has significant positive relationship with company performance (Khatib & Nour, 2021; Ghazali et al., 2019). In contrary, there are also researchers argued that board diversity and company performance are negatively associated (Kweh et al., 2019; Lim et al., 2019). Other than that, previous studies also proved that board diversity has no significant relationship towards company performance (Wang et al., 2019). Hence, there are mixed results with different demographic variables towards company performance (Abdulsamad et al., 2018; Hassan & Marimuthu, 2018; Amin & Nor, 2019). The main reason for the mixed results in prior studies is found related to the inconsistencies in assessing diversity and the types of diversities evaluated (Ngo et al., 2019). Hence, studies in Malaysia showed conflicting outcomes towards the board diversity and company performance might because of numerous board demographic aspects, including ethnicity, religion, culture, gender, and a variety of other factors (Amin & Nor, 2019). It is observed that much research have been conducted in global basis, while some studies focus only European boardroom (Naghavi, 2020; Ionascu et al., 2018). Hence, this research intends to investigate the topic of board diversity in Malaysia context.

Other than that, the economic impact of the COVID-19 pandemic is being assessed in the early stages of the outbreak. The COVID-19 influences on company attributes like performance, governance, financial structure as well as shareholder payout are, yet the subject of few studies.

(Khatib & Nour, 2021). Hence, it will also be valuable for this research to study the influence of COVID-19 pandemic towards board diversity and company performance.

1.3 Research Objective

1. To examine the relationship of board diversity and publicly listed companies' performance in Malaysia.
2. To examine the difference of board diversity before and during COVID-19 pandemic.

1.3.1 Detailed Objectives:

1. To examine the relationship of gender diversity and publicly listed companies' performance in Malaysia.
2. To examine the relationship of age diversity and publicly listed companies' performance in Malaysia.
3. To examine the relationship of ethnic diversity and publicly listed companies' performance in Malaysia.
4. To examine the relationship of skill diversity and publicly listed companies' performance in Malaysia.
5. To examine the relationship of tenure diversity and publicly listed companies' performance in Malaysia.
6. To examine the difference of gender diversity before and during COVID-19 pandemic.
7. To examine the difference of age diversity before and during COVID-19 pandemic.
8. To examine the difference of ethnic diversity before and during COVID-19 pandemic.
9. To examine the difference of skill diversity before and during COVID-19 pandemic.
10. To examine the difference of tenure diversity before and during COVID-19 pandemic.

1.4 Research Question

1. Does board diversity affect the publicly listed companies' performance in Malaysia.
2. Does board diversity can be differentiated before and during the COVID-19 pandemic?

1.4.1 Detailed Questions:

1. Does gender diversity affect the publicly listed companies' performance in Malaysia>
2. Does age diversity affect the publicly listed companies' performance in Malaysia?
3. Does ethnic diversity affect the publicly listed companies' performance in Malaysia?
4. Does skill diversity affect the publicly listed companies' performance in Malaysia?
5. Does tenure diversity affect the publicly listed companies' performance in Malaysia?
6. Does gender diversity can be differentiated before and during the COVID-19 pandemic?
7. Does age diversity can be differentiated before and during the COVID-19 pandemic?
8. Does ethnic diversity can be differentiated before and during the COVID-19 pandemic?
9. Does skill diversity can be differentiated before and during the COVID-19 pandemic?
10. Does tenure diversity can be differentiated before and during the COVID-19 pandemic?

1.5 Significance of Research

The research result will be significant to the board of directors in the sense of updating how the board diversity can affect the company performance in Malaysia. With the actual research, the boards will understand more on the importance of board diversity impact toward company and increase their concern during the selection of board. Besides, the board will have relevant evidence and knowledge on how to select their board composition appropriately in order to boost the board capability as much as possible for the sake of company. Other than that, the boards will also learn more about the difference of board diversity before and during pandemic, which may help them to prepare for post pandemic or have a greater idea and preparation for the next crisis.

The study provides insightful information on which board diversity variables will be significantly affects and improve current board composition to enhance company performance. Regulators and policymakers are capable of developing more effective guidelines to be followed by Malaysia's publicly traded corporations. Besides, for those independent variables which are significant but still lacking board and regulators intention, this study helps to shed a light on them to raise boards and regulators attention.

The future researchers will get to expose on the Malaysia's board diversity environment and how it impacted the company performance in Malaysia. In addition, this paper also serves as a reference and provide relevant data and information under the case study in Malaysia for future researchers who are interested to investigate board diversity issues. They will be able to fill up the limitation and missing parts of research in this area with the support of this study. Besides, this research fills the research gap on the board diversity situation in Malaysia before and during COVID-19 pandemic, especially on the age diversity, ethnic diversity, skill diversity and tenure diversity that are found limited research conducted by the previous studies.

1.6 Chapter Structure

Research report presentation arrangement is crucial. A clear and systematic presentation is important so that it is easy to understand. Therefore, this research is written with five chapters as follow.

Chapter 1: Introduction
The research introduction begins with the research background and then moves on to the problem statement. After that, the objectives of research and questions of research will be listed accordingly. This chapter will eventually conclude with the study's significance and the overall chapter layout for the research report.

Chapter 2: Literature Review
The underlying theories and literature reviews are presented in this chapter, followed by hypothesis formation and conceptual framework development.

Chapter 3: Research Methodology

This chapter describes how the research will be carried out. It consists of the following components: research design, data collection, data sampling, dependent variables, independent variables, control variables, and statistical analysis method.

Chapter 4: Research Results

The chapter presents descriptive analysis outcome performed using SPSS as well as panel data analysis performed with EViews.

Chapter 5: Conclusion

Final chapter discusses the outcomes that were determined. It contains a review of hypothesis testing, implications, limitations, recommendations for further research, and a conclusion.

CHAPTER 2: Literature Overview

2.0 Introduction

This chapter further continue to provide a thorough examination of the research literature. The underlying theories will be presented at first, followed by the review of relevant literatures, hypotheses development as well as the structure of conceptual framework. It ends with a conclusion of the chapter.

2.1 Theoretical Framework

2.1.1 Agency Theory

Jensen and Meckling (1976) proposed agency theory for the first time. It is a well-known term in economics and management that explores the interaction between an organization's principals (shareholders or owners) and agents (managers or executives). It focuses on the potential conflicts of interest that may occur between these two groups as a result of ownership and control separation, different risk preferences, information asymmetry, and moral hazards (Panda & Leepsa, 2017). The theory's main goal is to understand how to coordinate the interests of agents and principals in order to produce efficient and successful corporate governance.

Assume that the boards (agents) are supposed to operate on behalf of absent owners or shareholders (principals). The theory does accept, however, that managers may not always act in the best interests of shareholders and may pursue their own self-interests, resulting in agency concerns. Management and shareholder conflicts of interest can manifest itself in a variety of ways, including labour shirking, perquisite consumption, investment conflicts, and so on (Allam, 2018). As a result of conflicts of interest, agents may have incentives to affect information flows when the managers hold an inadequate equity in the company (Zainuldin et al., 2018). Therefore, managers with a low level of ownership are less likely to maximise

shareholder capital, and they have an incentive to consume perquisites. (Alabdullah, 2018). The misalignment of managers' and shareholders' goals results in agency costs. When a company performs poorly, agency cost rise dramatically. (Bhatt & Bhatt, 2017).

Nonetheless, improved governance will lessen agency conflict between management and stakeholders. (Elmarzouky et al., 2021). To align the principal-agent aims, agency theory proposes separating decision-making between them and limiting the manager's discretion. (Naciti, 2019). The boardroom will be more independent and will better oversee managers in accordance with the interests of stakeholders, resulting in increased corporate governance effectiveness and higher corporate performance when it exists a higher share of independent directors. (Pankaj, 2017). Furthermore, Taljaard et al. (2015) hypothesised that variety increase can promote independence. Not only that, but it can also improve monitoring functions, assist in acquiring critical resource capabilities that contribute to organisations' investment efficiency, and therefore reduce agency problems. (Ullah et al., 2020).

2.1.2 Stakeholder Theory

Stakeholder theory emphasizes the connectivity between a firm and its various external and internal "stakes." According to the notion, board members are accountable for working in the best interests of not just the shareholder, but also of many individuals and groups that have a "stake" in the business. (Mannion et al., 2013). This is because a company's performance is influenced not just by its shareholders, but also by governments, suppliers, environmentalists, employees, the media, and so on.

The activities and relationships of board members, shareholders, management, and stakeholders create value for the firm. (Ranangen, 2017; Yilmaz et al., 2022). Firms are required to go above and beyond their legal responsibilities and commitments in order to meet society's and other stakeholders' demands and expectations. If a company wants to preserve a competitive advantage, it must implement such a strategy. (Alqatan et al., 2019). As a result, this idea sparks a debate over the design of a governance system capable of addressing the interests of all stakeholders. (Khatib et al., 2020). It has been discovered that having a diverse

board is critical to meet the interests of a variety of different stakeholders with varying backgrounds and a broad spectrum of social opinion. (Mannion et al., 2013).

Hillman (2001) agreed with the hypothesis and said that if a corporation has a larger and more diverse board, there will be more potential for more links to other stakeholders. For example, Evanson (2022) noted that more younger directors are needed on boards because millennials are now the largest group in the world's workforce as well as customers. The board requires youthful directors to comprehend what the majority of customers are thinking about in terms of their desires.

2.1.3 Resource Dependency Theory

This theory proposes a mechanism through which corporations might gain access to important resources from the environment through the affiliations of their directors, emphasizing the economic nature of these resources (Mishra & Kapil, 2018). According to resource dependency theory, companies attempt to attract and hire board members who best complement their existing resource profile and can offer new types of human and social capital to the organization. (Pfeffer & Salancik, 1978). Furthermore, this theory states that increasing board diversity can generate a strong link between the organization and its external environment. Brahma et al. (2020) cited that board diversity contributes to maintaining essential resources such as board members' human capital, guidance and counsel, communication channels, and legitimacy. As a result, a company should seek to form a board of directors comprised of persons with a broad range of knowledge across important demographics who can provide legitimacy and prestige to the organization.

Adeabah et al. (2019) cited that the theory acknowledges the necessity for women to get involved in top hierarchy roles in company boardrooms as a crucial resource on which organizations may rely due to the higher benefits on firm performance. Gender diversity is a resource that improves decision-making quality, according to resource dependence theory. Based on Masud et al. (2018), a resourceful board of directors with professional directors develops solid ties with numerous stakeholders and comprehends their demands, interests, and worries. As a result, the directors' experience, different qualities, and backgrounds are critical

to engaging, monitoring, and regulating the firm and, as a result, its performance. Fernández and Gaite (2020) further explained that resource dependency theory promotes a better understanding of an increasingly diversified and complicated marketplace. By integrating a greater range of perspectives from the resourceful board of directors, it stimulates creativity and innovation while also contributing to more effective problem-solving.

2.2 Company Performance

Performance evaluation is critical for the firm's effective management. It is the primary provider of the firm's perceptual and organizational/control capacities. Taouab and Issor (2019). Indeed, financial indicators have long been used to analyse a corporate's performance. This is because of corporate's financial profitability that able to increase employee returns, have better manufacturing units, and provide higher-quality products to its customers. Taouab and Issor (2019). Accounting and market factors have both been extensively used to identify conceptually diverse conclusions and allow comparison to earlier studies. Yang and colleagues (2019). Accounting metrics include return on assets, return on equity, and return on invested capital, whereas market indicators include Tobin's Q, earnings per share (EPS), etc.

2.2.1 Return of Equity (ROE)

The Return on Equity (ROE) ratio is a financial ratio that measures a company's profitability and efficiency in generating profits from its shareholders' equity. It contributes to determining how certain resource allocations affect the firm's present or short-term profits. (Yoon & Chung, 2018). As a result, ROE is recognized as a typical accounting-based performance assessment that serves as a predictor of short-term financial performance. (Fariha et al., 2021).

ROE is primarily a shareholder-focused indicator. (Moreno-Gomez et al., 2021). It is used to assess financial performance from the standpoint of shareholder value in order to determine how well management uses shareholder equity to generate profits. (Jardak & Hamad, 2022). This is corroborated by Obeidat and Darkal (2018), who stated that generally investors and analysts will use it to determine the profit level a corporation may produce based on the money invested by shareholders. A high ROE suggests that the capital required to generate huge profits

is less than in a mature firm. (Juwita & Diana, 2020). It reflects that management is more skilled at managing the company, which leads to improved firm performance.

2.2.2 Tobin-Q

The Tobin's Q ratio is utilised to calculate company's own value. It is a market-based performance metric that predicts long-term financial performance (Fariha et al., 2021). Tobin's Q reveals how investors assess the firm's ability to generate future and intangible earnings (Yoon & Chung, 2018). It indicates the performance of management in managing company activities to support firm value. If the company's worth is guaranteed, it will have an impact on the company's viability (Budiharjo, 2022).

Tobin's Q also indicates how well an organization's assets are valued in the market (Nasr et al., 2019). If a company's market worth exceeds its asset value, it means that its assets are being utilised successfully. In this situation, the stock's value exceeds its current value. This happens anytime the Tobin's Q ratio is greater than one. If a firm's market value is less than its asset value, and Tobin's Q ratio is less than one, the firm has performed poorly in terms of asset utilization (Potharla & Amirishetty, 2002).

2.3 Board Diversity

2.3.1 Gender diversity

Gender diversity pointed out that a lack of female leadership on the board will result in a decline in firm performance. EmadEldeen et al. (2021) investigated the association between gender diversity and corporate performance with a sample of 233 companies from 2000 to 2016 using the ordinary least squares (OLS) model. It is observed that gender diversity had a positive influence on Tobin's Q, indicating that an increase in the number of females in the firm leads to improved company performance.

Ahmadi et al. (2018) used OLS regression technique to conduct analysis on CAC 40 firms in their study. From 2011 to 2013, they examined and found a significant difference between companies with female directors and those without female directors. Firms with at least one

female director outperform firms without female directors in ROA and ROE by a mean of 1.76% and 1%, respectively. According to their research, gender diversity on the board of directors adds value by improving board monitoring, bringing more perspectives to the table, improving manager collaboration and mentoring, and improving relationships with stakeholders, which is consistent with Zalata et al. (2019). They also stated that women directors may grasp certain market situations better than men, which may lead to more creativity and excellence in board decision making. Indeed, greater gender diversity on the board may improve the firm's public image and performance.

Brahma et al. (2021) examined the impact of gender diversity on corporate performance using Tobin's Q and ROA. The findings supported their positive and significant link by identifying a sample of FTSE100 constituent firms from 2005 to 2016. However, when three or more females are appointed to the board, the outcome becomes highly significant and unmistakable when compared to the appointment of two or fewer females. After accounting for endogeneity problems and using different measures of company performance, the results remain identical. This is corroborated further by Khidmat et al. (2020), who researched gender diversity using the Blau Index and data collected from A-listed businesses listed on the Shanghai SSE 180 and the Shenzhen 100 between 2007 and 2016. They demonstrated that gender diversity had a beneficial effect on business performance in terms of Tobin's Q and ROE.

Moreno-Gomez (2018) investigated gender diversity using panel data models and a sample of 54 Colombian state firms from 2008 to 2015. They stated that in today's more competitive corporate environment, gender diversity has been recognized as a "needed solution" to improve the board's human capital performance, based on the findings of a favourable correlation between gender diversity measured using the Blau Index and company's ROE. Furthermore, putting women into senior management positions has a favourable effect show that the diverse perspectives of the "feminine management style" provide value to the organisation. They contended that the advantages of gender diversity at the highest levels of the organizational hierarchy outweighed the disadvantages, and that expanding the existence of women in senior management is particularly important for boosting knowledge-intensive strategic and managerial decisions inside the organization, which is also cited by Song et al. (2020).

In contrast, Amin and Nor (2019) used random effect panel data regression analysis to demonstrate that board diversity in terms of gender diversity has a detrimental influence on business performance in the trading or service industry with a sample of 90 firms from 2012 to 2016. Kweh et al. (2019) used conventional least squares, two-stage least squares, and generalised method of moments analysis on a sample of the top 200 Malaysian enterprises publicly traded on the Bursa Malaysia from 2010 to 2015. Their studies revealed that board gender diversity had a considerable negative impact on firm performance. Female directors are unable to increase the value of their company's shareholders by the use of their expertise, knowledge, abilities, or influence. Aside from that, Kagzi and Guha (2018) employ a panel data set of the top 200 enterprises registered on the National Stock Exchange from 2010 to 2014. demonstrating that gender diversity has no effect on corporate performance. One possible explanation for this conclusion, according to their research, is that there are relatively few females on the boards, and this tiny proportion does not have enough ability to affect commercial decision-making.

Elsayed (2023) studied the board gender diversity influence towards business performance during Covid-19 pandemic from 2017 to 2021 using a sample of Egyptian firms listed on the Egyptian Stock Exchange index (EGX100). The study found that female board involvement had a positive substantial influence on business performance throughout the Covid-19 era (2020-2021), but not before the pandemic. This means that female involvement on boards can be more important and prevalent during times of crisis and uncertainty, assisting corporations in mitigating the negative effects. Khatib and Nour (2021) used a sample of 188 non-financial firms listed in Malaysia for the period 2019 and 2020 to support that there is no significant difference in gender diversity between prior and post COVID-19.

2.3.2 Age Diversity

Rahman et al. (2020) studied the association between age diversity and business performance using a sample of 360 Malaysian non-financial listed companies from 2010 to 2014. They discovered a positive relationship between the age equality of directors and share market price, indicating that shareholders believe it will increase firms' reputational capital while signalling their equality, transparency, experience, and commitment to good governance, particularly the

protection of shareholders' interests. Based on the sample of 233 publicly traded corporate on the London Stock Exchange (FTSE 350) from 2000 to 2016, EmadEldeen et al. (2021) support this further. In their study, they emphasised that high age diversity relates to a blend of old and new experience, which leads to good firm performance, which is backed by findings indicating age diversity has a favourable effect on Tobin's Q. Based on a panel data set of top 200 listed companies in India's National Stock Exchange from 2010 to 2014, the study of age diversity and company's Tobin's Q, which was supported by Kagzi and Guha (2018), indicated that a combination of young and senior boards have different values that can improve a company's performance. Hodgson et al. (2022), on the other hand, reported empirical evidence supporting the existence of a significant positive association between age diversity and business ROE using a sample of 319 firms listed on the Stock Exchange of Thailand (SET) and the Market for Alternative Investment between 2015 and 2016. Vemala et al. (2018), who examined a panel data sample of S&P 500 firms from 2000 to 2011, found that age diversity has a substantial positive impact on both Tobin's Q and ROE performance, showing that experienced boards of directors provide a lot of value with their insights to the board.

Oliveira and Zhang (2022), utilising a sample of 8590 enterprises from 2000 to 2020, found that larger firms' boards are less age diverse. They stated that when a company's complexity grows, it may prefer to hire and retain more experienced board members. Khan et al. (2023) used a panel data model and the generalised method of moment (GMM) to examine 188 companies publicly traded on the Pakistan Stock Exchange (PSX) from 2009 to 2020. They discovered that age diversity is strongly negatively related to company performance, implying that age diversity reduces firm performance in terms of ROE. Song et al.'s (2020) investigation, on the other hand, comprised a sample of publicly traded US hotel enterprises from 1993 to 2018. Using Tobin's Q, their findings supported that age diversity has no meaningful association with company performance, with an explanation that board members' propensity and actions based on age reveal indistinct distinctions.

2.3.3 Ethnic Diversity

From 2012 to 2017, Kabara and Modibbo (2020) did a panel data study with a sample of 67 listed non-financial enterprises in Nigeria. Findings revealed that the presence of directors of different ethnic backgrounds on the board of directors might increase profitability and improve internal operations of their companies, resulting in a beneficial influence on company performance in terms of Q. Khan et al. (2023) used a panel random effect model and examined 188 companies listed on the Pakistan Stock Exchange (PSX) from 2009 to 2020. They discovered that board director's ethnic diversity is an internal corporate resource that enhances firm competitive advantages and performance in terms of ROE. Their findings show that organisations with ethnic highly diversified on the boards will have the capacity to present opposing opinions and make critical decisions based on them, hence increasing firm performance. According to Bakar et al. (2019), according to a survey of top 100 Malaysian firms in 2016, board members of various ethnicities will have resourceful ways of thinking, culture beliefs, and attitudes that will contribute to the firm's sustainability plans. Churchill (2019) discovered that ethnic diversity had a beneficial influence on corporate performance measures such as total revenue, dividends, net sales or turnover, return on assets, and more using data from Sub-Saharan Africa. According to a study conducted by Rahman et al. (2020) on 360 non-financial listed businesses in Malaysia from 2010 to 2014, Malaysian boards are largely dominated by men of middle age of Chinese ethnicity, with just 12.5% having directors from all three major races. The strong beneficial benefit of ethnic diversity on ROA explains why firms with boards that include directors from all three major ethnic groups in the country outperform others.

In contrast, some researchers have a different viewpoint. Frijns et al. (2016) used Tobin's Q and ROA to study 243 large British enterprises from 2002 to 2014 and discovered that ethnic diversity on company boards has a detrimental effect on company performance. Their findings confirmed the notion that the frictions caused by cultural variety exceed the potential benefits. Guest (2019) research, on the other hand, which included 1,906 US enterprises from 1996 to 2011, contributed their findings showing ethnic diversity has no association with corporate success. They oppose the 'business' or 'commercial' reason for increasing board ethnic diversity, which maintains that average firm performance will improve. Financial gains are insufficient to impact overall business performance or value. As a result, proponents of

increased board ethnic diversity would be able to make their case on non-financial grounds such as justice, equal opportunity, and demonstrating commitment to an inclusive corporate culture.

2.3.4 Skill Diversity

Hosny and Elgharbawy's (2021) research employed a sample of 235 FTSE 350 businesses from 2013 to 2019. Their findings support the notion that more talent diversity leads to improved corporate financial performance in terms of Tobin's Q and ROE. It is because of skill diversity that more diverse persons are brought to boards, resulting in broader links to organisations that ultimately improve their performance. More resources for decision-making and problem-solving will be available as a result of the diversity of financial and nonfinancial talents. Gabaldon et al. (2018) studied 504 organisations in Norway between 2005 and 2006. As a result, the utilisation of knowledge and skills by directors is recognised as a basic board process. Skill diversity can activate the utilisation of various knowledge and talents, as well as promote communication and diversity of opinions during board meetings. As a result, board decision outcomes lead to higher quality and more strategic decisions.

Merendino and Melville (2019) use a dynamic generalised method of moments on a sample of Italian publicly traded companies from 2003 to 2015. Their research revealed that companies tend to increase the size of their boards in order to profit from greater potential variety, with the appointment of directors from varied professional fields, expertise, and abilities. Skill diversity becomes even more vital during a crisis to establish whether a company's board of directors has the necessary competencies to tackle the crisis. Using quarterly data from Chinese enterprises in 2020, Jebran and Chen (2022) discovered that during the COVID-19 crisis, firms with higher ability managers reduced their investments, financing, and cash holdings while increasing their dividend payouts. The findings show that organisations with more capable managers outperform those with less capable managers. These findings helped to emphasise management competence as a major predictor of corporate performance and policies in times of uncertainty.

Nonetheless, Adams et al. (2018) argue that boards with more similar skill sets across their directors will have higher business performance using a sample of 3218 firm-year data in the United States from 2010 to 2013. Their data suggest that directors are skill packages. As a result, organisations may be unable to maximise across all skill dimensions. If a company selects a director because he or she is a finance expert, for example, that director will offer additional skills that the company may not want or that will make communication with other directors difficult. In the short term, it may be difficult to locate another director who possesses those attributes. In the long run, communication issues may force these directors to resign from the board sooner, either voluntarily or because the firm requires it. Mismatches in skill sets can also be an issue on boards with little in common.

Aside from that, Assenga et al. (2018) did a balanced panel data regression analysis on 80 Tanzanian listed enterprises from 2006 to 2013, based on annual reports, and semi-structured interviews with 12 important stakeholders. According to their findings, board skills have no association with the firm's financial performance, and a lack of appropriate experience could be one of the causes for this insignificant relationship.

2.3.5 Tenure diversity

Hasan and Islam (2022) examined firms featured on the FTSE 100 index between 2018 and 2021. The findings revealed a strong positive relationship between board tenure and ROE. They discovered that boards with longer tenure is associated with companies that perform greater. Ali et al. (2022) provides strong evidence that tenure diversity has a positive association with Tobin's Q at a 1% significant level based on a sample of Chinese nonfinancial enterprises from 2003 to 2017. They discovered that a diversified board of directors, in terms of tenure, employs greater monitoring, knowledge, abilities, and experience to oversee investment decisions, ultimately improving business investment decisions.

During 2015-2016, Hodgson et al. (2022) examined 319 enterprises listed on the Stock Exchange of Thailand (SET) and the Market for Alternative Investment (MAI). They discovered that tenure diversity increases profitability. Tenure diversity may be beneficial in preventing boards from becoming narrow-minded and in providing a critical review of project

value relevance. Their research concluded that board tenure is significantly positive in relation to firm ROE. From 1999 to 2019, Phuong et al. (2022) used an international sample of enterprises from 45 countries. Their findings confirmed the notion that board tenure diversity improves a company's investment efficiency. Senior directors with greater experience can better understand challenges specific to their organisation, whilst rookie directors with less experience can provide new insights to discussions.

Ji et al. (2021) examined a sample of listed corporations from 1999 to 2017 to demonstrate that board tenure diversity leads to lower stock return volatility, which leads to improved company performance. According to their findings, tenure length diversity emphasises that a firm can benefit from both knowledge continuity and independence, which are critical for high-quality corporate decision-making, if it maintains diversity in terms of both long and short-tenured directors. Based on Khan et al. (2019) who conducted an analysis on 57 firms registered on the Pakistan Stock Exchange from 2010 to 2017, they found that tenure heterogeneity in a company's board is more critical and performs better than boards with homogeneous tenure.

Dedunu and Anuradha (2020), on the other hand, used 28 publicly traded manufacturing companies on the Colombo Stock Exchange from 2013 to 2017 as the sample to demonstrate that organizations tenure diversity has a significantly negative influence on business performance in Sri Lanka in terms of Tobin's Q and return on sales. From 2010 to 2014, Kagzi and Guha (2018) collected a panel data set of the top 200 National Stock Exchange (NIF) listed companies. They contended that the tenure diversity index has little bearing on company performance. It is because of longer tenured boards may be too close to other management and may agree to prevent any confrontation, whilst shorter tenured board members are too hesitant to speak up. Board members may be tempted to follow rather than lead in a decision-making process in such a circumstance. It is backed by studies by Hosny and Elgharbawy (2021), who discovered that tenure diversity has no substantial influence towards Tobin’s Q and ROA performance in United Kingdom.

2.4 Control variable

2.4.1 Leverage

Company leverage has frequently been employed as a control variable in studies of board diversity and company success. Song et al. (2020) denoted leverage had an impact on both corporate performance and the monitoring function of a diverse board of directors towards executive management in a sample of 320 publicly traded US lodging enterprises from 2003 to 2018. For example, while leverage may reduce firm value due to the tax shield effect and financial distress costs, higher leverage improves a diverse board's authority to regulate managers' discretion, potentially reducing agency costs.

According to Kijkasiwat et al. (2022), who examined a sample of 2568 enterprises from 2002 to 2017, financial leverage mediates the linkage between corporate governance and firm performance in both developed and emerging nations. They contend that it is the board's responsibility to employ as little financial leverage as possible to improve business performance. According to Hosny and Elgharbawy (2021), debt can improve market performance by reducing management's ability to generate "free cash flows." Leverage, on the other hand, increases the likelihood of bankruptcy and increases interest expenditures, both of which lower earnings. Amin and Nor (2019) used a sample of 90 Malaysian enterprises from 2012 to 2016 to claim that leverage has a negative association with corporate performance.

2.4.2 Firm Size

The size of the corporation is said to have an effect on company performance. Hosny and Elgharbawy (2021) found that large organisations benefit from economies of scale, market domination, and improved resource access using a sample of 235 FTSE 350 companies from 2013 to 2019. Small enterprises, on the other hand, are more versatile and have greater growth potential than giant corporations. Song et al. (2020) studied 320 enterprises in the US lodging industry from 1993 to 2018. They stated that as company size grows, there is a greater probability of improving both board diversity and firm performance, which may complicate the influence of pure board diversity towards firm performance.

2.5 Hypothesis Development

2.5.1 Gender diversity and Company Performance

Referring to the literature reviewed, this research proposes a hypothesis whereby gender diversity has a positively significant relationship towards company ROE as well as Tobin's Q performance.

The first hypothesis, $H1_A$ proposed that gender diversity has a significant positive relationship with company's ROE. It is supported by the studies reviewed. (Ahmadi et al., 2018; Khidmat et al., 2020; Moreno-Gomez, 2018). It emphasises that greater gender diversity leads to improved board oversight, mentoring, and the quality of the board's human capital, all of which improve the company's ROE performance. More female directors on corporate boards are thought to result in more profitable utilisation of equity capital.

The second hypothesis, $H1_B$ proposed that gender diversity has a positively significant relationship with company's Tobin's Q performance. This is consistent with previous studies. (EmadEldeen et al., 2021; Brahma et al., 2021; Khidmat et al., 2020). It highlighted that increased gender diversity will contributes to improved decision-making quality, resulting to greater Tobin's Q performance. Greater female directors on the business's board are thought to improve the company's profitability more.

$H1_A$: There is a significant positive relationship between gender diversity and company's ROE performance.
$H1_B$: There is a significant positive relationship between gender diversity and company's Tobin's Q performance.

2.5.2 Age Diversity and Company Performance

Referring to the literature reviewed, the research proposes a hypothesis that age diversity has a favourable and significant link with company ROE as well as Tobin's Q performance.

The first hypothesis, $H2_A$ proposed age diversity has a positively significant relationship with company's ROE. It is supported by the studies reviewed. (Hodgson et al., 2022; Vemala et al., 2018). Age equality is believed to increase shareholder trust, which leads to effective governance and, as a result, higher company success.

The second hypothesis, $H2_B$ proposed age diversity has a positively significant relationship with company's Tobin's Q performance. This is supported by previous studies. (EmadEldeen et al., 2021; Kagzi & Guha, 2018; Aluoch et al., 2020; Vemala et al., 2018). According to the research, the combination of young and experienced directors will provide various values to the board. As a result, more age diversity leads to better firm Tobin's Q performance.

$H2_A$: There is a significant positive relationship between age diversity and company's ROE performance.
$H2_B$: There is a significant positive relationship between age diversity and company's Tobin's Q performance.

2.5.3 Ethnic Diversity and Company Performance

The research hypothesized that ethnic diversity is positively and significantly relationship to company ROE as well as Tobin's Q performance.

The first hypothesis, $H3_A$ proposed that ethnic diversity has a positively significant relationship with ethnic diversity and company's ROE. It is supported by the studies reviewed. (Khan et al., 2023; Churchill, 2019). It is expected that ethnic diversity will expand internal corporate resources, focus on the interests of various stakeholder groups, and so improve company performance.

The second hypothesis, $H3_B$ proposed that ethnic diversity has a positively significant relationship with company's Tobin's Q performance. This is supported by previous studies. (Kabara & Modibbo, 2020; Vemala et al., 2018). According to the research, an ethnically diversified group will present different viewpoints and meet critical decisions in the organisation, resulting in an increase in corporate value.

$H3_A$: There is a significant positive relationship between ethnic diversity and company's ROE performance.
$H3_B$: There is a significant positive relationship between ethnic diversity and company's Tobin's Q performance.

2.5.4 Skill Diversity and Company Performance

The research hypothesized that ethnic diversity is positively and significantly relationship to company ROE as well as Tobin's Q performance.

The first hypothesis, $H4_A$ proposed skill diversity has a positively significant relationship with company's ROE. It is supported by the studies reviewed. (Hosny & Elgharbawy, 2021; Kim and Sul, 2021). It is considered that a more skill-diversified board will bring more resources into board discussions, resulting in better decision-making and thus greater corporate performance.

The second hypothesis, $H4_B$ proposed skill diversity has a positively significant relationship with company's Tobin's Q performance. This is supported by previous studies. (Ozdemir, 2020; Kim and Sul, 2021). The research believed that higher skill diversity will bring more expertise and knowledge needed into the board, hence enhance company performance.

$H4_A$: There is a significant positive relationship between skill diversity and company's ROE performance.
$H4_B$: There is a significant positive relationship between skill diversity and company's Tobin's Q performance.

2.5.5 Tenure diversity and Company Performance

The research hypothesized that tenure diversity is positively and significantly relationship to company ROE as well as Tobin's Q performance.

The first hypothesis, $H4_A$ proposed tenure diversity has a positively significant relationship with company's ROE. This is supported by previous studies. (Hodgson et al., 2022; Hasan and Islam, 2022). The research trust that if a corporation maintains diversity in terms of both long and short-tenured directors, it can benefit from both knowledge continuity and independence, which are crucial for high-quality corporate decision-making.

The second hypothesis, $H4_B$ proposed tenure diversity has a positively significant relationship with company's Tobin's Q performance. It is supported by the studies reviewed. (Ali et al., 2022; Dedunu & Anuradha, 2020). Senior directors with more experience can better comprehend organisational difficulties, whereas rookie directors with less experience can add new perspectives to talks, hence increase quality of discussion.

$H5_A$: There is a significant positive relationship between tenure diversity and company's ROE performance.
$H5_B$: There is a significant positive relationship between tenure diversity and company's Tobin's Q performance.

2.5.6 Before and During COVID-19

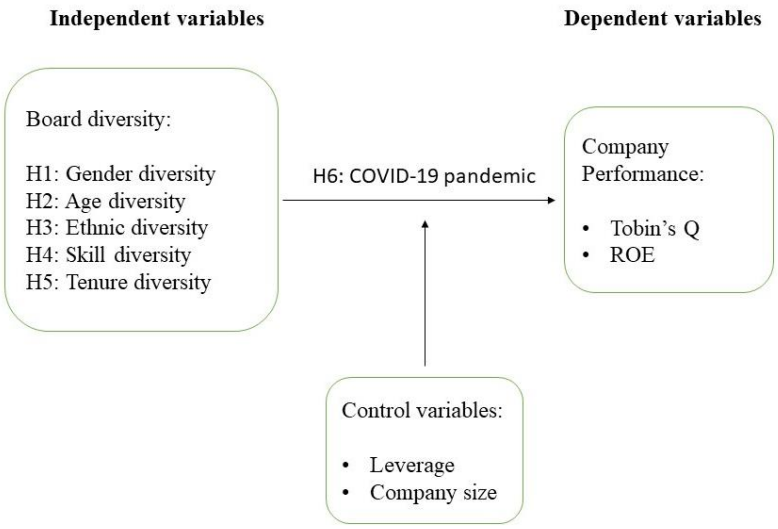
The research hypothesized that COVID-19 pandemic will impact the relationship between board diversity and company performance. This is supported by previous research. (Jebran and Chen, 2021; Nur and Darvin, 2023; Chen et al., 2019 & Chatterjee and Nag, 2022). It is considered that a nationwide lockdown and uncertainty have a bad influence on firm performance, leading to an increase in demand for a more diverse board.

H6: Gender diversity can be differentiated before and during the COVID-19 pandemic.
H7: Age diversity can be differentiated before and during the COVID-19 pandemic.
H8: Ethnic diversity can be differentiated before and during the COVID-19 pandemic.

H9: Skill diversity can be differentiated before and during the COVID-19 pandemic.
H10: Tenure diversity can be differentiated before and during the COVID-19 pandemic.

2.9 Conceptual Framework

Figure 2.1: Conceptual Framework



2.10 Conclusion

In conclusion, chapter 2 presented a comprehensive literature review based on the journals from previous researchers. The underlying theories are first being identified which are the agency theory, stakeholder theory and upper echelons theory. Furthermore, the study looked at relevant journal papers about the connection between board diversity towards company performance. With the support of literature from the 5 independent variables (IVs) and dependent variable (DV), this research constructed a conceptual framework and hypotheses based on the 5 IVs (Gender diversity, Age diversity, Ethnic diversity, Skill diversity & Tenure diversity) and DV (Company Performance measured by Tobin's Q & ROE) to continue identify their relationship in the next chapter which is Research Methodology.

Chapter 3: Methodology

3.0 Introduction

Chapter 3 describes the research approach used in the study. The research design, data collection, and data sampling are all included. This chapter will also go over the construct of dependent variables, independent variables, control variables and end with panel data analysis method.

3.1 Research Design

There are two types of research design which are qualitative research and quantitative research. By using a deductive research approach, the research aims to have greater understanding on the association among board diversity and company performance in Malaysian publicly traded companies. Determination of board diversity including gender diversity, age diversity, ethnicity diversity, skill diversity and tenure diversity, together with company performance which include ROE as well as Tobin's Q will be referred to the numerical data gathered from the annual report. Besides, the research also intends to find out the changes of board diversity before and during COVID-19 pandemic based on the statistical results after analysis conducted. Controls will be established while testing the hypothesis which are the firm size and leverage. Thus, in this research, a quantitative research strategy is adopted which includes numerical measurement and statistical analysis along the empirical assessments.

Furthermore, business research can be divided into four categories such as exploratory, descriptive, analytical, and predictive research. Descriptive analysis is being undertaken to acquire information from demographic profiles of present board characteristics as well as financial condition in Malaysian public listed companies. The research will centre on answering the questions of what, when, who, and how the research will be carried out.

3.2 Data Collection

In terms of data collection method, data can be collected either from primary sources or secondary sources. Given the difficulty of obtaining board profiles and company financial position through primary data collection, the research prefers in secondary data collection method to extract the relevant information from existing sources which are Refinitiv and Bursa Malaysia. Board gender, age, ethnic, skills and experience profile will be gathered through the annual report downloaded in Bursa Malaysia, while the financial performance of companies in terms of ROE and Tobin's Q will be extracted from Refinitiv.

3.3 Data sampling

The research collects sample data from the manufacturing industry, service industry as well as mining and quarrying industry. According to Department of Statistics Malaysia (DOSM), service sector includes domestic tourism, education, food and beverage, health, etc. Manufacturing sectors include businesses that manufacture food, beverage and tobacco, textiles, wood products, rubber, etc. Mining and quarrying sector involve mineral mining and quarrying, petroleum, and natural gas mining as well as companies that provide support activities for petroleum and natural gas extraction. The rationale behind is due to these three industries are the top 3 main contributors towards Malaysia economy in 2022.

A sample of 90 publicly listed companies will be chosen according to market capitalization from the services, manufacturing as well as mining and quarrying sectors. Each sector consists of 30 public listed companies. To differentiate board diversity before and during COVID-19 pandemic, the research collect data 3 years before as well as 3 years during COVID-19 pandemic. Since the COVID-19 outbreak is declared by the World Health Organization (WHO) on March 11, 2020, the first 3 years from year 2017 to year 2019 are considered before COVID-19 pandemic, and the following 3 years from year 2020 to year 2022 are considered during COVID-19 pandemic. Hence, it is estimated to have 540 observations in total.

3.4 Dependent Variables

Tobin's Q and ROE are chosen as proxies for company performance. Tobin's Q is a market-based measure of company performance determined by summing the market value of shares and sum of debt divided by sum of assets. ROE, on the other hand, is being chosen as a proxy for accounting indicators of company performance. ROE derived by dividing total equity by net income.

Table 3.1: Dependent Variables Table

Dependent Variable	**Formula**	**Sources**
Return on Equity (ROE)	$\frac{Net\ Income}{Total\ Equity}$	Onyekwere & Babangida (2021); Shamsudin et al. (2022)
Tobin's Q (TOBINQ)	$\frac{Market\ Value\ of\ Equity + Book\ Value\ of\ Total\ Debts}{Book\ Value\ of\ Total\ Assets}$	Ozdemir (2020); Shamsudin et al. (2022)

3.5 Independent Variables

Board diversity is the main independent variable in this study. The research use dummy variables to measure gender diversity and ethnic diversity. Blau's (2000) model is used to examine the index for age diversity and skill diversity, which is given by the following formula:

$$D = 1 - \sum_{i=1}^{n} P_i^2$$

where D is the diversity index, P_i denotes the proportion of members in a category, and n denotes the total number of categories. The diversity index has a value between 0 and 1. A larger value suggests perfect heterogeneity, whereas a smaller value shows perfect homogeneity. If an index consists of only one category, such as a board of entirely male directors, the gender diversity index has a value of 0 to signify perfect homogeneity. As the number of groups represented in a diversity dimension grows, the group's diversity index score approaches 1. When the number of categories increases, so does the diversity index. Finally, the coefficient of variation of the tenure of board director is used to assess tenure diversity. A higher coefficient of variation indicate that the viability is higher, hence shows a more diversified tenure in the board.

Table 3.2: Blau Diversification Index Categories

Diversification category	**Description of category**
0.00-0.25	Undiversified
0.26-0.50	Moderately diversified
0.51-0.75	Diversified
0.76-1.00	Highly diversified

Table 3.3: Coefficient of Variation Categories

Diversification category	**Description of category**
.> 1.0	High Variability
0.7 - 1.0	Moderate Variability.
0.5 – 0.7	Relatively Low Variability
0.3 – 0.5	Very low Variability
< 0.3	Exceptionally Low Variability

Table 3.4: Independent Variables Table

Independent Variable	**Formula**	**Sources**
Gender Diversity (GENDER)	"1" = more than 30% female "0" = less than 30% female	Shamsudin et al. (2022)
Age Diversity (AGE)	Blau Age Index, = $1 - \sum_{i=1}^{5} P_i^2$, applying five age groups: 40 and younger, 41 to 49, 50 to 59, 60 to 69 as well as 70 years and above.	Ozdemir (2020), Ali et al. (2021)
Ethnic Diversity (ETHNIC)	"1" = included three major ethnic categories on board (Malay, Chinese, and Indian). "0" = No 3 major ethnic categories on board	Rahman et al. (2020)
Skill Diversity (SKILL)	Blau Skill Index = $1 - \sum_{i=1}^{5} P_i^2$, applying five skill groups: 1 = financial; 2 = consulting; 3 = legal; 4 = management (executives); and 5 and other expertise (research, technology, medical, etc.).	Ali et al. (2021)
Tenure Diversity (TENURE)	Coefficient of variation of the tenure of the board of directors $\frac{Standard\ deviation\ of\ board\ tenure, \sigma_{ijt}}{Mean\ of\ board\ tenure,\ \mu_{ijt}}$	Izco et al., (2020); Ji et al. (2021); Phuong et al. (2022)

3.6 Control Variables

Leverage is defined as the ratio of total liabilities to total assets, which is used to account for the company's financial leverage. (Elsayed, 2023). Elsayed (2023) indicated that leverage has a large and favourable influence towards Tobin's Q during the COVID-19 epidemic. However, Khatib and Nour (2021) agreed that the COVID-19 pandemic has influenced firm leverage, with managers lowering leverage to overcome the operational risks posed by COVID-19 and ensuring enterprises able to endure in the pandemic smoothly.

Firm size, on the other hand, is determined using natural logarithm of the company's total assets. It accounts for any systematic variances in performance caused by the firm's size. (Ozdemir, 2020). According to Amin and Nor (2019), firm size has a positive relationship with business performance because larger firms have competitive advantages due to economies of scale, market power, expansion, and profitability. It was chosen for control because of its major impact towards company performance during COVID-19 pandemic. (Golubeva, 2021).

Table 3.5: Control Variable Table

Control Variable	**Formula**	**Sources**
Firm Size (FIRM_SIZE)	Natural Logarithm of Firm's Total Assets	Ozdemir (2020); Oliveira & Zhang (2022)
Leverage (LEV)	Ratio of total liabilities to total assets	Elsayed (2023); Khatib & Nour (2021)

3.7 Data Analysis

3.7.1 Descriptive Analysis

A descriptive analysis is one that offers basic information about the variables in a dataset while also detecting potential causal effects. The mean as well as the standard deviation will be interpreted in this research for the independent variables, dependent variables, and control variables. SPSS will be used to generate the necessary results.

3.7.2 Correlation Analysis

The research conduct Pearson's Correlation Coefficient test to determine correlation existence among variables. This linear relationship strength can be evaluated by examining the link among two variables. The typical correlation coefficient range (ρ) is from one that is negative (-1) to one that is positive (+1). The closer the displayed value of two variables to -1, the stronger the negative linear relationship, and vice versa. The closer the variables towards 0, the weaker the linear relationship. This research intends to examine the correlation among the two dependent variables and the five independent factors.

Table 3.6: Pearson's Correlation Coefficient Indicator

Test Value	Interpretation
0.00 – 0.10	Negligible Correlation
0.10 – 0.39	Low Correlation
0.40 – 0.69	Moderate Correlation
0.70-0.89	High Correlation
0.90-1.00	Very High Correlation

3.7.3 Independent T-test Analysis

An independent t test is a statistical test used to compare two groups' means. It is frequently used in hypothesis testing to assess whether the samples are different from each other. Assumptions are made that the data within each group are normally distributed and have approximately equal variances.

The research wants to see if there is any difference in board diversity before and during COVID-19 pandemic. According to the null hypothesis, no difference is found in board diversity before and during COVID-19 pandemic. The level of acceptable significance is set at 5% significance level.

3.7.4 Panel Data Analysis

The research conduct panel data analysis to analyse the observations about different cross sections across time. This research is interested in finding out the influence of board diversity towards company performance across the period of 2017 to 2022.

Pooled Ordinary Least Squares (Pooled OLS)

Pooled Ordinary Least Squares (Pooled OLS) is a statistical approach conducted to examine the parameters of a linear regression model in econometrics and statistics. It is frequently used when dealing with cross-sectional data, which entails watching numerous individuals or entities at the same time. The pooled OLS model is based on the assumption of a linear relationship between the dependent variable and one or more independent variables, with the goal of estimating the coefficients (β) that describe this linear relationship.

Pooled OLS estimates the coefficients by minimizing the sum of squared residuals for all observations across all entities. Assumption is made that the relationship between the dependent and independent variables is the same for all individuals/entities in the dataset. This assumption might not hold if there are systematic differences or interactions that vary across different groups within the dataset. In cases where there are group-specific differences, heteroscedasticity, or other issues, alternative methods like fixed effects or random effects models might be more appropriate. In order to find out whether pooled OLS regression is preferable, this research will conduct Breusch and Pagan Lagrange Multiplier (BP-LM) test at 5% significance level.

Fixed Effect Model

The fixed effects model, also known as the within-subjects or entity-specific effects model, assumes that each individual or entity in the panel dataset has a distinct influence that persists through time. These effects are sometimes known as "fixed effects" or "individual effects." While accounting for these individual-specific effects, the fixed effects model predicts the average connection between variables. The fixed effects model's central principle is to eliminate individual-specific effects by taking differences within each individual/entity across time. This helps in controlling for any unobserved characteristics that are specific to each individual/entity (Collischon & Eberl, 2020).

Random Effect Model

Individual-specific effects are assumed to be random variables derived from a wider population in the random effects model. Individual-specific effects are not assumed to be fixed in this model, but rather are handled as random variables with known distributions. The random effects approach provides greater flexibility in capturing variability in individual-specific effects. Individual-specific effects are evaluated alongside other model parameters in the random effects model. The fundamental advantage of the random effects model over the fixed effects model is that it allows for more efficient estimate, especially when the number of entities and time periods is considerable. In order to know whether fixed effect model or random effect model will be preferable, this research will conduct Hausman test at 5% significance level to finalise the method to conduct panel data regression analysis.

Eviews will be used throughout the whole process to run panel data analysis. The panel data regression model is shown below:

$$ROE_{it} = \beta_0 it + \beta_1(GENDER)it + \beta_2(AGE)it + \beta_3(ETHNIC)it + \beta_4(SKILL)it + \beta_5\ (TENURE)it + \beta_6(FIRM\_SIZE)it + \beta_7(LEV)it + \varepsilon it \quad (3.7.2.1)$$

$$TOBINQit = \beta_0 it + \beta_1(GENDER)it + \beta_2(AGE)it + \beta_3(ETHNIC)it + \beta_4(SKILL)it + \beta_5\ (TENURE)it + \beta_6(FIRM\_SIZE)it + \beta_7(LEV)it + \varepsilon it \quad (3.7.2.2)$$

where:
ROE: Return on Equity
TOBINQ: Tobin's Q
GENDER: Gender Diversity
AGE: Age Diversity
ETHNIC: Ethnic Diversity
SKILL: Skill Diversity
TENURE: Tenure Diversity
FIRM_SIZE: Firm Size
LEV: Leverage
E: Error Term

3.8 Conclusion

Chapter 3 summarized the research methodology utilised to investigate the relationship among board diversity and company performance was provided. A deductive technique is applied for quantitative and descriptive research. This research employed a secondary data gathering strategy to extract IVs and DV data and literature from Bursa Malaysia, Refinitiv, Google Scholar, and other platforms. This research used stratified probability sampling to collect 30 public listed companies each from the service, manufacturing, and mining and quarrying industries from Bursa Malaysia, for a total of 90 companies. This chapter also discussed the research instrument used, including dependent variables, independent variables and control variables chosen for the analysis. Lastly, the chapter discussed on the tests used to conduct analysis and end with a conclusion.

Chapter 4: Research Result

4.0 Introduction

The findings of the research from EViews and SPSS are presented in Chapter 4. First, a descriptive analysis is performed and discussed. After that, this chapter will end with the panel data analysis before and during COVID-19 pandemic.

4.1 Descriptive Analysis

Referring to the table below, descriptive analysis is conducted that include all variables involves in the research. Tobin's Q has a mean value of 1.5909 with standard deviation of 1.9501 before COVID-19 pandemic, while the mean decreased to 1.4312 with standard deviation of 1.7077 during COVID-19 pandemic. It indicates that company performance is being affected and dropped during the COVID-19 pandemic periods. However, it is observed that Tobin's Q for both periods is greater than 1, which suggests that the market values the company's assets more than their replacement cost. This indicates that the company's investments and operations are generating positive returns, making it attractive to investors. It is possibly due to the sample selected are the Top 3 industries that contributed to Malaysia's GDP. On the other hand, the ROE also shows a downward trending in terms of their mean and standard deviation, whereby before COVID-19 pandemic there is a mean value of 0.1577 with standard deviation of 0.3840 and during COVID-19 pandemic the mean value drop to 0.1222 with a standard deviation of 1.7077. It is observed that COVID-19 pandemic has a detrimental influence towards company performance.

Looking through the independent variables, gender diversity is observed as the only independent variable that have high increasement in mean value from 0.31 to 0.40. The standard deviation has also raise from 0.464 to 0.490. It indicates that there are 9% of the public listed companies have increased their women participation in board during COVID-19

pandemic and reach the government requirement to have 30% of women directors in the board. Other diversity variables are observed to have only minimal changes. Age diversity dropped by 0.0213 from a mean of 0.6117 to 0.5904. The mean value shows that companies have a diversified board age averagely for both before and during COVID-19 pandemic. Ethnic diversity raised with a mean from 0.34 to 0.36. It indicates that there are averagely 30% of the companies included 3 main ethnic group which are Malay, Chinese and Indian, and this percentage raised during pandemic. Skill diversity raised from a mean of 0.6578 to 0.6631. It shows that Malaysian companies have boards with skill diversified in overall. Lastly, tenure diversity mean value dropped from 0.8042 to 0.8014, with a standard deviation from 0.3304 to 0.2832. The mean value of tenure diversity has indicate that there is a moderately diversified board within the 6 years. In terms of the control variables, there is a considerable increase in firm size by 0.1005 from a mean value of 12.8233 before COVID-19 pandemic to a mean value of 12.9238 during COVID-19 pandemic. The standard deviation of firm size however drops from 3.8473 to 3.7812 by 0.0661. Other than that, leverage only shows a minimal raise by 0.49%, from a mean of 0.2599 to 0.2648.

4.2 Independent T-Test Analysis

As presented in Table 4.1, an independent t-test has been conducted to compare the mean value of all independent variables before and during COVID-19 pandemic. This research hypothesized that board diversity shows a significant difference before and during COVID-19 pandemic. It should be noted that COVID-19 pandemic does affect the board diversity, although some of the variable's impact are not significant within the three industries.

Gender diversity is observed to have a significant different before and during COVID-19 with a probability value of 0.039, which is lesser than 0.05. It indicates that there is a significant difference in gender diversity before and during COVID-19 pandemic at 5% significance level. Besides, age diversity shows a probability value of 0.055, which is lesser than 0.10. Hence, it is concluded with sufficient evidence that age diversity is significantly different before and during COVID-19 pandemic. Other than gender diversity and age diversity, ethnic, skill, and tenure diversity show no significant difference during COVID-19 since their probability values are all exceeded the significance level at 0.10.

Table 4.1: Descriptive Analysis

Variables	**Before COVID-19**			**During COVID-19**			**Mean**	**T-Test**
	N	Mean	SD	N	Mean	SD	**Difference**	P-Value
Dependent Variables								
ROE	270	0.1577	0.3840	270	0.1222	0.3767	0.0356	0.278
Tobin's Q	270	1.5909	1.9501	270	1.4312	1.7077	0.1597	0.312
Independent Variables								
Gender Diversity	270	0.31	0.464	270	0.40	0.490	-0.085	0.039**
Age Diversity	270	0.6117	0.1244	270	0.5904	0.1327	0.0213	0.055*
Ethnics Diversity	270	0.34	0.475	270	0.36	0.482	-0.022	0.590
Skills Diversity	270	0.6578	0.0968	270	0.6631	0.0946	-0.0053	0.520
Tenure Diversity	270	0.8042	0.3304	270	0.8014	0.2832	0.0027	0.918
Control Variables								
Firm Size	270	12.8233	3.8473	270	12.9238	3.7812	-0.1005	0.760
Leverage	270	0.2599	0.1799	270	0.2648	0.1907	-0.0048	0.763

4.3 Correlation Analysis

This research used Pearson Coefficient Correlation analysis to find out whether there is any correlation problem between the variables. It is employed to assess the magnitude and pattern of correlations between independent variables. A correlation coefficient close to 1 or -1 indicates a strong linear relationship. If there are correlation coefficients that are close to 1 or -1, these high correlation values suggest that the variables are strongly correlated with each other.

Table 4.2 presented the correlation analysis result of the research. First of all, it is examined that all of the independent variables are having a positive coefficient value with ROE and Tobin's Q, which means that board diversity have a positive linear relationship with the company's ROE as well as Tobin's Q. Furthermore, it is observed that all independent variables are having a correlation value below 0.4. This reflects that all the variables are having weak correlation between each other. There are no high correlation values suggest that the variables are strongly correlated with each other. All the independent variables show probability values that are less than 5% significance level when correlated to ROE and Tobin's Q. Therefore, the conclusion is made with sufficient evidence that there is no correlation problem at 5% significance level.

The VIF value ranged from 1 (noncorrelation) to infinity (perfect colleration). Normally, the VIF values should not exceed 10 in order to said that the multicollinearity among variables is not too high. Since the result shows VIF values are all within the range of 1.0 to 2.0, it is observed that the VIF values are all less than the critical value of 10. Hence, it signifies that there is no significant presence of multicollinearity problems.

Table 4.2 - Correlation Analysis

Correlation	**ROE**	**TOBINSQ**	**GENDER**	**AGE**	**ETHNICS**	**SKILL**	**TENURE**	**FIRM_SIZE**	**LEV____**
ROE	1.000000								
TOBINSQ	0.599***	1.000000							
GENDER	0.324***	0.243***	1.000000						
AGE	0.154***	0.186***	0.051	1.000000					
ETHNICS	0.191***	0.127***	0.242***	0.090**	1.000000				
SKILL	0.150**	0.087**	0.086**	0.279***	0.167***	1.000000			
TENURE	0.109**	0.170***	0.151***	0.054	-0.007	0.030	1.000000		
FIRM_SIZE	-0.136***	-0.294***	-0.020	0.009	0.170***	0.157***	-0.057	1.000000	
LEV____	0.076*	-0.026	-0.012	0.042	0.136***	0.045	-0.050	0.321***	1.000000
VIF			1.0983	1.0930	1.1314	1.1350	1.0331	1.1640	1.1275

Note: 1. *, ** and *** indicate 10%, 5% and 1% level of significance, respectively.

2. TOBINSQ = Tobin's Q, ROE = Return of Equity, GENDER = Gender Diversity, AGE = Age Diversity, ETHNICS = Ethnics Diversity, SKILL = Skill Diversity, TENURE = Tenure Diversity, FIRM_SIZE = Firm Size, LEV_ = Leverage

4.4 Regression Result

Table 4.3: Panel Regression Analysis Result (Entire Sample)

Variables	Pooled Regression Model		Random Effect Model		Fixed Effect Model	
	ROE	Tobin's Q	ROE	Tobin's Q	ROE	Tobin's Q
C	(0.1260)	(0.0005)	0.0999	2.1687	(0.0306)	4.3352
	0.4778	0.9995	0.5371	0.0036***	0.9405	0.0000
GENDER	0.1898	0.4218	0.1347	0.0683	0.0947	(0.0183)
	0.0001***	0.0858*	0.0002***	0.6209	0.0045***	0.8285
	0.7921	3.3375	0.5103	0.8280	0.2625	1.0133
AGE	0.0000***	0.0004***	0.0000***	0.0766*	0.0148**	0.0002***
	0.0568	0.2599	(0.0262)	0.1771	(0.0068)	0.0691
ETHNICS	0.2506	0.2895	0.4760	0.2139	0.8473	0.4412
	(0.2979)	1.2902	(0.2759)	1.1202	0.4659	(0.2005)
SKILL	0.2230	0.2874	0.0899	0.0716*	0.0018***	0.5966
	0.0665	0.7247	0.0069	0.2497	(0.0275)	0.0529
TENURE	0.3198	0.0296**	0.8850	0.1738	0.5943	0.6870
FIRM_	(0.0160)	(0.1858)	(0.0106)	(0.1732)	(0.0184)	(0.2722)
SIZE	0.0100***	0.0000***	0.2537	0.0002**	0.5438	0.0005
LEV_	0.2647	1.0825	0.0896	0.4496	(0.2554)	(0.5419)
	0.0405**	0.0909*	0.4798	0.3820	0.0293	0.0690
R-square	0.1721	0.2093	0.1084	0.0906	0.6488	0.9020
Adjusted R-square	0.1501	0.1882	0.0846	0.0663	0.5725	0.8807
F-statistic	7.7849	9.9069	4.5502	3.7268	8.5039	42.3552
Prob	0.0000	0.0000	0.0001	0.0007	0.0000	0.0000

Note: 1. *, ** and *** indicate 10%, 5% and 1% level of significance, respectively.

2. TOBINSQ = Tobin's Q, ROE = Return of Equity, GENDER = Gender Diversity, AGE = Age Diversity, ETHNICS = Ethnics Diversity, SKILL = Skill Diversity, TENURE = Tenure Diversity, FIRM_SIZE = Firm Size, LEV_ = Leverage

4.4.1 Breusch and Pagan Lagrange Multiplier Analysis

Table 4.4: Breusch and Pagan Lagrange Multiplier (BP-LM) Test Output

Summary	**ROE**	**Tobin's Q**
Cross-section random	255.4943***	850.5681***
	(0.0000)	(0.0000)

Note: Significance level at 5%. REM is appropriate.

The BP-LM Test is designed to determine if a pooled OLS or a random effect model (REM) should be employed for this research. As a result, the BP-LM test is carried out with the following hypothesis:

H0: There is no random effect (Pooled OLS is preferable)
H1: There is random effect (REM is preferable)

In BP-LM test, if the p-value is less than 0.05, the null hypothesis is rejected. Based on Table 4.3, the output of the BP-LM test for ROE showed a probability value of 0.0000, meaning it was below the level of 0.05. Therefore, H0 is rejected. Decision has been made that random effect model is more appropriate to be used to explain ROE. On the other hand, the output of the BP-LM test for Tobin's Q showed a probability value of 0.0000, meaning it was below the level of 0.05. Therefore, H0 is rejected. The random effect model is also more applicable for explaining Tobin's Q.

4.4.2 Hausman Analysis

Table 4.5: Hausman Test Output

Summary	**ROE**	**Tobin's Q**
Cross-section random	23.1566	21.7148
	(0.0016)	(0.0028)

Note: Significance level at 5%. REM is appropriate.

Hausman Test is conducted to find out whether a fixed effect model or a random effect model should be utilized for this research. As a result, the Hausman Test is carried out with the following hypothesis statement:

H0: REM are consistent and efficient (REM is preferable)
H1: REM are inconsistent and inefficient (FEM is preferable)

If probability value is below 0.05, Hausman test will reject the H0. The Hausman Test for ROE result in table 4.4 shows a probability of 0.0016, that is lower than 0.05. On account to this, the null hypothesis is rejected. Therefore, fixed effect model is better suitable for explaining ROE. Besides, Hausman Test for Tobin's Q revealed a probability of 0.0028, that is below the level of 0.05. As a result, null hypothesis is rejected. Finally, the fixed effect model is better relevant for explaining Tobin's Q.

4.5 Panel Data Analysis Result

Table 4.6: Panel Data Analysis Output for ROE & Tobin's Q - FEM

	ROE		Tobin's Q	
Exploratory Variables:	**Coefficient**	**P-value**	**Coefficient**	**P-value**
GENDER	0.0947	0.0045***	(0.0183)	0.8285
AGE	0.2625	0.0148**	1.0133	0.0002***
ETHNIC	(0.0068)	0.8473	0.0691	0.4412
SKILL	0.4659	0.0018***	(0.2005)	0.5966
TENURE	(0.0275)	0.5943	0.0529	0.6870
FIRM SIZE	(0.0184)	0.5438	(0.2722)	0.0005***
LEV	(0.2554)	0.0293**	0.5419	0.0690*
C	(0.0306)	0.9405	4.3352	0.0000
R-square	0.6488		0.9020	
Adjusted R-square	0.5725		0.8807	
F-statistic	8.5039		42.3552	
Prob (F-stat)	0.0000		0.0000	

Note: 1. *, ** and *** indicate 10%, 5% and 1% level of significance, respectively.

2. TOBINSQ = Tobin's Q, ROE = Return of Equity, GENDER = Gender Diversity, AGE = Age Diversity, ETHNICS = Ethnics Diversity, SKILL = Skill Diversity, TENURE = Tenure Diversity, FIRM_SIZE = Firm Size, LEV_ = Leverage

4.5.1 Board Diversity and Company ROE Performance - FEM

According to Table 4.6, the equations are formulated as below:

$$ROE = -0.0306 + 0.0947(GENDER) + 0.2625(AGE) – 0.0068(ETHNICS) + 0.4659(SKILLS) – 0.0275(TENURE) – 0.0184(FIRM\_SIZE) – 0.2554(LEV) + \varepsilon$$

Gender Diversity and ROE

The coefficient value of 0.0947 indicates that for every 1% increase in gender diversity, the company's ROE will increase by 9.47%. Gender diversity has a probability value of 0.0045, which is less than 0.01. Hence, there is ample proof to suggest that gender diversity has a significant positive relationship at 1% significance level.

Age Diversity and ROE

The coefficient value of 0.2625 indicates that for every 1% increase in age diversity will increase the company's ROE by 26.25%. Age diversity has a probability value of 0.0148, which is less than 0.5. Hence, there is ample proof to suggest that that age diversity has a significant positive relationship at 5% significance level.

Ethnic Diversity and ROE

The coefficient value of -0.0068 showed that for every 1% increase in ethnic diversity, the company's ROE will decrease by 0.68%. However, ethnic diversity shows probability value of 0.8437, which is more than 0.10. On account of this, no significant relationship is found among ethnic diversity and company ROE at the 10% level of significance.

Skill Diversity and ROE

Skill diversity has a coefficient value of 0.4659 For every 1% increase in skill diversity, company's ROE will increase by 46.59%. The probability value of skill diversity is 0.0018, which is less than 0.01. Hence, the research concludes that the relationship between skill diversity and company's ROE is positively significant at 1% significance level.

Tenure Diversity and ROE

Tenure diversity has a coefficient value of -0.0275. For every 1% increase in tenure diversity, the company's ROE will decrease by 2.75%. However, tenure diversity shows a probability value of 0.5943, which is more than 0.10. Hence, at the 10% level of significance, the conclusion is made that no significant relationship is found among tenure diversity and ROE.

Firm Size and ROE

Firm size is found to have a coefficient value of -0.0184. It indicates that for every 1% increase in firm size, the company's ROE will decrease by 1.84%. However, firm size shows a probability value of 0.5438, which is more than 0.10. Therefore, it is found out that no significant relationship happened between firm size as well as company ROE at 10% significance level.

Leverage and ROE

Leverage is analysed to have a coefficient value of 0.2554. It indicates that for every 1% increase in leverage, the company's ROE will increase by 25.54%. The probability value of leverage is 0.0293, that is less than 0.05. Hence, conclusion made that significant positive relationship among leverage and ROE exist at 5% significance level.

The fixed effect model's R-square for ROE is 0.6488. It means that 64.88% of the variation in independent variables and control variables can explain the variation in the dependent variable. The F-statistic is 8.5039 and the adjusted R-square is 0.5725. The probability value of the F-statistic, 0.000000, indicates that the model is fit. There is enough evidence to indicate that one or more independent variable has a significant association with the ROE performance of the company.

4.5.2 Board Diversity and Company Tobin's Q Performance - FEM

According to the result from Table 4.6, the equations are formulated as below:

$$\text{Tobin's Q} = 4.3352 - 0.0183(\text{GENDER}) + 1.0133(\text{AGE}) + 0.0691(\text{ETHNICS}) - 0.2005(\text{SKILLS}) + 0.0529(\text{TENURE}) - 0.2722(\text{FIRM\_SIZE}) + 0.5419(\text{LEV}) + \varepsilon$$

Gender Diversity and Tobin's Q

Gender diversity has a coefficient value of -0.0183. It indicates that for every 1% increase in gender diversity, the company's Tobin's Q will decrease by 1.83%. However, the probability value is 0.8285, which is more than 0.10. Hence, gender diversity has no significant relationship with company Tobin's Q at 10% significance level.

Age Diversity and Tobin's Q

Age diversity has a coefficient value of 1.0133. It indicates that for every 1% increase in age diversity, the company's Tobin's Q will increase by 101.33%. The probability value of age diversity is 0.0002, which is less than 0.01. Thus, there is sufficient evidence to show that age diversity is significantly positive associated with company's Tobin's Q at 1% significance level.

Ethnic Diversity and Tobin's Q

Ethnic diversity has a coefficient value of 0.0691. It indicates that for every 1% increase in ethnic diversity, the company's Tobin's Q will increase by 6.91%. However, the probability value of ethnic diversity is 0.4412, which is more than 0.10. Thus, ethnic diversity has no significant relationship with company's Tobin's Q at 10% significance level.

Skill Diversity and Tobin's Q

Skill diversity has a coefficient value of -0.2005. It indicates that for every 1% increase in skill diversity, the company's Tobin's Q will decrease by 20.05%. However, the probability value of skill diversity is 0.5966, which is more than 0.10. Thus, skill diversity has no significant relationship with company's Tobin's Q at 10% significance level.

Tenure Diversity and Tobin's Q

Tenure diversity has a coefficient value of 0.0529. It indicates that for every 1% increase in tenure diversity, the company's Tobin's Q will increase by 5.29%. However, the probability value of skill diversity is 0.6870, which is more than 0.10. Thus, tenure diversity has no significant relationship with company's Tobin's Q at 10% significance level.

Firm Size and Tobin's Q

Firm size has a coefficient value of -0.2722. It indicates that when firm size increase by 1%, the company's Tobin's Q will decrease by 27.22%. The probability value of firm size is 0.0005, which is less than 0.01. Thus, there is enough proof to mention that firm size is significantly negative associated with company's Tobin's Q at 1% significance level.

Leverage and Tobin's Q

Leverage has a coefficient value of 0.5419. It indicates that when leverage increased by 1%, the company's Tobin's Q will increase by 54.19%. However, the leverage's probability value is 0.0690, that is less than 0.10. Hence, there is sufficient evidence to say that leverage has a significant positive association with company's Tobin's Q at 10% significance level.

R-square for the fixed effect model for Tobin's Q is 0.9020. It indicates that 90.20% of the variation of independent variables and control variables able to explain the dependent variable. The R-square corrected is 0.8807, and the F-statistic is 42.3552. The probability value of the F-statistic, 0.000000, indicates that the model is fit. There is enough evidence to indicate that at least one independent variable has a significant association with the Tobin's Q performance of the company.

4.6 Conclusion

In conclusion, the research chapter 4 has presented the overall research results. It started with the descriptive analysis, followed by t-test analysis, correlation analysis. It is found that gender and age diversity show difference before and during COVID-19 pandemic, and there is no correlation and multicollinearity problem in the variables. The chapter ended with panel data analysis to study the relationship of board diversity and company performance.

Chapter 5: Conclusion

5.0 Introduction

The final chapter summarizes the conclusions of the research. It started with the hypothesis testing results and discussion, followed by implications. Later, the research's drawbacks and recommendations will be provided for future researchers to utilize as a guide for conducting their own study. Lastly, a research conclusion will be presented at the end of the chapter.

5.1 Hypothesis Testing

5.1.1 Overview of Significance Value

Table 5.1: Overview of Statistical Outcomes for the PLCs

IV	Research Hypothesis	Expected Outcome	Actual Outcome	Significance Level
GENDER	$H1_A$: There is a significant positive relationship between gender diversity and company's ROE performance.	P	P	**1%**
	$H1_B$: There is a significant positive relationship between gender diversity and company's Tobin's Q performance.	P	N	-
AGE	$H2_A$: There is a significant positive relationship between age diversity and company's ROE performance.	P	P	**5%**

	$H2_B$: There is a significant positive relationship between age diversity and company's Tobin's Q performance.	P	P	**1%**
ETHNIC	$H3_A$: There is a significant positive relationship between ethnic diversity and company's ROE performance.	P	N	-
	$H3_B$: There is a significant positive relationship between ethnic diversity and company's Tobin's Q performance.	P	P	-
SKILL	$H4_A$: There is a significant positive relationship between skill diversity and company's ROE performance.	P	P	**1%**
	$H4_B$: There is a significant positive relationship between skill diversity and company's Tobin's Q performance.	P	N	-
TENURE	$H5_A$: There is a significant positive relationship between tenure diversity and company's ROE performance.	P	N	-
	$H5_B$: There is a significant positive relationship between tenure diversity and company's Tobin's Q performance.	P	P	-

Note: 1. *, ** and *** indicate 10%, 5% and 1% level of significance, respectively.

2. GENDER = Gender Diversity, AGE = Age Diversity, ETHNICS = Ethnics Diversity, SKILL = Skill Diversity, TENURE = Tenure Diversity.

3. P = Positive relationship, N = Negative relationship.

Table 5.2: Overview of T-test Outcome

IV	Research Hypothesis	Significance Level
GENDER	H6: Gender diversity can be differentiated before and during the COVID-19 pandemic.	**5%**
AGE	H7: Age diversity can be differentiated before and during the COVID-19 pandemic.	**1%**
ETHNIC	H8: Ethnic diversity can be differentiated before and during the COVID-19 pandemic.	-
SKILL	H9: Skill diversity can be differentiated before and during the COVID-19 pandemic.	-
TENURE	H10: Tenure diversity can be differentiated before and during the COVID-19 pandemic.	-

Note: 1. *, ** and *** indicate 10%, 5% and 1% level of significance, respectively.
2. GENDER = Gender Diversity, AGE = Age Diversity, ETHNICS = Ethnics Diversity, SKILL = Skill Diversity, TENURE = Tenure Diversity.

5.2 Discussion on Findings

Panel data analysis has been conducted to study the relationship among board diversity and company performance in Malaysia. It is first started with a question that whether board diversity will influence the company performance. The findings showed a mixed result. There are 3 independent variables found significant related to ROE which are gender diversity, age diversity and skill diversity. Other than that, only age diversity is found statistically significant toward company's Tobin's Q performance.

Gender diversity is found to have significant positive relationship with company's ROE performance. The positive relationship with company's ROE is consistent with the previous studies (Ahmadi et al., 2018; Khidmat et al., 2020; Moreno-Gomez, 2018), supporting that a feminine management style will add greater value to the organization, outweighing the costs. It also reflects that more women director is believed to enhance short term financial performance, whereby management uses shareholder equity well to generate profits. The rising

participation of women in top management is especially important for improving the organization's human resources, knowledge-intensive strategy, and decision-making activities. However, the research found no relationship between gender diversity and company's Tobin's Q. This can be explained by the reason that there are relatively few females on the boards, and this tiny number does not have enough power to affect the organisations' decision making, which is supported by Kagzi and Guha (2018).

Age diversity is found to have significant positive relationship towards both company ROE and Tobin's Q performance. The positive association among age diversity and company performance is in line with Jahani et al. (2022) and Talavera et al. (2018). It is supported that age-diverse board may mix with different resources and add to overall board knowledge which benefits in company strategic decision making. The lack of generational diversity will diminish the capacity to understand the needs of all market segments their companies attend. (Ilie et al., 2023). Hence, it is proven that higher age diversity will bring higher company performance, no matter in long term or short-term financial performance.

Ethnic diversity is observed to have an increasement in mean. It indicates that more companies are having 3 cultural background involving Malay, Chinese and Indian board of directors in their boardroom during COVID-19 pandemic. It is stated that COVID-19 pandemic has raised the concern of racial equity issue so that minority group can be heard in the boardroom (Paine, 2020). This concern is getting slowly acknowledged by the company and make adjustment on it. On the other hand, the result shows that ethnic diversity is not significantly related to company performance, no matter in terms of ROE or Tobin's Q. This is in line with the research from Guest (2019), who argued that ethnic diversity will not improve company performance, but shows more credibly on non-financial grounds, such as justice, equal opportunity, and indicating commitment to an inclusive corporate culture.

The companies are observed to have diversified skill in the boardroom in average before and during COVID-19 pandemic with an increasing trend in their mean value. This indicate that COVID-19 pandemic has increased company attention to include more right skills into the boardroom. The findings show a positive relationship between skill diversity with company's ROE performance. This proved that skill diversity will bring more diversified personnel to boards, thus creating wider connections, more resources to facilitate decision-making and

problem-solving, and ultimately improve company performance, which is supported by Hosny and Elgharbawy (2021). However, skill diversity shows a negative result in Tobin's Q. One of the possible explanations may be that there is a lack of right expertise in the board, which is in line with Assenga et al. (2018).

Tenure diversity shows moderately diversified for both before and during COVID-19 pandemic, with a decreasing trend in means. It reflects that companies tend to concentrate on the directors who are experienced in the companies and terminated directors who have either too short tenure or too long tenured board of directors to avoid risks and uncertainties. In addition, the positive association among tenure diversity and company performance is also being rejected for both company's ROE and Tobin's Q. This is in consistent with the research from Kagzi and Guha (2018). It could be explained by the reason that longer tenured boards may be too close to other management and may agree to avoid any conflict, but shorter tenured board members are too timid to speak up. Hence, tenure diversity shows minimal impact in influencing board decision making.

Leverage is found to have positive relationship with company performance for ROE and Tobin's Q. It is supported by the literature from Song et al. (2020), argued that leverage will enhance the monitoring role of a diverse board towards executive managers. When leverage may negatively influence company value, higher leverage enhances a diverse board's authority to oversee managers' discretion, resulting in a reduction in possible agency costs. On the other hand, firm size shows an inconsistent result with previous studies (Hosny & Elgharbawy, 2021; Song et al., 2020). The research found firm size has a negatively significant association with Tobin's Q, and no significant relationship is examined between firm size with company's ROE performance. It shows that a larger firm size will actually negatively impact the long-term company performance. Other than that, firm size found no significant impact on the company short term financial performance.

In regard to research question two to find whether board diversity can be differentiated before and during the COVID-19 pandemic, the research found that there are only gender diversity and age diversity show a significant difference before and during COVID-19 pandemic. This is in line with the previous study (Khatib & Nour, 2018). Gender diversity, which found 9% increasement in mean during COVID-19 pandemic, shows significant changes before and

during COVID-19. It indicates that company tend to recruit more women director in board, believing that the women characteristics will add values in crisis management to reduce company pressures in crisis management, which is supported by Chen et al. (2019). It also shows that companies are slowly adopting the recommendation in the MCCG2021 to include 30% of women participation in board.

Age diversity in Malaysia's company board is also examined to have significant difference before and during COVID-19 pandemic. The mean value of board age diversity has decreased from 0.6117 to 0.5904, which shows that companies tend to have a less age diversified board during COVID-19 pandemic. It reflects that Malaysia companies may prefer to hire and keep more experienced board members, instead of the younger directors during pandemic. With that, age diversity has decreased and changed significantly. This is consistent with previous study (Oliveira & Zhang, 2022)

5.3 Implication of Study

To sum up, this research examined that gender diversity, age diversity and skill diversity are positively related to company ROE performance. It indicates that the higher the gender, age and skill diversity, the greater the company ROE performance. On the other hand, age diversity shows a significant positive association with company Tobin's Q performance, which shows that the higher the age diversity, the greater the company Tobin's Q performance. Notably, age diversity has significant positive relationship with both company's ROE and Tobin's Q. With that, research question 1 has been answered. Furthermore, the research also found that there is a significant difference on gender diversity and age diversity before and during COVID-19 pandemic. Hence, hypothesis 6 and 7 have been accepted in the research.

The significant positive relationship between gender diversity, age diversity and skill diversity towards company performance is aligned with agency theory, which stated that having a diverse board is crucial to encourage independency in the boardroom, hence monitor manager better according to stakeholders' interest. It is also supported the stakeholder theory which denoted that a board should be diverse with different background of directors in order to take care on the stakeholders' interest from different background. Other than that, the research also

supported the resource dependency theory, argued on the importance of resources attached by a diverse board can shape the board's behaviours, decision-making, and overall functioning and performance. All of them showed that higher board diversity will leads to higher company performance.

The result of the positive impact on gender diversity, age diversity and skill diversity towards company performance implies that a diverse workforce will brings together individuals with varied experiences, perspectives, and skills, in order to have synergistic decision-making. Gender diversity, age diversity, and skill diversity contribute to well-rounded decision-making processes. Diverse teams are more likely to engage in thorough discussions, consider multiple viewpoints, and make informed choices, ultimately benefiting a company's strategic direction. Besides, age diversity facilitates knowledge transfer between generations. Older employees can mentor younger ones, sharing valuable insights and experiences. Younger employees, in turn, can bring fresh perspectives and technological proficiency, enhancing overall company performance. Furthermore, combining employees with diverse skills creates a synergistic effect where each person's strengths complement the weaknesses of others. Skill diversity enables teams to cover a wide range of competencies needed for tasks, projects, and challenges, ultimately contributing to enhanced performance. Companies that prioritize gender diversity, age diversity, and skill diversity are likely to be perceived positively by stakeholders, including investors, customers, and employees. Such organizations are often seen as progressive, socially responsible, and forward-thinking, which can enhance brand reputation and attract top talent. Most importantly, diverse teams reflect the evolving global landscape. Organizations that embrace diversity are positioned to remain competitive in an increasingly interconnected and multicultural world. This adaptability and inclusivity contribute to long-term sustainability and growth.

On the other hand, the research also found significant difference in gender and age diversity before and during COVID-19 pandemic. The shift in gender and age diversity during the pandemic suggests that organizations had to rapidly adapt to changing circumstances. The ability to quickly modify workforce composition demonstrates organizational agility and flexibility, which are crucial for weathering unexpected challenges. Examining how gender and age diversity changed during the pandemic can offer insights into how organizations supported their board of director's well-being and promoted inclusivity during challenging

times. It may indicate a commitment to retaining a diverse boardroom and valuing all directors' contributions. The shift in diversity might reflect changes in remote work practices and virtual collaboration. The pandemic forced many companies to implement remote work policies, which could have affected the representation of certain groups differently. Understanding these dynamics is crucial for managing remote board effectively. Furthermore, analysing changes in diversity before and during the pandemic can help organizations anticipate future challenges and plan for resilience. Understanding the impact of such disruptions on diversity levels can inform strategies for future crises or unexpected events. The observed changes in diversity can stimulate further research into the specific factors that drove these shifts. It can also inform policies and guidelines aimed at maintaining diversity and inclusivity during the period of crisis.

Hence, the research found to have significant implications for Malaysia companies, board of directors, policymakers, as well as regulators. To improve business performance, the governance regulations need to take into account on board diversity value, especially take into consideration on gender diversity, age diversity and skill diversity. Governments and regulatory bodies should cooperate to lessen the COVID-19 pandemic's financial and economic impacts. Businesses should think about restructuring their corporate governance to address the crisis and prepare for the next crisis. In addition, further studies in this area need to be conducted to support the progressive increase in board diversity. Contributions to research on board diversity and company performance are desperately needed, particularly for developing nations. With Malaysian government's ongoing support to promote board diversity, and the cooperation of all relevant parties, board diversity is expected to be enhanced in the foreseeable future.

5.4 Limitation of Study

This study has a few shortcomings that must be addressed. The study only includes 90 Malaysian publicly listed companies. As a result, it is solely applicable to Malaysian businesses in the three industries. The influence of board diversity cannot be extended to other countries because their laws and regulations, as well as their cultures, differ. Furthermore, because the

study excludes private limited firms and financial institutions, it overlooks the influence of board diversity in these private limited companies and financial organizations.

Furthermore, there are different measurements given in the literature to measure the variables. Therefore, there might be different results and findings generated towards the board diversity. For instance, the ratio of women on boards can be used to measure gender diversity. It can also be measured by the Blau Index. Different measurement might produce different outcome to explain the company performance.

Furthermore, this research only employs ROE and Tobin's Q to assess company performance. Various scholars have developed other metrics for example return of assets (ROA), return on investment (ROI), price earning ratio (PER), and return of sales (ROS) that can be used as an indicator for firm performance. This research also does not consider economic factors for example inflation, recession, exchange rate, and so on, which may influence the firm's success.

5.5 Recommendations for Future Research

Based on the research, numerous expansions of research can be conducted. First of all, the impact of board diversity on the financial performance has been measured by ROE and Tobin's Q. Future researchers can consider using other dependent variables to represent the company performance such as ROA, ROI, PER, ROS and etc.

Besides, board diversity is being measured by using gender diversity, age diversity, ethnic diversity, skill diversity and tenure diversity. However, it does not comprise only five of them. Future research can consider using other independent variables that affect board diversity to test on company performance for example the education level, industry experience, nationality and etc.

Furthermore, other than leverage and firm size, the future researcher may include more control factors in the study. They may also include board size, business age, debt level, and other factors that have been employed in previous work. These control variables may have an impact on board diversity and corporate performance both before and during the COVID-19 epidemic.

Other than that, it is notable that this research only includes sample of data from service industry, manufacturing industry as well as mining and quarrying industry. In the future research, more industries can be involved such as agriculture industry, construction industry, and etc which also bring huge contribution to Malaysia's economy. Other than that, future researcher can even conduct an in-dept analysis on the influence of board diversity towards company performance in industry basis. It is valuable in order to let the companies from different industry to have deeper insights regarding which board diversity dimension brings more influence towards their company performance. They can also further improve on their board diversity level respectively according to the findings.

In addition, this research has highlighted the changes of gender diversity and age diversity for the period before and during COVID-19 pandemic. More research is encouraged to deep down in researching the relationship between board diversity and company performance which is impacted by COVID-19 pandemic. Future researcher is also recommended to determine board diversity before and during COVID-19 pandemic based on the Top 50 or Top 100 public listed companies in Malaysia to see whether there are any differences from the leading companies in Malaysia. When time passed by, future researcher can also conduct research on the impact of board diversity before and after COVID-19 pandemic. It will be interesting to see what changes have been made by the crisis towards companies' perspective on board diversity and the influences of board diversity towards company performance in the post pandemic period.

5.6 Conclusion

In conclusion, the final chapter summarizes the research outcome. It started by showing the hypothesis testing results. After that, discussion of the results has been conducted. The research provided a comprehensive implication based on the research outcome. Limitations and recommendations are provided later on to give more direction on further study. Lastly, chapter 5 will be ended with a research wrap up

REFERENCE

Adams, R. B., Akyol, A., & Verwijmeren, P. (2018). Director skill sets. *Journal of Financial Economics*, *130*(3), 641–662. https://doi.org/10.1016/j.jfineco.2018.04.010

Abdulsamad, A. O., Fauziah, W., & Lasyoud, A. A. (2018). The influence of the board of directors' characteristics on firm performance: Evidence from Malaysian public listed companies. *Corporate Governance and Sustainability Review*, *2*(1), 6–13. https://doi.org/10.22495/cgsrv2i1p1

Adeabah, D., Gyeke-Dako, A., & Andoh, C. (2019). Board gender diversity, corporate governance and bank efficiency in Ghana: a two stage data envelope analysis (DEA) approach. *Corporate Governance*, *19*(2), 299–320. https://doi.org/10.1108/cg-08-2017-0171

Ahmadi, A., Nakaa, N., & Bouri, A. (2018). Chief Executive Officer attributes, board structures, gender diversity and firm performance among French CAC 40 listed firms. Research in International Business and Finance, 44, 218–226. https://doi.org/10.1016/j.ribaf.2017.07.083

Alabdullah, T. T. Y. (2018). The relationship between ownership structure and firm financial performance. *Benchmarking: An International Journal*, *25*(1), 319–333. https://doi.org/10.1108/bij-04-2016-0051

Allam, B. S. I. G. (2018). The impact of board characteristics and ownership identity on agency costs and firm performance: UK evidence. *Corporate Governance*, *18*(6), 1147–1176. https://doi.org/10.1108/cg-09-2016-0184

Ali, F., Ullah, M. W., Ali, S. F., Yang, Z., & Ali, I. (2022). Board Diversity and Corporate Investment Decisions: Evidence from China. *SAGE Open*, *12*(2), 215824402211040. https://doi.org/10.1177/21582440221104089

Ali, F., Wang, M., Jebran, K., & Ali, S. T. (2021). Board diversity and firm efficiency: evidence from China. Corporate Governance: The International Journal of Business in Society, 21(4), 587–607. https://doi.org/10.1108/cg-10-2019-0312

Alqatan, A., Chbib, I., & Hussainey, K. (2019). How does board structure impact on firm performance in the UK? *Corporate Board: Role, Duties and Composition*, *15*(2), 18–27. https://doi.org/10.22495/cbv15i2art2

Aluoch, M. O., Mwangi, C. I., Kaijage, E., & Ogutu, M. (2020). The Relationship between Board Structure and Performance of Firms Listed at the Nairobi Securities Exchange. *European Scientific Journal*, *16*(19). https://doi.org/10.19044/esj.2020.v16n19p337

Amin, S. I. M., & Nor, S. M. (2019). Board Diversity and Firm Performance in the Construction, Manufacturing, and Trading/Services Industries. *Asian Journal of Accounting and Governance*, *12*, 183–193. https://ejournals.ukm.my/ajac/article/download/35986/10230

Assenga, M. P., Aly, D., & Hussainey, K. (2018). The impact of board characteristics on the financial performance of Tanzanian firms. Corporate Governance: The International Journal of Business in Society, 18(6), 1089–1106. https://doi.org/10.1108/cg-09-2016-0174

Bakar, A. B. S. A., Ghazali, N. A. B. M., & Ahmad, M. B. (2019). Sustainability reporting and board diversity in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *9*(3), 91-99. https://www.ijbel.com/wp-content/uploads/2019/03/KLIISC_8_042.pdf

Bhatt, P., & Bhatt, R. R. (2017). Corporate governance and firm performance in Malaysia. *Corporate Governance*, *17*(5), 896–912. https://doi.org/10.1108/cg-03-2016-0054

Brahma, S., Nwafor, C., & Boateng, A. (2020). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics*, *26*(4), 5704–5719. https://doi.org/10.1002/ijfe.2089

Brahma, S., Nwafor, C. N., & Boateng, A. (2021). Board gender diversity and firm performance: The UK evidence. *International Journal of Finance & Economics*, *26*(4), 5704–5719. https://doi.org/10.1002/ijfe.2089

Budiharjo, R. (2022). Effect of Environmental Performance, Good Corporate Governance and Leverage on Firm Value. *American Journal of Humanities and Social Sciences Research*, *4*(8), 455-464. http://www.ajhssr.com/

Butt, M. N., Baig, A. S., & Seyyed, F. J. (2021). Tobin's Q approximation as a metric of firm performance: an empirical evaluation. *Journal of Strategic Marketing*, *31*(3), 532–548. https://doi.org/10.1080/0965254x.2021.1947875

Chatterjee, C., & Nag, T. (2022). Do women on boards enhance firm performance? Evidence from top Indian companies. *International Journal of Disclosure and Governance*, *20*(2), 155–167. https://doi.org/10.1057/s41310-022-00153-5

Chen, J., Leung, W. S., Song, W., & Goergen, M. (2019b). Why female board representation matters: The role of female directors in reducing male CEO overconfidence. *Journal of Empirical Finance*, *53*, 70–90. https://doi.org/10.1016/j.jempfin.2019.06.002

Chuah, S. F., & Hooy, C. W. (2018). The impact of board ethnic diversity on firm performance: evidence from public listed firms in Malaysia. International Journal of Monetary Economics and Finance, 11(3), 260. https://doi.org/10.1504/ijmef.2018.093795

Churchill, S.A. (2018). Firm financial performance in Sub-Saharan Africa: the role of ethnic diversity. Empirical Economics, 57(3), 957–970. https://doi.org/10.1007/s00181-018-1463-2

Collischon, M., & Eberl, A. (2020). Let's Talk About Fixed Effects: Let's Talk About All the Good Things and the Bad Things. *Kölner Zeitschrift Für Soziologie Und Sozialpsychologie*, *72*(2), 289–299. https://doi.org/10.1007/s11577-020-00699-8

Conyon, M. J., & He, L. (2017). Firm performance and boardroom gender diversity: A quantile regression approach. Journal of Business Research, 79, 198–211. https://doi.org/10.1016/j.jbusres.2017.02.006

Elmarzouky, M., Albitar, K., & Hussainey, K. (2021). Covid-19 and performance disclosure: does governance matter? *International Journal of Accounting and Information Management*, *29*(5), 776–792. https://doi.org/10.1108/ijaim-04-2021-0086

Elsayed, D. H. A. (2023). The Impact of Board Gender Di-versity on Firms Performance During the Covid-19 Crisis. *Alexandria Journal of Accounting Research*, *7*(1), 1-29.

EmadEldeen, R., Elbayoumi, A. F., Basuony, M. A. K., & Mohamed, E. K. A. (2021). The effect of the board diversity on firm performance: An empirical study on the UK. Corporate Ownership and Control, 18(3, special issue), 337–347. https://doi.org/10.22495/cocv18i3siart8

Evanson, D. (2022). Embrace board diversity. New Straits Times. https://www.nst.com.my/opinion/columnists/2022/09/831366/embrace-board-diversity

Fariha, R., Hossain, M. M., & Ghosh, R. (2021). Board characteristics, audit committee attributes and firm performance: empirical evidence from emerging economy. *Asian Journal of Accounting Research*, *7*(1), 84–96. https://doi.org/10.1108/ajar-11-2020-0115

Frijns, B., Dodd, O., & Cimerova, H. (2016). The impact of cultural diversity in corporate boards on firm performance. *Journal of Corporate Finance*, *41*, 521–541. https://doi.org/10.1016/j.jcorpfin.2016.07.014

Gabaldon, P., Kanadlı, S. B., & Bankewitz, M. (2018). How does job-related diversity affect boards' strategic participation? An information-processing approach. Long Range Planning, 51(6), 937–952. https://doi.org/10.1016/j.lrp.2018.02.005

Ghazali, A. W., Nurullah, M., Ibrahim, S., Sanusi, Z. M., & Mohamed, N. (2019). The effect of corporate board diversity: Real earnings management among malaysian listed firms. *International Journal of Business & Management Science*, *9*(2).

Guest, P. C. (2019). Does Board Ethnic Diversity Impact Board Monitoring Outcomes? *British Journal of Management*, *30*(1), 53–74. https://doi.org/10.1111/1467-8551.12299

Hasan, F., & Islam, M. T. (2022). Impact of Board Diversity on Firm Performance. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-1905244/v2

Hassan, R., & Marimuthu, M. (2018). Contextualizing comprehensive board diversity and firm financial performance: Integrating market, management and shareholder's perspective. *Journal of Management & Organization*, *24*(5), 634–678. https://doi.org/10.1017/jmo.2018.10

Hillman, A. J., Keim, G. D., & Luce, R. A. (2001). Board Composition and Stakeholder Performance: Do Stakeholder Directors Make a Difference? *Business &Amp; Society*, *40*(3), 295–314. https://doi.org/10.1177/000765030104000304

Hodgson, A., Inlakom, S., Lhaopadchan, S., & Sabsombat, N. (2022). Diversity in Diversity: The Demand for and Profitability of Sub-boards in Thai Listed Corporations. *International Journal of Business*, *27*(3), 1-28. https://doi.org/10.55802/ijb.027(3).003

Hosny, K., & Elgharbawy, A. (2021). Board diversity and financial performance: empirical evidence from the United Kingdom. Accounting Research Journal, 35(4), 561–580. https://doi.org/10.1108/arj-02-2020-0037

Ilie, C., Fernandez, A., Cardoza, G., & Mondragon, J. (2023). Exploring boardroom composition and diversity in Latin-America. *Social Science Research Network*. https://doi.org/10.2139/ssrn.4493271

Ionascu, M., Ionascu, I., Sacarin, M., & Minu, M. (2018). Women on Boards and Financial Performance: Evidence from a European Emerging Market. *Sustainability*, *10*(5), 1644. https://doi.org/10.3390/su10051644

Izco, Á. M., Ruiz-Cabestre, F. J., & Ruiz-Olalla, M. C. (2020). Diversity in the board of directors and good governance practices. *Economics and Business Letters*, *9*(2), 97. https://doi.org/10.17811/ebl.9.2.2020.97-105

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405x(76)90026-x

Janahi, M., Millo, Y., & Voulgaris, G. (2022). Age diversity and the monitoring role of corporate boards: Evidence from banks. Human Relations, 001872672211087. https://doi.org/10.1177/00187267221108729

Jardak, M. K., & Hamad, S. B. (2022). The effect of digital transformation on firm performance: evidence from Swedish listed companies. *The Journal of Risk Finance*, *23*(4), 329–348. https://doi.org/10.1108/jrf-12-2021-0199

Jebran, K., & Chen, S. (2021). Can we learn lessons from the past? COVID -19 crisis and corporate governance responses. *International Journal of Finance & Economics*, *28*(1), 421–429. https://doi.org/10.1002/ijfe.2428

Jensen, M. C., & Meckling, W. H. (1994). THE NATURE OF MAN*. *Journal of Applied Corporate Finance*, *7*(2), 4–19. https://doi.org/10.1111/j.1745-6622.1994.tb00401.x

Ji, J., Peng, H., Sun, H., & Xu, H. (2021). Board tenure diversity, culture and firm risk: Cross-country evidence. *Journal of International Financial Markets, Institutions and Money*, *70*, 101276. https://doi.org/10.1016/j.intfin.2020.101276

Juwita, C. P., & Diana, N. (2020). The effect of debt to equity ratio and return on equity on stock price in Jakarta Islamic Index Companies on Indonesia Stock Exchange period 2015-2019. *Management Analysis Journal*. https://doi.org/10.15294/maj.v9i4.41890

Kabara, A. S., & Modibbo, A. (2020). Impact Of Ethnic Diversity On Firm Financial Performance: The Case Of Non-Financial Firms In Nigeria. *Kebbi Journal Of Accounting Research*, *1*(1), 127-137. http://www.kejar.com.ng/journal/164227Kejar011v1n11120.pdf

Kagzi, M., & Guha, M. (2018f). Does board demographic diversity influence firm performance? Evidence from Indian-knowledge intensive firms. Benchmarking: An International Journal, 25(3), 1028–1058. https://doi.org/10.1108/bij-07-2017-0203

Kanakriyah, R. (2021). The Impact of Board of Directors' Characteristics on Firm Performance: A Case Study in Jordan. *Journal of Asian Finance, Economics and Business*, *8*(3), 341–350. https://doi.org/10.13106/jafeb.2021.vol8.no3.0341

Katikireddi, S. V., Lal, S., Carrol, E. D., Niedzwiedz, C. L., Khunti, K., Dundas, R., Diderichsen, F., & Barr, B. (2021). Unequal impact of the COVID-19 crisis on minority ethnic groups: a framework for understanding and addressing inequalities. *Journal of*

Epidemiology and Community Health, *75*(10), 970–974. https://doi.org/10.1136/jech-2020-216061

Khan, I., Khan, I., & Senturk, I. (2019). Board diversity and quality of CSR disclosure: evidence from Pakistan. Corporate Governance: The International Journal of Business in Society, 19(6), 1187–1203. https://doi.org/10.1108/cg-12-2018-0371

Khan, I., Khan, I., Khan, I. U., Suleman, S., & Ali, S. (2023). Board diversity on firm performance from resource-based view perspective: new evidence from Pakistan. *International Journal of Productivity and Performance Management*. https://doi.org/10.1108/ijppm-01-2022-0055

Khatib, S. F. A., & Nour, A. I. (2021). The Impact of Corporate Governance on Firm Performance During The COVID-19 Pandemic: Evidence from Malaysia. *Journal of Asian Finance, Economics and Business*, *8*(2), 943–952. https://doi.org/10.13106/jafeb.2021.vol8.no2.0943

Khidmat, W. B., Khan, M. S., & Ullah, H. (2020). The Effect of Board Diversity on Firm Performance: Evidence from Chinese L isted Companies. *Indian Journal of Corporate Governance*, *13*(1), 9–33. https://doi.org/10.1177/0974686220923793

Kijkasiwat, P., Hamayun, M., & Mumtaz, A. (2022). Corporate Governance, Firm Performance and Financial Leverage across Developed and Emerging Economies. *Risks*, *10*(10), 185. https://doi.org/10.3390/risks10100185

Kim, D. H., & Sul, H. K. (2021). Diversity Matters: A Study on the Relationship between Board Career Diversity and Firm Performance. *Sustainability*, *13*(17), 9674. https://doi.org/10.3390/su13179674

Kweh, Q. L., Ahmad, N., Ting, I. W. K., Zhang, C., & Hassan, H. (2019). Board Gender Diversity, Board Independence and Firm Performance in Malaysia. *Institutions and Economies*, 1–20. http://mojem.um.edu.my/index.php/ijie/article/view/17017

Lim, K. P., Lye, C., Yuen, Y. Y., & Teoh, W. M. Y. (2019). Women directors and performance: evidence from Malaysia. *Equality, Diversity and Inclusion: An International Journal*, *38*(8), 841–856. https://doi.org/10.1108/edi-02-2019-0084

Masud, M. a. K., Nurunnabi, M., & Bae, S. M. (2018). The effects of corporate governance on environmental sustainability reporting: empirical evidence from South Asian countries. *Asian Journal of Sustainability and Social Responsibility*, *3*(1). https://doi.org/10.1186/s41180-018-0019-x

Merendino, A., & Melville, R. (2019). The board of directors and firm performance: empirical evidence from listed companies. Corporate Governance: The International Journal of Business in Society, 19(3), 508–551. https://doi.org/10.1108/cg-06-2018-0211

Mishra, R. A., & Kapil, S. (2018). Effect of board characteristics on firm value: evidence from India. *South Asian Journal of Business Studies*, *7*(1), 41–72. https://doi.org/10.1108/sajbs-08-2016-0073

Moreno-Gómez, J., Lafuente, E., & Vaillant, Y. (2018). Gender diversity in the board, women's leadership and business performance. Gender in Management: An International Journal, 33(2), 104–122. https://doi.org/10.1108/gm-05-2017-0058

Naciti, V. (2019). Corporate governance and board of directors: The effect of a board composition on firm sustainability performance. *Journal of Cleaner Production*, *237*, 117727. https://doi.org/10.1016/j.jclepro.2019.117727

Naghavi, N., Sharif, S. P., & Hussain, H. B. I. (2021). The role of national culture in the impact of board gender diversity on firm performance: evidence from a multi-country study. *Equality, Diversity and Inclusion: An International Journal*, *40*(5), 631–650. https://doi.org/10.1108/edi-04-2020-0092

Nasr, A.K., Alaei, S., Bakhshi, F., Rasoulyan, F., Tayaran, H., Farahi, M. (2019). How Enterprise Risk Management (ERM) Can Affect on Short-Term and Long Term Firm Performance: Evidence From The Iranian Banking System. *Entrepreneurship and Sustainability Issues*, *7*(2), 1387-1403. http://doi.org/10.9770/jesi.2019.7.2(41)

Ngo, M. T. T., Van Pham Van Pham, T. H., & Luu, T. X. T. (2019). Effect of Board Diversity on Financial Performance of the Vietnamese Listed Firms. *Asian Economic and Financial Review*, *9*(7), 743–751. https://doi.org/10.18488/journal.aefr.2019.97.743.751

Noland, M., Moran, T., & Kotschwar, B. R. (2016). Is Gender Diversity Profitable? Evidence from a Global Survey. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2729348

Nur, T., & Darvin, Q. (2023). Gender Diversity and Firm Profitability, before and during the Covid-19 Pandemic. *2023 International Conference on Cyber Management and Engineering (CyMaEn)*, 408–412. https://doi.org/10.1109/cymaen57228.2023.10051029

Obeidat, M.I. and Darkal, N. (2018) Accounting versus economic based measures of performance and the share market value: the evidence of the industrial listed firms at Abu Dhabi stock Exchange. WSEAS Transactions on Business and Economics, 15, pp.363-374.

Oliveira, M. S., & Zhang, S. (2022). The trends and determinants of board gender and age diversities. *Finance Research Letters*, *46*, 102798. https://doi.org/10.1016/j.frl.2022.102798

Ozdemir, O. (2020). Board diversity and firm performance in the U.S. tourism sector: The effect of institutional ownership. International Journal of Hospitality Management, 91, 102693. https://doi.org/10.1016/j.ijhm.2020.102693

Paine, L. S. (2021, August 27). *COvid-19 is rewriting the rules of corporate governance*. Harvard Business Review. https://hbr.org/2020/10/covid-19-is-rewriting-the-rules-of-corporate-governance

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of Theory and Evidence on Problems and Perspectives. *Indian Journal of Corporate Governance*, *10*(1), 74–95. https://doi.org/10.1177/0974686217701467

Pankaj M. M. (2017). Diverse Roles of Corporate Board: Review of Various Corporate Governance Theories. *Social Science Research Network*. https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2981605_code765212.pdf?abstractid=2981605&mirid=1

Pechersky, A. (2016). Diversity in Board of Directors: Review of Diversity as a Factor to Enhance Board Performance. Studia Commercialia Bratislavensia, 9(33), 88–101. https://doi.org/10.1515/stcb-2016-0009

Pfeffer, J. & Salancik, G. (1978). The External Control of Organizations: A Resource Dependence Perspective. https://ssrn.com/abstract=1496213

Phuong, T. T., Le, A., & Ouyang, P. (2022). Board tenure diversity and investment efficiency: A global analysis. *Journal of International Financial Markets, Institutions and Money*, *81*, 101657. https://doi.org/10.1016/j.intfin.2022.101657

Potharla, S., & Amirishetty, B. (2021). Non-linear relationship of board size and board independence with firm performance – evidence from India. *Journal of Indian Business Research*, *13*(4), 503–532. https://doi.org/10.1108/jibr-06-2020-0180

Rahman, H. U., Zahid, M., & Jehangir, M. (2020). Different is Better: Does Difference in Age and Ethnicity of the Directors Matter for Corporate Performance in Malaysia? *Journal of Applied Economics and Business Studies*, *4*(2), 205–220. https://doi.org/10.34260/jaebs.4210

Ranängen, H. (2017). Stakeholder management theory meets CSR practice in Swedish mining. *Mineral Economics*, *30*(1), 15–29. https://doi.org/10.1007/s13563-016-0098-z

Roy, S. (2022). The Impact Of Age, Gender, And Ethnic Diversity On Organizational Performance: An Empirical Study Of Bangladesh's Banking Sector. *International Journal of Financial, Accounting, and Management*, *4*(2), 145–161. https://doi.org/10.35912/ijfam.v4i2.905

Securities Commission Malaysia. (2022). *CG Monitor 2022*. https://www.sc.com.my/api/documentms/download.ashx?id=b22f271c-1355-4d4d-bc85-e9e06f81c1fb

Shamsudin, S. M., Suffian, M. T. M., & Rahman, L. A. (2022). The Effect of Board Diversity and Corporate Performance in Malaysia: Pre- and During COVID-19 Pandemic. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *12*(2). https://doi.org/10.6007/ijarafms/v12-i2/14114

Song, H. W., Yoon, Y. S., & Kang, K. H. (2020). The relationship between board diversity and firm performance in the lodging industry: The moderating role of internationalization. *International Journal of Hospitality Management*, *86*, 102461. https://doi.org/10.1016/j.ijhm.2020.102461

Taouab, O., & Issor, Z. (2019). Firm Performance: Definition and Measurement Models. *European Scientific Journal, ESJ*, *15*(1). https://doi.org/10.19044/esj.2019.v15n1p93

The Malaysia Board Diversity Study & Index. (2021). Institute of Corporate Directors Malaysia.https://pulse.icdm.com.my/wp-content/uploads/2021/04/ICDM-BOARD-DIVERSITY-REPORT.v11.pdf

Ullah, A., Pinglu, C., Ullah, S., Zaman, M., & Xia, E. (2020). The nexus between capital structure, firm-specific factors, macroeconomic factors and financial performance in the textile sector of Pakistan. *Heliyon*, *6*(8), e04741. https://doi.org/10.1016/j.heliyon.2020.e04741

Vairavan, A., & Zhang, G. P. (2020). Does a diverse board matter? A mediation analysis of board racial diversity and firm performance. Corporate Governance: The International Journal of Business in Society, 20(7), 1223–1241. https://doi.org/10.1108/cg-02-2020-0081

Vemala, P., Seth, T. & Reddy, M. (2018) Does Diversity in The Boardroom Add Value to a Firm? American Journal of Management, 18(5), 79-87. https://doi.org/10.33423/ajm.v18i5.255

Wang, Y., Abbasi, K., Babajide, B., & Yekini, K. C. (2019). Corporate governance mechanisms and firm performance: evidence from the emerging market following the revised CG code. *Corporate Governance*, *20*(1), 158–174. https://doi.org/10.1108/cg-07-2018-0244

Yang, P. Q., Riepe, J., Moser, K., Pull, K., & Terjesen, S. (2019). Women directors, firm performance, and firm risk: A causal perspective. *Leadership Quarterly*, *30*(5), 101297. https://doi.org/10.1016/j.leaqua.2019.05.004

Yilmaz, M. K., Hacioglu, U., Tatoglu, E., Aksoy, M., & Duran, S. (2022). Measuring the impact of board gender and cultural diversity on corporate governance and social performance: evidence from emerging markets. *Economic Research-Ekonomska Istraživanja*, 1–35. https://doi.org/10.1080/1331677x.2022.2106503

Yoon, B., & Chung, Y. (2018). The effects of corporate social responsibility on firm performance: A stakeholder approach. *Journal of Hospitality and Tourism Management*, *37*, 89–96. https://doi.org/10.1016/j.jhtm.2018.10.005

Zainuldin, M. H., Lui, T. K., & Yii, K. J. (2018). Principal-agent relationship issues in Islamic banks: a view of Islamic ethical system. *International Journal of Islamic and Middle Eastern Finance and Management*, *11*(2), 297–311. https://doi.org/10.1108/imefm-08-2017-0212

Zalata, A. M., Ntim, C. G., Choudhry, T., Hassanein, A., & Elzahar, H. (2019). Female directors and managerial opportunism: Monitoring versus advisory female directors. The Leadership Quarterly, 30(5), 101309. https://doi.org/10.1016/j.leaqua.2019.101309

Zhang, P., Kakabadse, N., Deusen, C.V. & Fadil, P. (2022). *Resilience in the Covid-19 pandemic: a study of board diversity through a crisis management plan. Quarterly Review of Business Disciplines*, *9*(3), 176 – 204. https://centaur.reading.ac.uk/108729/8/3-QRBD%209-3-2280-Diversity%20and%20Crisis%20Plan%20Final.pdf

APPENDIX

Appendix 1: Descriptive Analysis

Group Statistics

	C19	N	Mean	Std. Deviation	Std. Error Mean
ROE	Before	270	.15774889	.384013384	.023370310
	During	270	.12217818	.376683143	.022924206
TobinsQ	Before	270	1.590878551540373	1.950081274116259	.118678166977988
	During	270	1.431183183354051	1.707738535919558	.103929657604888
GENDER	Before	270	.31	.464	.028
	During	270	.40	.490	.030
AGE	Before	270	.611734765575963	.124390559178829	.007570168355881
	During	270	.590422354121119	.132732707610850	.008077855341911
ETHNICS	Before	270	.34	.475	.029
	During	270	.36	.482	.029
SKILL	Before	270	.657779958258249	.096838498778379	.005893403357317
	During	270	.663088435260701	.094585313561687	.005756278871826
TENURE	Before	270	.804155098365646	.330436491766002	.020109724484790
	During	270	.801441838770234	.283181427275626	.017233872842819
FIRM SIZE	Before	270	12.823286232120902	3.847303685684234	.234139446024669
	During	269	12.923765144617176	3.781209597834248	.230544418082768
LEV (%)	Before	270	.259985165156493	.179974910758774	.010952924267507
	During	269	.264809406766138	.190686998351057	.011626391484877

Appendix 2: Independent T-test Analysis

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ROE	Equal variances assumed	.183	.669	1.087	538	.278	.035570707	.032736686	-.028736688	.099878103
	Equal variances not assumed			1.087	537.800	.278	.035570707	.032736686	-.028736742	.099878157
TobinsQ	Equal variances assumed	1.158	.282	1.012	538	.312	.159695368186322	.157752594422800	-.150191174662549	.469581911035193
	Equal variances not assumed			1.012	528.796	.312	.159695368186322	.157752594422800	-.150203335622404	.469594071995047
GENDER	Equal variances assumed	16.352	.000	-2.075	538	.039	-.085	.041	-.166	-.005
	Equal variances not assumed			-2.075	536.380	.039	-.085	.041	-.166	-.005
AGE	Equal variances assumed	.096	.757	1.925	538	.055	.021312411454844	.011070645684025	-.000434578701987	.043059401611676
	Equal variances not assumed			1.925	535.749	.055	.021312411454844	.011070645684025	-.000434784717435	.043059607627123
ETHNICS	Equal variances assumed	1.162	.282	-.540	538	.590	-.022	.041	-.103	.059
	Equal variances not assumed			-.540	537.888	.590	-.022	.041	-.103	.059
SKILL	Equal variances assumed	.521	.471	-.644	538	.520	-.005308477002452	.008238139934613	-.021491340512135	.010874386507230
	Equal variances not assumed			-.644	537.702	.520	-.005308477002452	.008238139934613	-.021491360727183	.010874406722279

TENURE	Equal variances assumed	1.215	.271	.102	538	.918	.002713259595412	.026484096964341	-.049311654979100	.054738174169925
	Equal variances not assumed			.102	525.676	.918	.002713259595412	.026484096964341	-.049314404998981	.054740924189806
FIRM SIZE	Equal variances assumed	.052	.819	-.306	537	.760	-.100478912496275	.328601527463170	-.745980935669828	.545023110677279
	Equal variances not assumed			-.306	536.901	.760	-.100478912496275	.328590944631560	-.745960416919172	.545002591926623
LEV (%)	Equal variances assumed	.078	.780	-.302	537	.763	-.004824241609646	.015971373103404	-.036198269998063	.026549786778772
	Equal variances not assumed			-.302	534.979	.763	-.004824241609646	.015973087646706	-.036201905783514	.026553422564223

Appendix 3: Correlation Analysis

Correlation Analysis

	ROE	TOBINSQ	GENDER	AGE	ETHNICS	SKILL	TENURE	FIRM_SIZE	LEV
ROE	1	0.598565406687 5999	0.324232049473 943	0.1542211218486 122	0.1911588108161 109	0.150083434240 9096	0.1092855905822 733	-0.1355225268870 047	0.076026083602 06575
TOBINSQ	0.598565406687 5999	1	0.243125710167 9209	0.1863560563847 51	0.1278509681152 374	0.086569735637 85521	0.1709105827589 175	-0.2942720740333 196	-0.026326598975 36873
GENDER	0.324232049473 943	0.243125710167 9209	1	0.0508994236984 2422	0.2440506710903 333	0.084064340659 22414	0.1541208545031 064	-0.0197160351230 9063	-0.012075840763 3712
AGE	0.154221121848 6122	0.186356056384 751	0.050899423698 42422	1	0.0905739245524 6449	0.278908526319 8859	0.0542556149006 0692	0.0089039869504 01256	0.041959410493 71198
ETHNICS	0.191158810816 1109	0.127850968115 2374	0.244050671090 3333	0.0905739245524 6449	1	0.168816639946 3402	-0.0088531215677 25162	0.1697584670523 436	0.136234211295 3063
SKILL	0.150083434240 9096	0.086569735637 85521	0.084064340659 22414	0.2789085263198 859	0.1688166399463 402	1	0.0318946700140 8881	0.1567972048718 136	0.044847655998 71324
TENURE	0.109285590582 2733	0.170910582758 9175	0.154120854503 1064	0.0542556149006 0692	-0.0088531215677 25162	0.031894670014 08881	1	-0.0573044498537 9748	-0.049943638920 34977
FIRM_SIZE	-0.135522526887 0047	-0.294272074033 3196	-0.019716035123 09063	0.0089039869504 01256	0.1697584670523 436	0.156797204871 8136	-0.0573044498537 9748	1	0.320661832483 4967
LEV	0.076026083602 06575	-0.026326598975 36873	-0.012075840763 3712	0.0419594104937 1198	0.1362342112953 063	0.044847655998 71324	-0.0499436389203 4977	0.3206618324834 967	1

VIF - ROE

Variance Inflation Factors
Date: 08/05/23 Time: 06:50
Sample: 2017 2022
Included observations: 539

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
GENDER	0.001071	1.696219	1.098294
AGE	0.014627	24.83968	1.093013
ETHNICS	0.001103	1.747326	1.131386
SKILL	0.027634	55.27534	1.135034
TENURE	0.002437	8.100324	1.033118
FIRM_SIZE	1.79E-05	14.46866	1.163975
LEV____	0.007325	3.393827	1.127454
C	0.015490	69.60828	NA

VIF - Tobin's Q

Variance Inflation Factors
Date: 08/05/23 Time: 06:54
Sample: 2017 2022
Included observations: 539

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
GENDER	0.024153	1.696219	1.098294
AGE	0.329939	24.83968	1.093013
ETHNICS	0.024881	1.747326	1.131386
SKILL	0.623316	55.27534	1.135034
TENURE	0.054964	8.100324	1.033118
FIRM_SIZE	0.000403	14.46866	1.163975
LEV____	0.165226	3.393827	1.127454
C	0.349391	69.60828	NA

Appendix 4: BP-LM_Test

ROE
Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(All others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	255.4943 (0.0000)	0.095515 (0.7573)	255.5898 (0.0000)
Honda	15.98419 (0.0000)	-0.309056 (0.6214)	11.08399 (0.0000)
King-Wu	15.98419 (0.0000)	-0.309056 (0.6214)	3.385754 (0.0004)
Standardized Honda	16.62882 (0.0000)	-0.024343 (0.5097)	5.467596 (0.0000)
Standardized King-Wu	16.62882 (0.0000)	-0.024343 (0.5097)	0.379214 (0.3523)
Gourieroux, et al.	--	--	255.4943 (0.0000)

Tobin's Q

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(All others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	850.5681 (0.0000)	0.355402 (0.5511)	850.9235 (0.0000)
Honda	29.16450 (0.0000)	-0.596156 (0.7245)	20.20087 (0.0000)
King-Wu	29.16450 (0.0000)	-0.596156 (0.7245)	6.146206 (0.0000)
Standardized Honda	30.08732 (0.0000)	-0.338352 (0.6325)	15.29594 (0.0000)
Standardized King-Wu	30.08732 (0.0000)	-0.338352 (0.6325)	3.416767 (0.0003)
Gourieroux, et al.	--	--	850.5681 (0.0000)

Appendix 5: Hausman Test

ROE

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	23.156560	7	0.0016

Tobin's Q

Hausman Test_Tobin's Q

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	21.714767	7	0.0028

Appendix 6: Pooled OLS

ROE

Dependent Variable: ROE
Method: Panel Least Squares
Date: 08/05/23 Time: 18:31
Sample: 2017 2019
Periods included: 3
Cross-sections included: 90
Total panel (balanced) observations: 270

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	0.189837	0.049281	3.852111	0.0001
AGE	0.792086	0.187482	4.224877	0.0000
ETHNICS	0.056818	0.049347	1.151397	0.2506
SKILL	-0.297867	0.243841	-1.221560	0.2230
TENURE	0.066528	0.066738	0.996854	0.3198
FIRM_SIZE	-0.016035	0.006182	-2.593699	0.0100
LEV____	0.264682	0.128547	2.059031	0.0405
C	-0.125976	0.177224	-0.710828	0.4778

Root MSE	0.348745	R-squared	0.172181
Mean dependent var	0.157749	Adjusted R-squared	0.150063
S.D. dependent var	0.384013	S.E. of regression	0.354030
Akaike info criterion	0.790310	Sum squared resid	32.83829
Schwarz criterion	0.896929	Log likelihood	-98.69179
Hannan-Quinn criter.	0.833124	F-statistic	7.784886
Durbin-Watson stat	0.579219	Prob(F-statistic)	0.000000

Tobin's Q

Dependent Variable: TOBINSQ
Method: Panel Least Squares
Date: 08/05/23 Time: 18:37
Sample: 2017 2019
Periods included: 3
Cross-sections included: 90
Total panel (balanced) observations: 270

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	0.421775	0.244585	1.724456	0.0858
AGE	3.337475	0.930476	3.586846	0.0004
ETHNICS	0.259914	0.244910	1.061261	0.2895
SKILL	1.290163	1.210190	1.066082	0.2874
TENURE	0.724722	0.331222	2.188023	0.0296
FIRM_SIZE	-0.185824	0.030683	-6.056176	0.0000
LEV____	1.082510	0.637982	1.696771	0.0909
C	-0.000549	0.879566	-0.000624	0.9995

Root MSE	1.730833	R-squared	0.209292
Mean dependent var	1.590879	Adjusted R-squared	0.188166
S.D. dependent var	1.950081	S.E. of regression	1.757059
Akaike info criterion	3.994341	Sum squared resid	808.8610
Schwarz criterion	4.100961	Log likelihood	-531.2361
Hannan-Quinn criter.	4.037155	F-statistic	9.906936
Durbin-Watson stat	0.303463	Prob(F-statistic)	0.000000

Appendix 7: Random Effect Model

ROE

Dependent Variable: ROE
Method: Panel EGLS (Cross-section random effects)
Date: 08/05/23 Time: 18:33
Sample: 2017 2019
Periods included: 3
Cross-sections included: 90
Total panel (balanced) observations: 270
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	0.137400	0.035734	3.845056	0.0002
AGE	0.510259	0.122019	4.181799	0.0000
ETHNICS	-0.026200	0.036704	-0.713829	0.4760
SKILL	-0.275944	0.162096	-1.702345	0.0899

TENURE	0.006891	0.047581	0.144830	0.8850
FIRM_SIZE	-0.010569	0.009239	-1.143937	0.2537
LEV____	0.089581	0.126584	0.707676	0.4798
C	0.099990	0.161796	0.618000	0.5371

Effects Specification	S.D.	Rho
Cross-section random	0.310284	0.7582
Idiosyncratic random	0.175226	0.2418

Weighted Statistics

Root MSE	0.174096	R-squared	0.108393
Mean dependent var	0.048900	Adjusted R-squared	0.084572
S.D. dependent var	0.184717	S.E. of regression	0.176734
Sum squared resid	8.183528	F-statistic	4.550211
Durbin-Watson stat	2.108890	Prob(F-statistic)	0.000082

Unweighted Statistics

R-squared	0.131113	Mean dependent var	0.157749
Sum squared resid	34.46738	Durbin-Watson stat	0.500710

Tobin's Q

Dependent Variable: TOBINSQ
Method: Panel EGLS (Cross-section random effects)
Date: 08/05/23 Time: 18:37
Sample: 2017 2019
Periods included: 3
Cross-sections included: 90
Total panel (balanced) observations: 270
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	0.068343	0.138008	0.495210	0.6209
AGE	0.827961	0.465678	1.777970	0.0766
ETHNICS	0.177110	0.142137	1.246053	0.2139
SKILL	1.120211	0.619197	1.809134	0.0716
TENURE	0.249739	0.183118	1.363818	0.1738
FIRM_SIZE	-0.173158	0.046478	-3.725634	0.0002
LEV____	0.449591	0.513449	0.875629	0.3820
C	2.168667	0.737885	2.939030	0.0036

Effects Specification	S.D.	Rho

Cross-section random		1.627350	0.8604
Idiosyncratic random		0.655421	0.1396

Weighted Statistics

Root MSE	0.653558	R-squared	0.090554
Mean dependent var	0.360314	Adjusted R-squared	0.066256
S.D. dependent var	0.686597	S.E. of regression	0.663461
Sum squared resid	115.3274	F-statistic	3.726795
Durbin-Watson stat	1.607587	Prob(F-statistic)	0.000727

Unweighted Statistics

R-squared	0.157402	Mean dependent var	1.590879
Sum squared resid	861.9426	Durbin-Watson stat	0.215094

Appendix 8: Fixed Effect Model

ROE

Dependent Variable: ROE
Method: Panel Least Squares
Date: 08/03/23 Time: 13:58
Sample: 2017 2022
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 539

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	0.094709	0.033129	2.858834	0.0045
AGE	0.262533	0.107325	2.446147	0.0148
ETHNICS	-0.006786	0.035212	-0.192710	0.8473
SKILL	0.465942	0.148728	3.132850	0.0018
TENURE	-0.027469	0.051542	-0.532937	0.5943
FIRM_SIZE	-0.018389	0.030270	-0.607517	0.5438
LEV____	-0.255429	0.116793	-2.187029	0.0293
C	-0.030636	0.410429	-0.074645	0.9405

Effects Specification

Cross-section fixed (dummy variables)

Root MSE	0.225466	R-squared	0.648753
Mean dependent var	0.139981	Adjusted R-squared	0.572464
S.D. dependent var	0.380783	S.E. of regression	0.248980
Akaike info criterion	0.218629	Sum squared resid	27.39996
Schwarz criterion	0.990618	Log likelihood	38.07955
Hannan-Quinn criter.	0.520576	F-statistic	8.503884

Durbin-Watson stat	2.400233	Prob(F-statistic)	0.000000

Tobin's Q

Method: Panel Least Squares
Date: 08/03/23 Time: 14:03
Sample: 2017 2022
Periods included: 6
Cross-sections included: 90
Total panel (unbalanced) observations: 539

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GENDER	-0.018283	0.084328	-0.216805	0.8285
AGE	1.013293	0.273193	3.709073	0.0002
ETHNICS	0.069094	0.089632	0.770864	0.4412
SKILL	-0.200521	0.378582	-0.529663	0.5966
TENURE	0.052906	0.131198	0.403257	0.6870
FIRM_SIZE	-0.272199	0.077051	-3.532702	0.0005
LEV____	0.541942	0.297292	1.822930	0.0690
C	4.335159	1.044735	4.149531	0.0000

Effects Specification

Cross-section fixed (dummy variables)

Root MSE	0.573916	R-squared	0.901954
Mean dependent var	1.510281	Adjusted R-squared	0.880659
S.D. dependent var	1.834581	S.E. of regression	0.633770
Akaike info criterion	2.087258	Sum squared resid	177.5356
Schwarz criterion	2.859248	Log likelihood	-465.5161
Hannan-Quinn criter.	2.389206	F-statistic	42.35517
Durbin-Watson stat	1.737122	Prob(F-statistic)	0.000000