

UNIVERSITI TEKNOLOGI MARA

**THE EFFECT OF CORPORATE
GOVERNANCE ON THE
LIKELIHOOD OF FRAUD
THROUGH TEXTUAL ANALYSIS:
EXAMINING THE MODERATING
EFFECT OF OWNERSHIP
STRUCTURE**

SITI FADILAH BINTI MAT ZIN

PhD

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SITI FADILAH BINTI MAT ZIN

Thesis submitted in fulfilment
of the requirements for the degree of
**Doctor of Philosophy
(Accountancy)**

Faculty of Accountancy

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The increasing incidence of fraud worldwide has affected not only organizations but also the broader economy. Fraud is more challenging to detect as perpetrators increasingly adopted innovative methods to conceal their activities. Recently, studies have shifted from traditional fraud detection methods to advanced methods such as textual analysis that provide deeper insight into likelihood of fraud in corporate disclosures. Therefore, the objectives of this study are to analyze the compliance of MCCG 2017, identify and compare narrative patterns using textual analysis, determine the relationship between corporate governance mechanisms and likelihood of fraud, and examine the moderating role of ownership structure in this relationship. This study examines the likelihood of fraud in the Management Discussion and Analysis (MD&A) sections of annual reports using a two-stage text mining approaches which are K-Means clustering to identify document groupings and LDA to extract dominant topics, while sentiment is measured using the Loughran & McDonald and SentiWordNet dictionaries. The identified fraud likelihood is then regressed against corporate governance variables to assess their influence. Based on the sample of 30 likelihood of fraud vs 30 non-likelihood of fraud firms from the year 2017-2022 of public listed firms in Malaysia, the findings of textual analysis reveals that the likelihood of fraud firms are focused on risk management activities, and loss & regularization reflecting the firms emphasized on the risk related issues. Meanwhile, non-likelihood of fraud firms focused on the non-performing activity, investment activity, and market and product activity reflecting the effort of the firms to improve business performance and profitability. This suggests that likelihood of fraud firms are more active in addressing risks and losses, whereas non-likelihood of fraud firms are more concentrating on business growth. Furthermore, multivariate analysis shows that corporate governance mechanisms such as board independence, board gender, and board meetings and ownership structure reduce the likelihood of fraud based on textual analysis, highlighting the role of corporate governance in reducing likelihood of fraud. Nevertheless, this effect is weakened in family ownership, while institutional ownership does not significantly moderate this relationship. This study contributes to literature by integrating textual analysis into fraud prediction, highlighting how corporate governance interacts with ownership structures. The results of this study provide practical implications for regulators, auditors, corporate managers, and investors by offering tools to identify early signals of fraud, enhance corporate transparency and governance practices, and support better decision-making processes, thereby reducing the likelihood of fraud.

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LIST OF SYMBOLS

Symbols

α	Constant Term
ϵ	Error Term in the Regression Equation
m	The Direction and Strength of a Trend
N	The Size of the Population
R^2	R Squared
$\bar{x}$	The Population Mean
X	Continuous Explanatory Variable
x_i	Each Value from the Population
Y	Continuous Response Variable
β	Slope Coefficient
σ	Population of Standard Deviation

LIST OF ABBREVIATIONS

Abbreviations

AAER	Accounting and Auditing Enforcement Releases
ACCA	Association of Chartered Certified Accountants
ACE	Access, Certainty, Efficiency
ACFE	Association of Certified Fraud Examiner
AI	Artificial Intelligence
AUD_IND	Independent Audit Committee
BOD_GEN	Board Gender
BOD_IND	The Independence of Director
BOD_MEET	Board Meeting
BOD_REM	Board Remuneration
BOD_SIZE	Board Size
BOD_TEN	Board Tenure
CARE	Comprehend, Apply & Report
CMSA	Capital Markets and Services Act
CSRI	Credit Suisse Research Institute
DV	Dependent Variable
EPF	Employees Provident Fund
FAMOWN_DIRECT	Direct Family Ownership
FAMOWN_INDIRECT	Indirect Family Ownership
FFR	Fraudulent Financial Reporting
FIRM_SIZE	Firm Size

Abbreviations

GDP	Malaysia's Gross Domestic Product
ISA	International Standard on Auditing
KLSE	Kuala Lumpur Stock Exchange
LDA	Latent Dirichlet Allocation
LEAP	Leading Entrepreneur Accelerator Platform
LSA	Latent Semantic Analysis
LSI	Latent Semantic Indexing
LTAT	Lembaga Tabung Angkatan Tentera
LTH	Lembaga Tabung Haji
MASB	Malaysia Accounting Standards Board
MCCG	Malaysian Code of Corporate Governance
MCO	Movement Control Order
MD&A	Management Discussion and Analysis
MIA	Malaysia Institute of Accountant
MICG	Malaysia Institute of Corporate Governance
MICPA	Malaysian Institute of Certified Public Accountants
MSWG	Minority Shareholder Watch Group
OECD	Organization Of Economic Cooperation and Development
PN	Practice Notes
PN17	Practice Notes No. 17/2005
PNB	Permodalan Nasional Berhad
PS	Polarity Scores

Abbreviations

RMC	Risk Management Committee
RMC_IND	Independent Risk Management Committee
SC	Securities Commission Malaysia
SME	Small And Medium-Sized Enterprise
SOCSSO	National Social Security Organization of Malaysia
SVM	Support Vector Machine
TA	Total Asset
TD	Total Debt
TF-IDF	Term Frequency-Inverse Document Frequency
TL	Total Liability
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Preamble

This section discusses the background of the study on the history of corporate fraud around the globe followed by problem statement in section 1.2. Section 1.3 and section 1.4 discuss on the objectives of the study and research questions. Section 1.5 discusses on the significance of the study while section 1.6 discusses on the motivation of the study. Lastly, section 1.7 briefs about the motivation and the structure of this study.

1.2 Background of the Study

Association of Certified Fraud Examiner (ACFE) classified frauds into three main categories which are Fraudulent Financial Reporting, Misappropriation of Asset and Corruption. Sutherland (1940) explained that fraud in business perspectives includes in the form of misrepresentation of financial statement corporation, manipulation in stock exchange, commercial bribery, bribery in of public officials and others. ACFE (2022) classified fraud into three categories which are Misappropriation of Assets, Corruption and Fraudulent Financial Reporting (FFR). Misappropriation of assets is the schemes in which perpetrator steals or misuses an organization resource such as skimming cash receipt, falsifying expenses reports and forging firm checks. Corruption involves employee's use of his or her influence in business transactions in a way that violates his or her duty to the employer for the purpose of obtaining a benefit for him or herself or someone else, for instance bribery, extortion and conflict of interest. Fraudulent Financial Reporting (FFR) is defined as the intentional misstatement or omission of material information in organizations financial report. Fraudulent Financial reporting includes recording fictitious revenues, concealing liabilities or expenses and artificially inflating reported assets, (ACFE, 2022).

Fraud is a cancer not only in organization but also continues to receive global attention. The FFR is a major component of fraud that needs to have effective fraud prevention and detection system. In 2022, among the 2,110 cases investigated, FFR

reported only 9% of cases as compared to misappropriation of assets and corruption of 86% and 50% of cases respectively (ACFE, 2022). Although FFR cases is the lowest as compared to misappropriation of assets and corruption, the median losses occurred was very huge with \$593,000 (RM2.6 million). The misappropriation of assets and corruption reported median loss of \$100,000 (RM441,000) and \$150,000 (RM661,500) respectively. ACFE (2020) investigated 2,504 cases of fraud which show that misappropriation of assets is the highest cases that occurred involving 86% of the cases followed by corruption and FFR with 43% and 10% of the cases respectively. However, FFR shows the costliest among the categories with a median loss of \$954,000 (RM3.8 million). Although misappropriation of asset is the highest case, the median loss incurred is only \$100,000 (RM402,000) while corruption incurred a median loss of \$200,000 (RM804,000).

ACFE (2018) reported that of 2,690 cases of fraud, FFR is still the least cases which is 10% but it is the most costly where the median loss incurred is \$800,000 (RM3.3 million) followed by misappropriation of assets and corruption with 89% and 38% of the cases and median losses of \$114,000 (RM471,960) and \$250,000 (RM1.04 million) respectively. ACFE (2016) reported that from the 2,410 cases of fraud, FFR has the least cases which is 10% but causes \$975,000 (RM4.37 million) median loss. Misappropriation of assets occurs more than 83% with a median loss of \$125,000 (RM560,750) while corruption occurs 35% of the cases with median loss of \$200,000. ACFE (2014) reported that the high case involved is misappropriation of assets and corruption with 85% of cases (median loss: \$130,000 (RM453,700)) and 37% of cases (\$200,000 (RM698,000)), respectively. The case involving FFR is only 9% of the cases but those cases have the greatest financial impact with median loss of \$1 million. This trend shows that FFR gives a huge impact and huge number of losses even though the number of cases is less than 10%. Figures 1.1 and 1.2 show the summary of statistics for fraud cases as reported by ACFE.

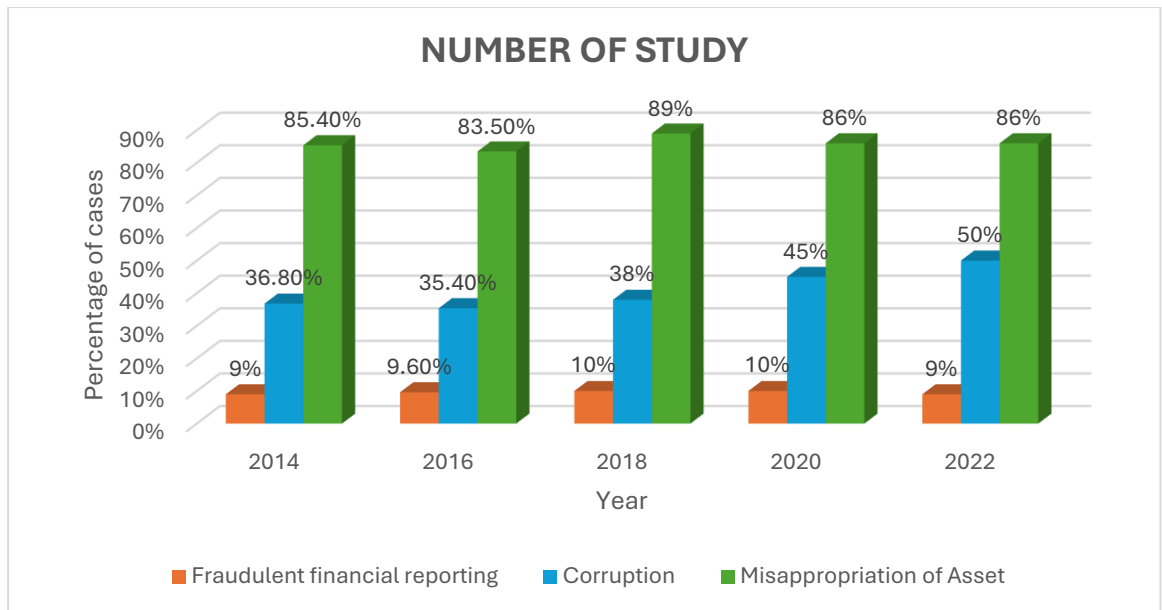


Figure 1.1 Number of cases conducted by ACFE from 2014 to 2022

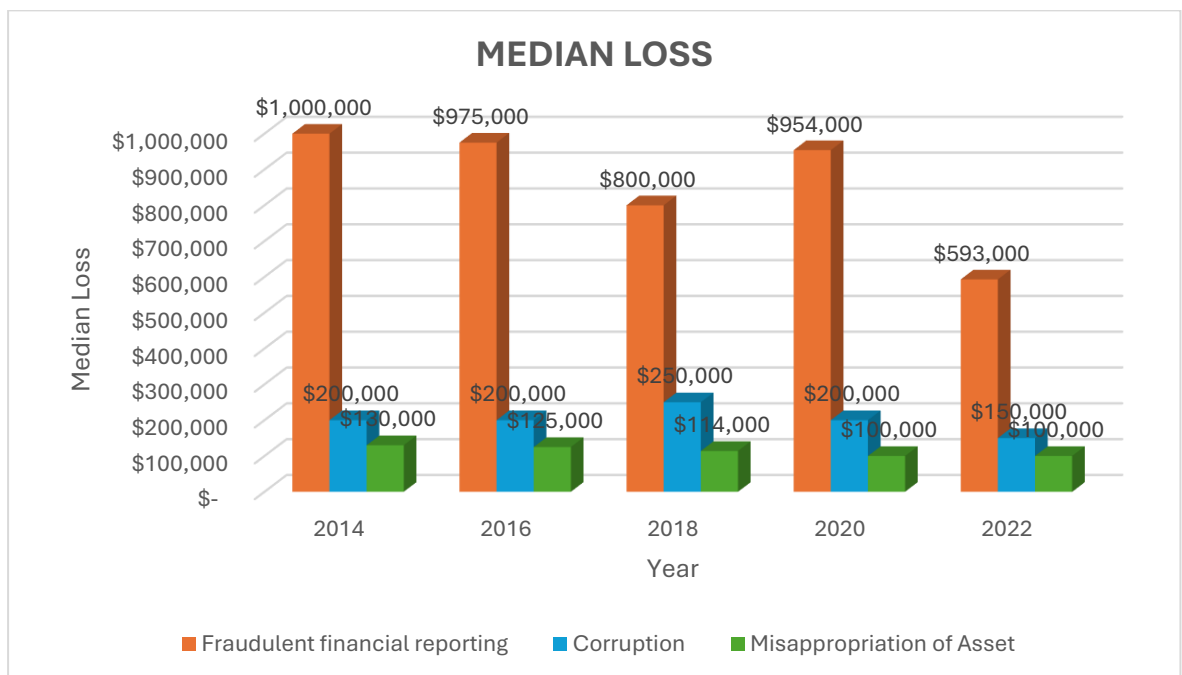


Figure 1.2 Median loss incurred by fraud from 2014 to 2022

The world witnessed the collapse of big organizations such as Enron Corporation, Parmalat, WorldCom in early 2000s. Malaysia is also not left behind as it involves series of corporate scandals which lead into bankruptcy; for example, Transmile Group which fell into bankruptcy in 2007 and resulted a loss in market capitalization of 1.2 billion, Megan Media firm incurred 1.27 billion and negative cash flow of 897 million (Fathilatul Zakimi et al., 2013), and Federal Land Development

Authority (FELDA) as the world's biggest producer of crude palm oil in 2015 saw its plots of land worth up to \$236 million being transferred through dubious means (Nawawi et al., 2018). Malaysia once again was hit by corporate scandal in 2017 with the case of Lembaga Tabung Haji (LTH), which is the financial institution that handles all Hajj operations and pilgrim's needs. The LTH applies Syariah principles in managing the deposits and investments, and in offering Hajj services (Khaliq Ahmad et al., 2012). LTH was involved in illegal dividend distribution since 2014, assets shrinkage of more than \$936 million and claims of accounting irregularities to mask a higher profit (Kumar & Zainuddin, 2018). LTH did not have enough assets to cover its liabilities but they still declared hibah (dividends) since 2014. The Price Waterhouse Cooper financial position review for 2017 claimed that LTH had paid hibah by using depositors' saving and the funds had masked its profitability by structuring deals to show profit.

Extensive academic research has been conducted to predict FFR including several models that use financial ratios to predict unethical behaviour such as fraud, earning manipulation, earning management and bankruptcy. Among the popular models are Beneish (1999), Altman (1968) and the recent model is F-Score developed by Dechow et al. (2011). These models incorporate both financial and non-financial indicators to identify the likelihood of FFR. Nevertheless, Goel and Uzun (2016) argued that detecting fraud is a complex problem and remains more challenging because the perpetrators can find other and more creative ways to conceal the fraud when the fraud indicators are publicly known. Recently, analysing the firm disclosures using textual analysis seems to be an interesting area that can be explored by the researchers. Text mining is a process of extracting unstructured data into structured data (text) which can be used to determine the relationship with other variables such as fraud and non-fraud. Loughran and McDonald (2016) defined textual analysis as a set of techniques to extract information from textual sources for its use in data analysis, business intelligence, or research purposes, among others. Compared to traditional financial analysis, textual analysis is a useful tool to capture the information from the financial statement (Gandía & Huguet, 2021).

Textual analysis has become a method that is increasingly popular among the researchers to analyse the content of corporate disclosures such as conference call, earning press releases, analyst reports, and annual reports (Madah Marzuki et al.,

2024). Textual disclosures may present information that differs from the one conveyed by financial statements, either because there is an intention to "sweeten" the actual financial condition and performance of the firm or because it is unintentionally exposing misleading quantitative information. These discrepancies can provide hidden cues within corporate disclosures (Gandía & Huguet, 2021). For example, the hidden cues related to differences between quantitative and textual information are the use of imagery, pleasantness or ambiguity in textual information (Humpherys et al., 2011). The use of annual reports lies in a large number of studies such as Goel et al. (2010), Loughran and McDonald (2011), Goel and Uzuner (2016) and Li et al. (2023). Goel and Uzuner (2016) believed that the annual report and other forms of disclosure are interesting to be investigated based on several reasons which are; (i) the reports are easier to disguise from the true facts through the mode of communication as it gives great sense of visual anonymity to the writer, gives opportunity to the firms to misrepresent the facts and shows the alternatives that might hide the fraud; (ii) as the text lacks direct relationship with the users of corporate disclosures, the writer will presumably disassociate from the sentiments of guilt and remorse when concealing the facts through mood of communication; and (iii) due to the digitalized information and data processing power, the possibility to detect the narrative patterns and cues from large text sets was not possible earlier.

In addition, the annual reports are the instruments which are easier to obtain that can intuitively reflect business situation, opportunities and challenges faced by the firms (Li et al., 2023). Thus, textual information disclosed in the annual reports has become critical complementary information for detecting financial statement fraud. Textual information present in financial reporting is unstructured in nature where the text is generally formless and must be converted into structured data before applying any predictive data mining techniques (Gupta & Gill, 2012). Figure 1.3 shows the example of the study by Gupta and Gill (2012) on how textual analysis works.

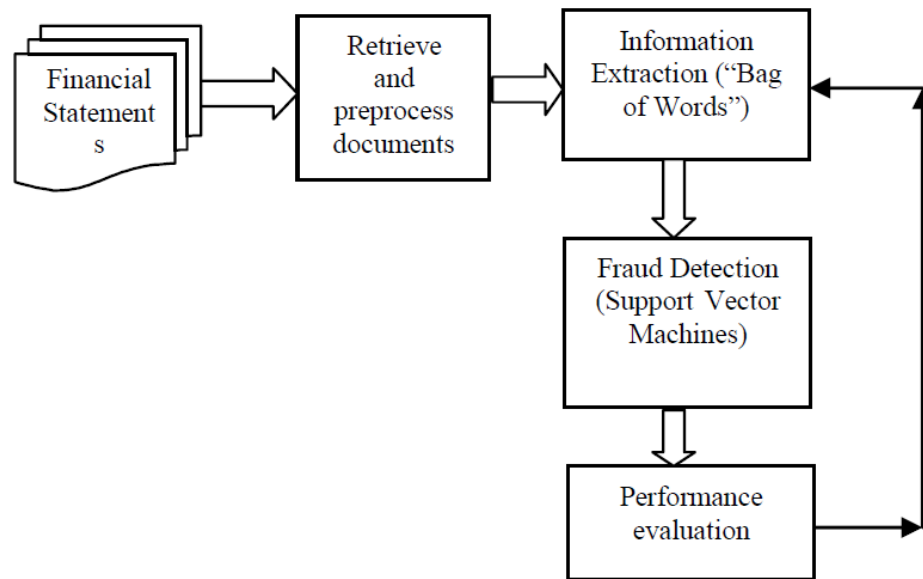


Figure 1.3 Text Mining Detection for Financial Statement Fraud (Gupta & Gill, 2012)

From the study of Gupta and Gill (2012), fraud detection begins with the collection data from likelihood of fraud and non-likelihood of fraud firms. The process continues with the pre-processing that involves lexical analysis of text present in financial statement. The next step is adopting bag of words approach to extract the hidden information which resulted in vector spaces for both fraudulent and non-fraudulent organizations. In bag of words approach, the occurrence of each word is used as a feature for training a classifier. In the bag of words approach, each document is represented by a vector of the words that appear in it. Each document's vector is compared to the typical vector associated with that class (fraud or non-fraud). Documents with similar vectors are thought to be diverse generally yet similar in content. The Support Vector Machines (SVM) is adopted to classify the organizations into fraud or non-fraud firm. The SVM will learn the features of both fraudulent and non-fraudulent examples present in the training set. After learning, this method is capable of classifying correctly between fraudulent and non-fraudulent organizations present in the testing dataset. The accurateness of classification should be evaluated by using evaluation measures such as accuracy, precision, recall (sensitivity in binary classification), F-measure and purity.

Management Discussion and Analysis (MD&A) section in annual report becomes an interesting topic in detecting the likelihood of fraud. The MD&A section predominantly expresses opinions and attitudes of management in the form of text

(Goel & Uzuner, 2016). MD&A section is meant to provide investors a feel of management's angle on the health and future outlook of firm, which incorporates a discussion of the firm's economic condition, the result of operations and an evaluation of quantitative and qualitative market risks faced by the firm (Humpherys et al., 2011). According to Loughran and McDonald (2011), the MD&A section is the section where the management is most likely to disclose information through the tone they used. In addition, the MD&A section has been earmarked as a relevant information as it provides investors with the opportunity to see the organization's performance and prospects through management's eyes (Purda & Skillicorn, 2015). For example, the MD&A report in Malaysia consists of the following parts: (i) Strategic review including operating environment and outlook, key risk and mitigation, strategic priorities, strategic performance review; (ii) performance review; and (iii) financial review. Besides, the annual report contains factual and nonfactual information; thus, the report is usually perceived as factual information to external and internal users.

In accounting studies, few research has recently looked at how to extract nonfactual information like opinions, sentiments, and emotions (Loughran & McDonald, 2011; Hájek & Olej, 2013; Goel & Uzuner, 2016; Li et al., 2023). The studies of discovering latent themes using topic modelling approach such as Latent Dirichlet Allocation (LDA) (Huang et al., 2018; Brown et al., 2020; Madah Marzuki et al., 2024) and sentiment analysis (Loughran & McDonald, 2011; Goel & Uzuner, 2016; Li et al., 2023) can successfully detect FFR. LDA is the probabilistic model that discovers hidden semantic structures in a large of corpus document in which the topics are characterized by distribution over words (Blei et al., 2003). When the model is applied in the corporate disclosures, it can extract dominant topics that represent the firm's communication themes, offering valuable insights into potentially fraudulent behaviour. Meanwhile, sentiment analysis is the public thoughts and opinions of the text whether is contains positive, negative, or neutral attitude (Chauhan, 2017). The opinions also can be in the form of other dimension such as strong, weak, active or passive (Loughran & McDonald, 2011; Goel & Uzuner, 2016). The sentiment analysis tool such as dictionary by Loughran and McDonald (2011) is often used by researchers to determine textual sentiment in detecting the fraudulent financial reporting (Loughran & McDonald, 2016; Goel & Uzuner, 2016). This dictionary includes the occurring words in financial context that is categorized into six word lists which are negative,

positive, uncertainty, litigious, strong modal, and weak modal (Loughran & McDonald, 2011). Besides that, the other popular tool lexicon is SentiWordNet (Esuli & Sebastiani, 2006) which is one of the approaches to automatically determine whether the text has opinion of positive or negative connotation.

Nevertheless, the majority of textual analysis studies concentrated on overseas location such as the United States, but it is limited in the emerging markets like Malaysia, particularly in the context of how the linguistic pattern differs from likelihood of fraud and non-likelihood of fraud firms, and which financial topics are most prevalent in these contexts. In addition, the studies on textual sentiments also remain underexplored particularly in assessing how the polarity of MD&As represents the management's opinions. RapidMiner studio is the tool used for the purpose of this study. RapidMiner studio is a visual workflow designer which is used for predictive analysis (Devipriya & Kalpana, 2019). RapidMiner is a system that facilitates data access, manages accessed data, loads, and evaluates data such as texts, images and audio tracks. This software allows the users to structure the data and used it to create model and plans with a strong set of tools and functionalities that are easier for the user to extract critical statistics and information (Devipriya & Kalpana, 2019). In addition, the use of RapidMiner in textual analysis offers several advantages which are: (i) interpretability, as clustering and topic modelling provide transparent outputs for financial domain experts; and (ii) replicability, since RapidMiner is widely used in applied text mining research and offers a reproducible workflow for interdisciplinary audiences.

Financial reporting is the financial result of an organization that is released to its stakeholders and public for the purpose of providing information about the result of operations, financial position, and cash flows of an organization. Financial reporting is an important tool in helping the management to make decision in the availability of data provided in the report. Financial reporting, also known as annual report, is defined as a comprehensive report on a firm's activities throughout the preceding year where the economic and technical health of the firm can be gauged by suppliers, customers, employees and investors (Sadasivam et al., 2016). The financial reporting issued by organizations consists of textual information in the form of corporate disclosure and comments as together with financial ratios. The qualitative information in financial reporting may contain indicators of FFR in the form of strategically chosen words,

phrases, or linguistic patterns (Loughran & McDonald, 2011; Goel & Uzuner, 2016; Li et al., 2023; Madah Marzuki et al., 2024). Gupta and Gill (2012) argued that the perpetrators may use selective sentence constructions, selective adjectives and adverbial phrases in order to conceal the fraudulent activity.

FFR is associated with corporate governance mechanisms. The collapse of big corporations, such as Enron, WorldCom and Parmalat, has shown poor corporate governance in which the roles of auditors and accountant are broadly questioned and turned into the central point of corporate governance issue (Costa, 2017; Haron et al., 2021; Girau et al., 2022). Corporate governance has been defined as a set of mechanisms of incentives and monitoring in order to ensure the good management of the firm and its stakeholders (Costa, 2017; Zin et al., 2020). Corporate governance mechanism should build the environment of trust, transparency, and accountability for the investments (Devarajar et al., 2022). In addition, corporate governance play a crucial role in ensuring the effective resources allocation and economic growth so that it improves the quality of financial reporting and the likelihood of fraud will be reduced (Rezaei & Rostami, 2022). One of the factors that contributed to FFR is the perpetrator's position in the organizations. ACFE (2022) reported strong correlation between the perpetrator's level of authority and the size of fraud. From the total of study of 2,110 cases, only 23% of fraud is committed by owner/executives. However, the median losses incurred was \$337,000 which is significantly larger than the cases committed by manager (\$125,000). In turn, the losses caused by manager is much larger than staff-level employee (\$50,000). It shows that the fraud losses tend to be larger in schemes committed by higher-level fraudster. This can be explained in which owners/executives are generally in better position to override controls and often have greater access to organization's assets (ACFE 2020). In addition, the fraud committed by higher-level perpetrators typically takes longer time to detect (ACFE, 2022). It is because these individuals often have the ability to evade or override controls that would otherwise detect fraud. The higher-level perpetrators also have the authority to bully or intimidate employees below them, thus influence those employees from reporting or investigating suspected wrongdoing.

Malaysia established Malaysian Institute of Corporate Governance (MICG) in 1998 and for the first time the Malaysian Code of Corporate Governance (MCCG) was issued in early 2000's for the purpose of combating fraudulent financial reporting in

Malaysia. The MCCG was then revised in 2007, 2011, and 2012 to ensure it remains aligned with globally recognized best practices and standards. The MCCG once again was revised in 2017 in which the MCCG 2017 supersedes the 2012 edition by introducing key approaches to promote greater internalization of corporate culture which include Comprehend, Apply and Report (CARE) approach, apply or explain an alternative, intended outcome, guidance, and steps up. The MCCG 2017 is now not only focusing on the large firms which are the firms listed under FTSE Bursa Malaysia but the new MICG also encourages the non-listed entities including state-owned enterprises, small and medium enterprises (SMEs) and license intermediaries to implement MCCG 2017 in their organizations. The MCCG once again was updated in 2021 by focusing on the enhancement of board policies and practices, strengthening board oversight and integration of sustainability in the firm's strategy and operation and adoption of best practices especially for firms with low levels of compliance.

Previous studies have indicated that the effectiveness of corporate governance is affected by the institutional setting of a country (Madah Marzuki & Abdul Wahab, 2016; Aziz et al., 2017; Sadique et al., 2019). Malaysia is a unique institutional setting where the firms are dominated by controlling shareholders in a concentrated ownership structure (AlQadasi & Abidin, 2018). The majority of businesses are owned predominantly by the government, individuals, and families (Amran & Ahmad, 2013; Malik et al., 2023; Madah Marzuki et al., 2024). By presenting the distribution of sample firms in each type of ownership in Malaysia in 1998, the study by Tam and Tan (2007) revealed that Malaysian firms have a high concentration of ownership. Individual ownership concentration was 38.45%, state ownership was 55.23%, foreign ownership was 50.46%, and trust fund ownership was 53.69%. According to Organization of Economic Cooperation and Development OECD (2023), Malaysia ownership structure is prominently concentrated with 34% of own by public sector, 26% own by corporations, 10% of strategic individuals, 9% of institutional investors, and 21% are other free-float. OECD (2017) reported that approximately 10-12 family groups control a range of firms while several investment funds considered as government-linked hold around 30% of market capitalization. Accordingly, the family ownership holds 44.7% of the shares in Malaysian firms.

Generally, narrowly held businesses may experience more agency conflicts that create opportunities to engage in unethical behaviours (Shan et al., 2013a). This is

because controlling shareholders, who have a considerable influence over the corporation, can readily circumvent the monitoring provided by minority shareholders (Fama & Jensen, 1983; Shan et al., 2013; AlQadasi & Abidin, 2018; Karim et al., 2023). In addition, in concentrated ownership system, the controlling shareholders are often the manager, gain effective control of corporation and have the power to expropriate wealth from minority shareholders through fraudulent activities (La Porta et al., 1999; Goldberg et al., 2016; Karim et al., 2022). Concentrated family ownership is often associated with the view that managers are less likely to be involved in fraudulent activities that would harm minority shareholders (Claessens et al., 2000; Wan Mohammad & Wasiuzzaman, 2020). Previous studies highlighted that family ownership is associated with higher earning quality (Hashim & Devi, 2008; Tee & Kasipillai, 2022; Amrah & Obaid, 2019), lower earnings management (Chi et al., 2015; Wan Mohammad & Wasiuzzaman, 2020) and lower likelihood of fraud (Madah Marzuki et al., 2024). Nevertheless, Alhebri et al. (2021) and Wan Mohd Zin et al. (2023) found contradictory evidence where family ownership creates opportunities to the managers to commit unethical behaviours.

On the other hand, institutional investors also serve as influential external shareholders who play a significant role in shaping a firm's governance environment. This is because the performance of the firm can be effectively monitored (Savitri, 2016; Githaiga 2023). In addition, institutional investors also play crucial roles in corporate governance due to their professional knowledge and expertise to provide oversight and monitoring function and disciplining dominant owners (Karim et al., 2023). Previous literatures highlighted that institutional ownership improves financial statement integrity (Oktaviana & Paramitha, 2021), lowers earning management (Githaiga, 2023) as well as lowers the likelihood of fraud (Kusuma & Fitriani, 2020; Wang et al., 2024).

Therefore, this study aims to investigate the relationship between corporate governance and likelihood of fraud and the effect of ownership structure on the relationship between corporate governance and likelihood of fraud in Malaysia Public Listed firms. Accordingly, this study specifically uses MD&As section of annual reports to capture the likelihood of fraud. The Rapid Miner tools are used to extract unstructured data from annual reports and transform it into structured data for further analysis. The organization of this chapter following this section proceeds with problem

statement of the study, followed by research objectives, research questions, significance of study, scope of the study, motivation of the study and the structure of this study.

1.3 Problem Statement

The money lost due to fraud has affected the global economy and directly impacted the organizations' ability to create jobs, produce goods and services, and provide public services (ACFE, 2020). According to Akyol (2017), the effect of fraud is not only to the firm's revenues but also many other aspects of the players such as investors, customers, suppliers, employees and other stakeholders. In addition, fraud demolishes the trust of the users in the financial market and public confidence resulting in increased cost of capital for firms (Sallal et al., 2021). Fraudulent financial reporting is a serious problem that may lead the organization into bankruptcy and collapse as it causes substantial losses to the investors. According to ACFE (2022), the case related to fraudulent financial reporting is the least total number as compared to misappropriation of assets and corruption. However, the total loss incurred is the highest in the categories of fraud which is \$593,000 of median loss. ACFE (2022) also reported that 69% of fraud occurrence involves in for-profit organization, with 44% being private firms and 25% of public firms. Malaysia also reported being ranked third of committing fraud with a total of 25 cases from 194 cases in Asia-Pacific Region. The fraudulent practices can erode the public confidence with regard to the reliability and accuracy of financial reporting in planning firms' future growth and decision making.

Past researchers have stressed that fraud occurs due to weak corporate governance mechanism and internal control in organization (Ahmed, 2018; Haron et al., 2021; Girau et al., 2022). Consequently, empirical evidence shows that effective corporate governance mechanisms can reduce the likelihood of fraud. Corporate governance characteristics such as board independent (Kaituko et al., 2023; Girau et al., 2022; Rathnasiri et al., 2018), board tenure (Wang et al., 2024; Yaacob & Wan Mohd Yusof, 2020), board diversity (Haron et al., 2021; Maulidi, 2023), board remuneration (Radwan et al., 2022; Hasnan et al., 2021) and board meetings frequency (Ebaid, 2023; Girau et al., 2022) are widely recognised for enhancing effectiveness of corporate governance within the firm. In addition, Audit Committee (Bader et al., 2024; Mousavi et al., 2022) and Risk Management Committee (Olayinka et al., 2019; Wan Fauzi et al., 2022; Malik et al., 2023) have also been widely discussed in the literature.

Apart from that, Akyol (2017) in his study highlighted the importance of good corporate governance in organization to reduce and prevent fraud. The study added that the organization should design their corporate governance structure with the future plan and alternatives so that it can be used to prevent fraud in future.

Malaysia has enforced laws, regulation, and regulatory bodies to monitor fraud occurrence and has taken further steps to control and prevent the fraud cases. For example, the Malaysia Institute of Corporate Governance (MICG) has implemented Malaysian Code of Corporate Governance (MCCG) since 2000's to combat fraud in Malaysia. The Malaysian Code of Corporate Governance (MCCG) was revised in 2007, 2011, 2012, 2017 and the recent MCCG 2021. The MCCG 2021 was updated on 28 April 2021 by focusing on the enhancement of board policies and practices, strengthening board oversight and integration of sustainability in firm's strategy and adoption of best practices especially for firms with low levels of compliance. Besides Malaysia Institute of Corporate Governance (MICG), the Malaysia Security Commission is also one of Malaysia regulatory bodies that is responsible for rule making and enforcing regulation to Malaysia's organization in monitoring the likelihood of fraud. However, fraud still occurs although there are control mechanisms in organizations. PricewaterhouseCooper (2020) reported that fraud in Malaysia has remained high since 2018 which showed an increase in fraud level between 2018 and 2020 as compared to South East Asia. Although Malaysia puts much effort to combat the fraud, the increasing trend of the fraud survey is arguable as to whether the governance reforms are effective and implemented in organizations.

In addition, the situation is even worst as Malaysia is characterized as having high concentrated ownership where shares are owned by blockholders such as family (Hasnan et al., 2014); Wan Mohammad & Wasiuzzaman, 2020; Wan Mohd Zin et al., 2023), individuals and institutional investors (Ghafoor et al., 2019; Karim et al., 2023). This can be explained where the controlling shareholders have dominant influence on the firm expropriate wealth from minority shareholders through fraudulent activities such as earning management or tunnelling behaviour (Shan et al., 2013; Alhebri et al., 2021). As fraud gives many impacts not only to the organizations but also the economy of the country, so it is important to detect fraud before it occurs. This is because the effect after fraud is worst, so any possible fraud prevention should be implemented in the organization. In addition, it is important to detect fraud before occurrence because

once there is revelation in the organization, it may lead to the decrease of the firm's value or the firm may close their business. Therefore, this study intends to explore the prediction so that it may help the organization to take better fraud prevention to mitigate risk in the future.

In combating fraud, the regulators now move from fraud detection to fraud prediction and the scholars have already designed tools to detect the likelihood of fraud. For instance, the tools include Altman Z-Score (Altman, 1968), Beneish M-Score (Beneish, 1999) and the recent tool designated by Dechow et al. (2011) which is F-Score. Several studies have been done on corporate governance and fraud by using the designated tools; for example, Ainul et al. (2014) investigated the relationship between corporate governance structures (board characteristic and effectiveness) on the likelihood of fraud using Altman Z-Score and Beneish M-Score; and Ahmed (2018) examined the relationship of corporate governance mechanism specifically board. However, the method of study is quantitative in nature. Recently, there is an increasing interest among the researchers in analysing the firm's disclosure through text analysis to detect fraud, in other words using linguistic structure of text which can be used as an indicator in detecting the fraud (Goel et al., 2010; Humpherys et al., 2011; Hajek & Henriques, 2017; Zhang et al., 2022). This area has been explored in countries like the US which specifically focused on Management Discussion and Analysis' (MD&A) section to identify the truth or fraudulent MD&A (Loughran & McDonald, 2011; Cecchini et al., 2010; Humpherys et al., 2011; Goel et al., 2010).

The use of text analysis as an indicator to detect fraud has raised significant attention among the researchers due to the language expression that contains opinions, sentiments, and emotion. The textual analysis techniques use topic modelling to discover thematic themes of MD&As by using LDA as one of the textual analysis techniques that successfully identify fraudulent financial reporting. The LDA method is used to determine the hidden semantic structures in large corpus documents such as MD&As in which it will be presented in the form of topics or financial characteristics that can be used as financial indicator to detect fraud. In addition, sentiment analysis is also among the popular text analysis techniques being used to detect fraud. Textual sentiment is used to determine the opinion of the text; whether it has positive or negative polarity of the text. In accounting studies, Loughran and McDonald's (2011) dictionary is one of the bag-of-words often used in detecting fraud since the wordlists contain

occurring words in financial context. The use of SentiWordNet (Esuli & Sebastiani, 2006) is also among the popular lexicons to determine text opinion because it facilitates of whether the text has opinion of positive or negative sentiment.

In Malaysia, research on this area is still nascent and remains underexplored particularly in determining the likelihood of fraud among likelihood and non-likelihood of fraud firms. Besides, the firms that fall under PN17 categories also have higher likelihood of fraud because they are under financial distress situation. Therefore, this study fills the gap by identifying the likelihood fraud using textual analysis among the firms that have high likelihood of fraud and to investigate whether corporate governance and ownership structure can influence this likelihood of fraud.

1.4 Research Questions

This study answers the following questions:

RQ1: What is the compliance status of MCCG 2017 among likelihood and non-likelihood fraud firms?

RQ2: What is the narrative pattern of financial reporting among likelihood and non-likelihood fraud firms by using Textual Analysis?

RQ3: What is the relationship between likelihood of fraud and the corporate governance among likelihood and non-likelihood fraud firms?

RQ3_(a): What is the relationship between likelihood of fraud and the board independence among likelihood and non-likelihood of fraud firms?

RQ3_(b): What is the relationship between likelihood of fraud and the board tenure among likelihood and non-likelihood of fraud firms?

RQ3_(c): What is the relationship between likelihood of fraud and the board gender among likelihood and non-likelihood of fraud firms?

RQ3_(d): What is the relationship between likelihood of fraud and board remuneration among likelihood and non-likelihood of fraud firms?

RQ3_(e): What is the relationship between likelihood of fraud and the board meeting among likelihood and non-likelihood of fraud firms?

RQ3_(f): What is the relationship between likelihood of fraud and independence of audit committee among likelihood and non-likelihood of fraud firms?

RQ3_(g): What is the relationship between likelihood of fraud and risk management committee among likelihood and non-likelihood of fraud firms?

RQ4: What is the effect of ownership structure on the relationship between corporate governance and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a1): What is the effect of direct and indirect family ownership on the relationship between board independent and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a2): What is the effect of direct and indirect family ownership on the relationship between board tenure and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a3): What is the effect of direct and indirect family ownership on the relationship between board gender and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a4): What is the effect of direct and indirect family ownership on the relationship between board remuneration and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a5): What is the effect of direct and indirect family ownership on the relationship between board meetings and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a6): What is the effect of direct and indirect family ownership on the relationship between independent audit committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a7): What is the effect of direct and indirect family ownership on the relationship between risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(a8): What is the effect of direct and indirect family ownership on the relationship between independent risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b1): What is the effect of institutional ownership on the relationship between board independent and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b2): What is the effect of institutional ownership on the relationship between board tenure and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b3): What is the effect of institutional ownership on the relationship between board gender and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b4): What is the effect of institutional ownership on the relationship between board remuneration and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b5): What is the effect of institutional ownership on the relationship between board meetings and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b6): What is the effect of institutional ownership on the relationship between independent audit committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b7): What is the effect of institutional ownership on the relationship between risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

RQ4_(b8): What is the effect of institutional ownership on the relationship between independent risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms?

1.5 Research Objectives

The objectives of this study are:

RO1: To analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms.

RO2: To identify and compare the narrative pattern of financial reporting among likelihood and non-likelihood fraud firms by using Textual Analysis.

RO3: To determine the relationship between likelihood of fraud and the corporate governance among likelihood and non-likelihood fraud firms.

RO3_(a): To determine the relationship between likelihood of fraud and the board independence among likelihood and non-likelihood fraud firms.

RO3_(b): To determine the relationship between likelihood of fraud and the board tenure among likelihood and non-likelihood fraud firms.

RO3_(c): To determine the relationship between likelihood of fraud and the board gender among likelihood and non-likelihood fraud firms.

RO3_(d): To determine the relationship between likelihood of fraud and the board remuneration among likelihood and non-likelihood fraud firms.

RO3_(e): To determine the relationship between likelihood of fraud and board meeting among likelihood and non-likelihood fraud firms.

RO3_(f): To determine the relationship between likelihood of fraud and the independence of audit committee among likelihood and non-likelihood fraud firms.

RO3_(g): To determine the relationship between likelihood of fraud and the risk management committee among likelihood and non-likelihood fraud firms.

RO4: To determine the effect of ownership structure on the relationship between corporate governance and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a1): To determine the effect of direct and indirect family ownership on the relationship between board independent and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a2): To determine the effect of direct and indirect family ownership on the relationship between board tenure and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a3): To determine the effect of direct and indirect family ownership on the relationship between board gender and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a4): To determine the effect of direct and indirect family ownership on the relationship between board remuneration and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a5): To determine the effect of direct and indirect family ownership on the relationship between board meetings and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a6): To determine the effect of direct and indirect family ownership on the relationship between independent audit committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a7): To determine the effect of direct and indirect family ownership on the relationship between risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(a8): To determine the effect of direct and indirect family ownership on the relationship between independent risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b1): To determine the effect of institutional ownership on the relationship between board independent and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b2): To determine the effect of institutional ownership on the relationship between board tenure and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b3): To determine the effect of institutional ownership on the relationship between board gender and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b4): To determine the effect of institutional ownership on the relationship between board remuneration and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b5): To determine the effect of institutional ownership on the relationship between board meetings and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b6): To determine the effect of institutional ownership on the relationship between independent audit committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b7): To determine the effect of institutional ownership on the relationship between risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

RO4_(b8): To determine the effect of institutional ownership on the relationship between independent risk management committee and the likelihood of fraud among likelihood and non-likelihood fraud firms.

1.6 Significance of the Study

The increasing trend of fraud in Malaysia highlights the importance of early prediction of likelihood of fraud before it becomes a cancer in an organization. The findings of this study are beneficial in several ways based on methodological, theoretical and practical perspectives. Methodologically, this study contributes to the literatures by identifying narrative pattern of firms that have high likelihood of fraud. As the study of textual analysis is new in Malaysia, this study gives the new angle of methodology on how to identify fraud through text analysis. This study extends the works of fraud prediction by using textual analysis while supporting practitioners in generating informed choices on their preferred implementation of detection method. Furthermore, this study contributes to the new angle of fraud where financial statement

readers are able to understand the trick behind the report disclosed as the textual analysis is the new area of study especially in emerging markets like Malaysia. The disclosures in the qualitative narratives might not clearly contain signs of fraud, but any such information is concealed by utilising extensive syntactic and semantic toolkit available for writing in natural languages like English.

Additionally, most of the earlier studies of fraud detection have focused on the quantitative component of financial statement which primarily emphasized on the structured data (financial and non-financial data). In addition, this study develops a new feature of selection process through Rapid Miner Studio tool. The Rapid studio tool is the new tool especially in accounting field. In this study, the author employs Document clustering and Topic modelling in identifying the narrative pattern of the selected samples. These two techniques are complimentary techniques of this study as it is able to determine the financial characteristics of the selected samples. This study also employs sentiment analysis techniques that can be used to determine the polarity of the MD&As of either positive or negative sentiments. This textual analysis provides a novel perspective on fraud risk assessment and be an early signal to detect likelihood of fraud in the firms. Theoretically, this study also adds to the literature on the factors that contribute to the likelihood of fraud. This study is significant because by examining the corporate governance mechanisms and its moderating effects of family and institutional ownerships, this study improves the understanding on how the ownership structures influence the corporate governance mechanisms in detecting the likelihood of fraud.

In practical perspectives, this study helps regulators to identify the narrative pattern of firms of financial reporting among firms that have high likelihood of fraud using textual analysis of MD&A. This is because this study contributes to the sample of unstructured data primarily on text analysis in MD&A section and can provide new, interesting, and useful information of the hidden qualitative content of annual reports. Apart from that, this study hopefully will facilitate auditors in fraud risk assessment since auditors potentially face adverse legal and regulatory consequences if fraud goes undetected. Since the annual reports are accompanied by a high frequency of linguistic markers, this study provides new avenue of detecting fraud using textual analysis of annual report. Therefore, this crucial indicator can alert the auditors of firms that are at higher risk of fraud. In addition, this study provides valuable insights for regulators by identifying governance factors that influence the likelihood of fraud. These findings are

crucial in assisting regulators to strengthen governance practices that mitigate fraud risks and to recognize governance elements that may contribute to a higher propensity for fraud

1.7 Scope of the Study

This study mainly focuses on the potential likelihood of fraud occurrence firms from Securities Commission litigation press release, criminal prosecution, civil actions and regulatory settlement within the period of 2016 to 2022. The samples of 150 likelihood of fraud firms for the selected years are selected and compared with 150 non-likelihood of fraud firms. In addition, this study further extends the sample of firms within PN17 firms. The PN17 firms are the financially distressed firms listed in Bursa Malaysia. The period covered for this study is 3 years from 2020 to 2022. The 19 PN17 firms are selected and compared with 19 non-PN17 firms. The reason of selecting PN17 firms is that these firms have higher likelihood to commit fraud due to the financially distress situation. The MD&A of each of the selected firms is collected as the main data to run the text analysis on the likelihood of the narrative pattern. The panel data (corporate governance variables) are collected manually through content analysis in annual report.

1.8 Structure of the Study

The remaining chapters are organized as follows. Chapter 2 outlines the institutional setting in Malaysia by focusing on the regulations such as MCCG and the Ownership structure. Chapter 3 summarizes the past research of corporate governance mechanism and textual analysis. Chapter 5 addresses the hypotheses development for this study while chapter 5 discusses on research methodology. Chapter 6 discusses on the findings and presents the discussion of textual analysis and regression analysis. Lastly, chapter 7 summarizes all the findings and discussion including implications of the study, contributions of the study, limitations of the study, and suggestions for future research.

CHAPTER TWO

INSTITUTIONAL BACKGROUND

2.1 Introduction

This chapter outlines the overall institutional background of Malaysia as a developing country in South-East Asia. It covers the history of Malaysia's capital market, followed by regulatory regime in Malaysia, the evolution of corporate governance in Malaysia and the uniqueness of Malaysia's ownership structures.

2.2 Regulatory Regime in Malaysia

The rising incidence of corporate fraud fostered regulators to introduce reforms to strengthen fraud prevention and mitigation. In Malaysia, regulators have introduced various reforms and enhancements to corporate transparency as to deliver high quality financial reporting information and mitigate the FFR. The regulators such as Bursa Malaysia, the Securities Commission Malaysia (SC), Malaysia Institute of Accountant (MIA) are among the bodies responsible to promote the enhancement of Malaysia's capital market and ensure the transparency of the reporting.

SC was established on 1 March 1993 under the Securities Commission Act 1993 (SC). The SC has direct responsibility for rule-making, enforcing regulations pertaining to capital market, ensuring sustainable market growth and development, supervising capital market activities and market institutions including the exchanges, clearing houses and registered market operators, and regulating all entities and persons licensed under the Capital markets and Services Act (CMSA) 2007. Among the functions of SC include promoting confidence in the quality and reliability of audited financial statement in Malaysia and developing an effective and robust oversight framework in Malaysia. The SC acts as regulatory oversight body that supervises and monitors Bursa Malaysia to ensure that it effectively fulfils its regulatory responsibilities and obligation. Therefore, SC requires Bursa Malaysia to present Annual Regulatory Report which ensures the details and scope are in accordance with regulation. Regulatory audit on Bursa Malaysia is conducted upon the submission of the Annual Regulatory Report. In addition, frequent discussions on the operational and strategic supervisory matters

are conducted by SC and Bursa Malaysia. Furthermore, Bursa Malaysia needs SC's approval for the changes of the rules and for new or enhancement of products provided by Bursa Malaysia.

Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange (KLSE)) was incorporated in December 1976 as a firm limited by guarantee which took over the operations of Kuala Lumpur Stock Exchange Berhad. Following a demutualisation exercise with the purpose to enhance competitive position and to respond to the global trends in the exchange sector which focus on customer-driven and market-oriented, KLSE changed its name to Bursa Malaysia Berhad on 14 April 2004. Bursa Malaysia was listed on the Main Board of Bursa Malaysia Securities Berhad on 18 March 2005. Bursa Malaysia is the frontline regulator of the Malaysian capital market and has the duty to maintain a fair and orderly market in the securities and derivatives that are traded through its facilities. Bursa Malaysia has the responsibility to ensure orderly dealings, clear and efficient clearings and settlement arrangements for the transactions to be cleared and settled through its facilities. In addition to these duties, Bursa Malaysia also puts in place comprehensive and effective regulatory and supervisory framework to regulate the market and its participants including the listed issuers and their directors and advisers, Participating Organisations, Trading Participants, Clearing Participants, Authorised Depository Agents and Authorised Direct Members. Bursa Malaysia comprises of three markets which are; (i) the main Market which is the primary market for the big firms with a strong track record of operations and profitability, (ii) the ACE Market which is sponsor-driven market for small firms with shorter track record but high growth prospects, and (iii) the LEAP Market which is advisor-driven market that offers small and medium-sized enterprises (SMEs) source of fund through public market (Qasem et al., 2021).

CMSA 2007 was issued on 28 September 2007 with the aim to govern the capital market of Malaysia. The CMSA 2007 is an Act to consolidate the Securities Act 1983 (*Act 280*) and Futures Industry Act 1993 (*Act 499*). The reason for issuing CMSA 2007 is to encourage good corporate governance in preventing fraud, insider trading, and market manipulation. Besides, the CMSA 2007 ensures the fairness, transparency and confidence in the market. The Act encompasses provisions relating to the licensing and registration of market intermediaries such as brokers, fund managers, and investment advisers as well as governs the offering and trading of securities and

derivatives. The Act also prescribes the disclosure of reporting of public firms to safeguard the investors interest. Furthermore, the Act prohibits market abuses such as false or misleading statements, market manipulation, and insider trading. The SC empowers the Act to undertake the enforcement measures including investigation, prosecution, civil actions, and administrative sanctions. The firms that violate the CMSA 2007 will be categorized under these sanctions according to the cases. However, some of the public listed firms in Malaysia have faced financially distress situation, but Bursa Malaysia and SC did not file for bankruptcy for these firms, instead, they are temporary suspended and given a chance to restructure the business operation (Md Zeni & Ameer, 2010). The Bursa Malaysia regulations are in the form of Practice Notes (PN). Previously, the firms under financial distress situation fell under PN No. 4/2001. On 3 January 2005, Bursa Malaysia reviewed the framework for PN No. 4/2001 and an amendment was made, in which the new PN No. 17/2005 (PN17) was issued effectively. The PN17 has frequently been revised since 2009 to 2020 and the latest revision was issued on 1 January 2022.

There are several criteria of PN17 which are; (i) the consolidated shareholder's equity of the listed issuer is 25% or less of the share capital (excluding treasury shares) and less than RM40 million; (ii) the receivers or managers, or judicial managers have been appointed over the asset of the listed issuer, its subsidiary or associated firm with asset accounts for at least 50% of the total assets employed of the listed issuer on a consolidated basis; (iii) a listed issuer's subsidiary or associated firm, which accounts for at least 50% of the consolidated total assets, is subject to winding up proceedings; (iv) the auditors have expressed an adverse or disclaimer opinion in the listed issuer's latest audited financial statements; (v) the auditors have highlighted a material uncertainty related to going concern or expressed a qualification on the listed issuer's ability to continue as a going concern in the listed issuer's latest audited financial statements and the consolidated shareholders' equity of the listed issuer 50% or less of share capital (excluding treasury shares); and (vi) a default in payment by a listed issuer, its major subsidiary or major associated firm, as the case may be, as announced by a listed issuer pursuant to paragraph 9.19A of the Listing Requirements and the listed issuer is unable to provide a solvency declaration to the Exchange (Bursa Malaysia, 2022).

The listed firms declared under PN17 status are given stipulated time to undertake regularisation plan. If the regularisation plan results in significant changes of business direction or policy, the PN17 firms must submit the plan to SC within 12 months from the date of First Announcement and must complete the implementation of the plan within such timeframe as prescribed by SC. However, if the regularisation plan does not result in significant changes of the business direction or policy, the PN17 firms must submit the plan and obtain the Exchange's approval to implement the plan within 12 months from the date of the First Announcement and complete the plan within 6 months from the date the plan is approved by the Exchange. According to Security Commission Act 1993, SC also has the function to promote and regulate corporate governance, and to approve accounting standards of listed corporations by setting and approving standards for professional qualification of the capital market. Several institutes have been established to support the regulators in enhancing and promoting good corporate governance which include MIA, Minority Shareholder Watch Group (MSWG) and Malaysia Accounting Standards Board (MASB). MIA was established under the Accountants Act 1967 which is the national accountancy body that regulates, develops, supports, and enhances the integrity, status and interest of the profession in Malaysia. MIA has the responsibility to employ professional standards and practices for its members to comply and establish tough disciplinary system and to penalise those who fail to comply. MIA is also responsible to educate its member to ensure the quality of the accounting profession.

The Minority Shareholder Watch Group (MSWG) was established on 30 August as firm limited by guarantee. MSWG was established to encourage good corporate governance amongst public listed firms with the objective of raising shareholder value over time. The MSWG is responsible for protecting the interests of minority shareholders through shareholder activism. This group is founded by four largest Institutional Funds in Malaysia which are (1) Armed Forces Fund Board, (2) National Equity Corporation, (3) Social Security Organisation and (4) Pilgrimage Board. These founding members play an important role in socio-economic development of Malaysia. Meanwhile, MASB was established under the Financial Reporting Act 1997 (Act) as the standard-setting body of Financial Reporting Foundation (FRF) whose functions shall be the determination and issuance of accounting standards for the preparation of financial statements, which are required to

be prepared or lodged under any law administered by the Securities Commission Malaysia, Bank Negara Malaysia or the Registrar of Firms. The MASB, together with the FRF, makes up the frameworks for financial reporting in Malaysia. This framework comprises an independent standard-setting structure with the representation from all relevant parties in the standard-setting process, including preparers, users, regulators and accountancy profession.

Table 2.1
Summary of the regulatory regime in Malaysia

Regulatory Body	Description	Source
Securities Commission Malaysia (SC)	1) The SC has direct responsibility for rule-making, enforcing regulations pertaining to capital market, ensuring sustainable market growth and development, supervising capital market activities and market institutions including the exchanges, clearing houses and registered market operators, and regulating all entities and persons licensed under the Capital markets and Services Act 2007. 2) SC requires Bursa Malaysia to present Annual Regulatory Report which details the extent and scope of Bursa Malaysia's compliance with its statutory duties and obligations.	Securities Commission
Bursa Malaysia	1) Bursa Malaysia has the responsibility to ensure orderly dealings, clear and efficient clearing and settlement arrangements for the transactions cleared and settled through its facilities. 2) Bursa Malaysia puts in place comprehensive and effective regulatory and supervisory framework to regulate the market and its participants including the listed issuers and their directors and advisers, Participating Organizations, Trading Participants, Clearing Participants, Authorised Depository Agents and Authorised Direct Members	Bursa Malaysia
Minority Shareholder Watch Group (MSWG)	1) The MSWG is responsible for protecting the interests of minority shareholders through shareholder activism. 2) This group is founded by four largest Institutional Funds in Malaysia which are: (i) Armed Forces Fund Board,	Minority Shareholder Watch Group

Regulatory Body	Description	Source
	(ii) National Equity Corporation, (iii) Social Security Organisation (iv) Pilgrimage Board.	
Malaysia Accounting Standard Board (MASB)	MASB functions shall be the determination and issuance of accounting standards for the preparation of financial statements, which are required to be prepared or lodged under any law administered by the Securities Commission Malaysia, Bank Negara Malaysia or the Registrar of Firms. The MASB, together with the FRF, makes up the framework for financial reporting in Malaysia.	Malaysia Accounting Standard Board

2.3 Malaysia Code of Corporate Governance (MCCG)

One of the factors that affects Asian Financial crisis including Malaysia's economy in 1997 was poor Corporate Governance itself. Due to the crisis, Malaysia issued High level Finance Committee on Corporate Governance (FCCG) in 1998 which is responsible for comprehensively reviewing and reforming corporate governance in Malaysia. This Committee comprises of senior representatives from government, regulatory agencies, industries bodies and professional associations. In March 1998, Malaysian Institute of Corporate Governance (MICG) were established to guide and give opinions to members of the MICG regarding the issues related to corporate governance and to promote awareness of corporate governance. The members of MICG are the Federation of Public Listed Firms, Malaysian Institute of Directors, Malaysia Institute of Accountants (MIA), Malaysian Institute of Chartered Secretaries and Administrators and Malaysian Institute of Certified Public Accountants (MICPA).

Malaysia is one of the countries that has taken further step to enhance corporate accountability by issuing its own corporate governance reform. Malaysia for the first time issued its own Corporate Governance Report known as Malaysian Code of Corporate Governance in 2000 (MCCG, 2000) which cover principles and best practices of good corporate governance by describing the governance structure and internal process. In MCCG 2000, the board of firm should have effective and efficient internal control system and must be maintained by the board of directors. The internal control report is required and information regarding risk management should be

included in the report. From January 2001, all the firms in Malaysia are required to comply with the corporate governance code of practice in order to strengthen the quality of Malaysian Financial Reporting and Capital Market.

The MCCG 2000 was revised in 2007 with the aim to strengthen board of directors and audit committee as well as to ensure that the board of directors and audit Committees carry out their duties and responsibilities effectively. The revised MCCG 2007 highlighted several amendments which are; (1) the specific eligibility criteria for appointment of directors and the role of nominating committee; (2) the eligibility criteria for appointment as an audit committee membership including composition, meeting frequency, and the need for continuous training; and (3) all Public Listed Firms are required to establish internal audit functions and the reporting line for internal auditors should be clarified. In 2012, Malaysia once again made revision on MCCG which is known as MCCG 2012. The MCCG 2012 emphasizes on the board leadership role by providing leadership, enhancing board effectiveness through strengthening its composition and reinforcing its independence. The MCCG 2012 also promotes the adoption of corporate disclosure policies that are aligned with good disclosure practices and firms are encouraged to make public their commitment to respect the shareholder rights.

Later, the MCCG once again was revised in 2017 and known as MCCG 2017. The new MCCG 2017 supersedes the MCCG 2012 by introducing a new approach to promote greater internalisation of corporate governance culture. There are five key approaches which are; (1) Comprehend, Apply & Report (CARE); (2) the shift from “comply or explain” principal to “Apply or Explain an alternative”; (3) emphasis on the Intended Outcome for each practice; (4) guidance to assist firms in implementation of the practices; and (5) identification of exemplary “Step Ups” practices to encourage firms in moving towards greater excellence. Unlike the MCCG 2012 which is limited only on Public Listed Firms in Malaysia, the new MCCG 2017 extends the recommendation to the non-listed entities including state-owned enterprises, small and Medium Enterprises (SMEs) and Licensed Intermediaries. These non-listed entities are encouraged to embrace the code on corporate governance to enhance their accountability, transparency and sustainability.

The new approach, which is CARE approach, is designed to strengthen trust between firms and stakeholders by encouraging meaningful disclosures that stakeholders can rely on for effective engagement with the firm. The first CARE approach is described as COMPREHEND which is to understand and internalise the spirit and intention behind the principles including its intended outcomes by understanding the business case for embracing good corporate governance and achieve the intended outcomes of the practices. As today's stakeholders are interconnected to the globalised and increasingly recognized economic by focusing on the environmental and social responsibility to achieve the firm's performance and long-term sustainability, the board should understand and incorporate these new dimensions into their decision-making process to ensure the firm operates successfully and sustains growth. Furthermore, the board also needs to understand the key principles of corporate governance such as effective controls, corporate culture grounded on ethical behaviour and transparency which can reduce risk, corruption and mismanagement.

The second approach is APPLY where the firms are expected to implement the practices in substance to achieve the intended outcomes of building and supporting a strong corporate governance culture throughout the firm. Applying the practices of MCCG is not only compliance with the set of rules but it involves meaningful application to achieve good corporate governance practices including mindset and culture change by moving away from a box-ticking approach to corporate governance. The MCCG 2017 adopts the "apply or explain an alternative approach" in promoting meaningful application of good corporate governance. The board should apply the practices by taking into consideration of the environment of their firms, size and complexity and the nature of risks and challenges faced. If the board is unable to implement any of the MCCG practices, the alternatives should be implemented to meet the intended outcomes.

The third approach is REPORT where the firms are expected to provide a fair and meaningful disclosure in the firm's corporate governance practices. The firms must disclose the corporate governance disclosure to demonstrate to the stakeholders that they have comprehensive and effective corporate governance arrangement by providing informative disclosure in their application of MCCG practices. The firms must provide meaningful explanation on how each of the practices are implemented and if they are unable to make recommendations in practice, the firms must provide explanation and

should disclose an alternative practice by clarifying on how the alternative practice has achieved the intended outcome.

The MCCG 2017 includes four enhanced practices (“Step Ups”). Firstly, the tenure of independent directors is limited to nine years, the detailed remuneration of each member of its senior management on a named basis should be disclosed in annual report, audit committee must comprise solely of independent directors and establishes a risk management committee that comprises a majority of independent directors. In board composition, the MCCG 2017 stipulates that half of the board should comprise of independent directors. Nevertheless, for Large Firms, the board should comprise a majority of independent directors. In addition, the MCCG 2017 highlighted that the position of independent directors to continue serving on the board as an independent director only applies from the ninth until twelve years. If such directors remain on the board after the twelfth year, the directors need to obtain its shareholders’ approval through a two-tier voting process. Therefore, firms that aspire to achieve excellence in corporate governance, in particular, Large Firms, are encouraged to adopt the Step Ups to strengthen their governance practices and processes.

On 28 April 2021, MCCG was updated to MCCG 2021 edition by covering on the enhancement of board policies and practices, strengthening board oversight and integration of sustainability in the firm’s strategy and operation and adoption of best practices especially for firms with low levels of compliance. As the Covid-19 pandemic's consequences are still being felt in the environment, the MCCG 2021 helps the boards to adopt and put into practise corporate governance measures to build long-term resilience.

2.4 Malaysia’s Ownership Structure

Malaysia was formed in 1963 from the merger of the states in Malaya, Sarawak and Singapore (Hooker, 2003). Singapore exited from being part of Malaysia in 1965 due to the inefficiency of political entity and became an independent country. Malaysia is a unique country with multicultural society and extensive division based on ethnicity, religion and language (Jamil, 2016). In 2020, it is estimated that the Malaysian population is at 32.7 million. However, due to the closure of national borders and the return of foreigners to their respective countries during the Movement Control Order

(MCO) following the spread of pandemic Covid-19, the Malaysian citizens are 29.7 million (Department of Statistics, 2020). From 29.7 million citizens, 69.6% is the Bumiputera, followed by Chinese with 22.6%, Indians with 6.8% and the remaining 1% from other ethnics. Each of the ethnic group maintains their identities and continues practising their culture, behaviours, and economics.

Malaysia is like many other East Asian countries where there is high level of ownership concentration, cross-holdings and significant of owners in management (La Porta et al., 1999; Liew, 2007). Lim (1981) as quoted in Liew (2007) stated that Malaysia has various degrees of concentration at various structure. Firstly, the major proportion of financial assets and productive capacity of corporate economy are concentrated in a few large firms. Second, despite the relatively high market capitalization of the Malaysian stock market, there is a concentration at the level of share ownership in which shares are not widely distributed and held predominantly by few institutional and corporate investors. Third, the structure of concentration is of control over the large firms. In practice, the holding firms that own a minor but significant proportion of shares in a large number of firms are primarily held by pyramiding or cross-holding ownership.

Malaysia is one of the nine East Asian countries reported to have more than two third of the firms that are controlled by single shareholder (Claessens et al., 2000). The ownership is dominated by family businesses with 70% of Malaysian firms are family owned (Claessens et al., 2000; Teh et al., 2017). According to Teh et al. (2017), the shares owned by Malaysian are commonly concentrated by the family ownership with about 73% of the shareholdings are owned by top twenty shareholders and most of them are family members. Additionally, according to Karim et al. (2023), 60.23% of Malaysian listed firms are concentrated ownership, whereas the state and state-affiliated held 49.54% of the common stocks on average. For example, the firms prominently owned by family include Berjaya Group, Sapura Group, Melewar Group, Genting Group and YTL Group. According to Ngui (2002) as quoted by Amran and Che Ahmad (2011), the family firms in Malaysia contribute more than half of Malaysia's Gross Domestic Product (GDP). The Credit Suisse Research Institute (CSRI) in their report stated that Malaysia ranks seventh globally in terms of number of family-owned businesses (The Edge Market, 2017). Malaysia also ranked 11th in

Asia Pacific ex-Japan with average market capitalisation of family-owned firms at US\$3.8 billion (The Edge Market, 2017).

In addition, Malaysian corporate ownership is highly concentrated in the hands of single shareholders, such as institutional investors (Claessens et al., 2000). According to Qasem et al. (2021), the market capitalization of Bursa Malaysia recorded RM1.7 trillion with local institutional investors owning 53% and foreign institutional investors 27% in 2016. Through investment mandate, the institutional investors are responsible to manage funds collected on behalf of their beneficiaries (MSWG and SC, 2014). According to Saleh et al. (2010), Malaysia represents the developing countries that hold 51% of shares in the 10 largest firms listed in Bursa Malaysia. Furthermore, Karim et al. (2023) noted that institutional ownership in Malaysian Listed firms accounts for 33.58%. This includes 70% of total institutional shareholdings that belong to five largest government-controlled institutional investors namely Employees Provident Fund (EPF), Lembaga Tabung Angkatan Tentera (LTAT), Permodalan Nasional Berhad (PNB), Lembaga Tabung Haji (LTH), and National Social Security Organization of Malaysia (SOC SO) (Abd-mutalib et al., 2016). Based on 2021 statistics, EPF which is known for being Malaysia's largest pension fund holds approximately \$278 billion (Thinking Ahead Institute, 2022). The institutional investors in the ownership structure plays a crucial roles in corporate governance due to their professional knowledge and expertise to provide oversight and monitoring function and disciplining dominant owners (Karim et al., 2023).

In an organization, the ownership (principal) and management control (agent) are separate entities that contribute to the raise of agency problems (Shahrier et al., 2020). Due to the separation of entities, the agency conflict between shareholders and the manager arises (Jensen & Meckling, 1976). However, according to Claessens and Fan (2002), agency conflicts between majority and minority owners might arise as a result of the concentration of shareholdings in the hands of a few shareholders on behalf of other shareholders. The conflict between majority and minority shareholders has led to expropriation of minority shareholder's right and may lead to fraudulent activities (La Porta et al., 1999; Goldberg et al., 2016; Karim et al., 2023).

The controlling shareholders can be the shareholders who have a stake within the firms and can be from outside the firm (for example institutional investors) where they have no relationship with the management (Karim et al., 2023). The presence of larger

concentration of ownership may align agency conflicts between management and shareholders or create a conflict of interests between minority and majority shareholders. The alignment view suggests that firm insiders directly own stock in the firm and are free to publicly monitor management's operations. Furthermore, insider controlling shareholders rely heavily on the firm's internal financial data and are less inclined to rely on information from the public (AlQadasi & Abidin, 2018). In contrast, the alignment view reveals that the insiders controlling shareholders breach the rights and wealth of minority shareholders in the presence of more influential incentives that enhance the chances of extensive monitoring by the minority shareholders in terms of regular analysis of financial reports (AlQadasi & Abidin, 2018). In addition, an entrenchment problem arises when there is tight control between majority shareholders and minority shareholders due to the expropriation of minority shareholders right (AlQadasi & Abidin, 2018).

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter presents a comprehensive review of the literatures and identifies research gaps related to the likelihood of fraud, corporate governance, and ownership structure within the Malaysian context. This chapter begins with definition of fraud in section 3.2. Section 3.3 discusses on the underpinning theories of fraud which are agency theory (section 3.3.1) and entrenchment and alignment effect (section 3.3.2). This chapter continues with the discussion on corporate governance and likelihood of fraud in section 3.4 with fraud detection model in section 3.5. Section 3.6 elaborates textual analysis in accounting and finance. Section 3.7 discusses on Topic Modeling and fraud, while section 3.9 discusses on sentiment analysis and fraud. The chapter continues to section 3.9 that discusses on textual analysis approaches and tools. Section 3.10 discusses on the independent variables which are corporate governance variables (details discussed in section 3.10.1 to 3.10.5). Section 3.11 and 3.12 discuss on audit committee and risk management committee and fraud, respectively. Section 3.13 discusses on the moderating variable which is ownership structure (details discussed in section 3.13.1 to 3.13.2). Section 3.14 presents the summary of research framework for this study. Lastly, section 3.15 concludes all the literatures for this chapter.

3.2 Definition of Fraud

Fraud, as to Merriam Dictionary of Law (1996) and quoted in Manurung and Hadian (2013), is “any act, expression, omission, or concealment calculated to deceive another to his or her disadvantage, specifically, a misrepresentation or concealment with reference to some fact material to a transaction that is made with knowledge of its falsify or in reckless disregard of its truth or falsify and worth the intent to deceive another and that is reasonable relied on by the other who is injured thereby”. International Standard on Auditing (ISA) 240 defined fraud as ‘an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage’.

According to Umar et al. (2020), fraud is defined as “any illegal acts marked by deception, concealment, or breach of trust. This action does not depend on threats of violence or physical threats. Fraud is committed by other parties and organizations involved to earn money, property or services; to avoid payments or losses on services; or to secure personal or business benefits”. Dorminey et al. (2012) presented three elements of fraud that describe the action of individuals in committing fraud which are *act, concealment and conversion*. The act represents the execution and types of fraud such as embezzlement, check kiting or material FFR. Concealment represents how the fraud is hidden, for instance by creating false journal entries, falsifying bank reconciliations or destroying files. Conversion is the process of transforming the ill-gotten gains into something the offender may use in a manner that seems legal; for example, laundered money, cars or homes.

ACFE classified frauds into three main categories which are Fraudulent Financial Reporting (FFR), Misappropriation of Asset and Corruption. Among these categories of fraud, FFR reported the largest losses as compared to misappropriation of assets and corruption. ACFE (2022) reported that in the year 2022, from the 2,110 investigated, FFR were reported as having the lowest cases with only 9% as compared to misappropriation of assets and corruption with 86% and 50% of cases, respectively. Nevertheless, the median loss reported due to FFR was the highest at \$593,000 (RM2.6 million) as compared to the median loss incurred due to misappropriation of assets and corruption at \$100,000 (RM441,000) and \$150,000 (RM661,500) respectively. In Malaysia, there is no specific national report regarding the total losses incurred due to FFR across the country; however, PwC’s (2020) reported fraud-related losses exceeding \$1 million rose to 24% in 2020, up from 22% in 2018. Accordingly, reported fraud cases increased to 43% in 2020 from 41% in 2018. These statistical reports reveal the serious effects of fraud beyond financial losses but also other consequences such as diminish the employee morale, strained business relationships, and reputational harm to organization (Girau et al., 2024) which resulted in inefficiencies of the market in allocating their resources (Rezaei & Rostami, 2022). In addition, fraud also resulted the increase in the cost of capital as the it erodes the public confidence (Sallal et al., 2021). The severity of these consequences have motivated the scholars to explore effective approaches for fraud prediction and prevention.

ACFE (2010) defined the FFR as the “intentional misstatement or omission of material information in the organization’s financial reports. Shamimul Hasan et al. (2016) defined FFR as the idea of top management especially CEO and CFO, since without their involvement, the financial reporting is little to less to perpetrate. The FFR is usually done because of the encouragement work performance expectation by the management (Handoko, 2019). The integrity of the financial information might be impaired as the financial statement that is accurate can show to the public that the information about the firm's financial status is accurate, enabling those who use financial statements to base judgments on the information presented (Oktaviana & Paramitha, 2021). According to Beasley (1996), FFR is defined into two types; firstly, it includes the management that intentionally misleads financial statement information to outsider users; and secondly, it includes occurrences of asset misappropriation by top management. Common methods of fraudulent financial statement include recording fictitious revenues, concealing liabilities and artificially inflating reported assets. In the study of Shamimul Hasan et al. (2016), FFR involves five schemes which are fictitious revenue schemes, improper timing schemes, understanding liabilities schemes, improper disclosure schemes and improper asset valuation schemes.

3.3 Underpinning Theory of Fraud

3.3.1 Agency Theory

Jensen and Meckling (1976, p. 308) defined agency relationship as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent. If both parties to the relationship are utility maximisers, there is good reason to believe that the agent will not always act in the best interests of the principal”. Agency theory is based on two main principles which are (i) existence of information asymmetries between principals and agents and (ii) the divergent interest between principals and agent. Agency problems as quoted in McColgan (2001) arise because of impossibility of perfectly contracting for every possible action of an agent whose decision affect both his own welfare and the welfare of the principal. In a firm, the owner (principal) is the one who supplies fund into the firm, thereby hires manager (agent) to carry out some duties. However, because of divergent interest, managers may act against the interest of owners since they have greater knowledge of the firm’s

operation. Unethical and self-interested managers may engage in unlawful or fraudulent operations to boost their wealth at the expense of the owner's money (Ali, 2020).

One of the most difficult obstacles for the firms is to reduce the information asymmetry because the outside shareholders are often unaware of how manager operates (Ali, 2020). The information asymmetries between outside shareholders and managers create opportunities for the manager to commit fraud. In this situation, the principals need to monitor the agents' behaviour by investing more information such as hiring auditors to inspect the manager's reporting. The existing of information asymmetries resulted in the problems of adverse selection and/or moral hazard (Ali, 2020). The adverse selection occurs due to the precontractual opportunistic behaviour. An adverse selection occurs from information asymmetry between auditors and shareholders. For example, in Enron fraud, the auditor, Anderson, issued a "clean" audit report even when there were major anomalies that mislead financial statement information. The Enron's shareholders were deceived because they were unable to know that they had purchase a "lemon" report for decision making process (Ali, 2020).

Meanwhile, moral hazard is the consequence of information asymmetry in a post-contractual situation when the agents make choices and do not bear the full cost of their action. Moral hazard arises when incompleteness of information comes from actions or hidden behaviors that may engage by the agents after entering into a contract. In the case of principal-agent conflict, opportunistic behaviour agents increase the likelihood of fraud. This opportunistic behaviour leads to the agency problem Type I. This behaviour enables managers to perform tasks or make decisions in opportunistic ways to obtain personal wealth in terms of incentives or bonuses at the expense of the shareholders (Jensen & Meckling, 1976). For example, in previous corporate scandals such as Enron, Xerox, and WorldCom, the manager overstated the stock price to receive higher bonuses and stock option (Ali, 2020). On the other hand, the information asymmetry also occurs between controlling shareholders and non-controlling shareholders (Agency problem Type II). This situation occurs when the controlling shareholders have the opportunity to commit fraud through managing the firm's resources for their personal interests, transferring assets and profits from firms, or investing funds to unprofitable projects (Ali, 2020).

The agency problem leads to agency cost where the principal takes incentive to reduce the divergent interest by incurring monitoring cost to limit the aberrant activities of the agent. Jensen and Meckling (1976) defined agency costs as sum of monitoring costs, bonding costs and residual loss. Expenses incurred by the principal to measure, observe, and regulate an agent's behaviour are known as monitoring costs. The monitoring costs include cost of audits, writing executives contracts, and cost of firing managers (McColgan, 2001). These monitoring costs are paid by the principal. Another aspect of monitoring is imposed by legislative practices. In Malaysia, public listed firms are required to implement the requirements of MCCG. The non-compliance with MCCG must be disclosed and explained in the annual report. The bonding costs are the cost incurred by the agent with the aim to reassure the principal that the agent acts in the principal's best interests (Ali, 2020). Some managers may benefit from these costs by investing resources to ensure that they will not take specific activities meant to harm shareholders or to make sure that shareholders will be compensated if managers do take such actions. According to Jensen and Meckling (p.326),

...the manager finds it in his interest to incur bonding costs as long as the net increments in his wealth which they generate (by reducing the agency costs and therefore increasing the value of the firm) are more valuable than the perquisites given up.

The agency theory gives examples of bonding costs such as expenditures on internal audit and internal control mechanisms. A manager can reassure shareholders that there are no major misstatements in the financial statements by selecting a big audit firm with a global reputation and strong audit quality (Ali, 2020).

Despite the best efforts of the shareholders to settle for proper monitoring costs and choose a manager who has incurred bonding costs, there is still some disagreement between the manager's choices and those that will maximize shareholder welfare. Residual loss occurs due to the conflict of interest and information asymmetries between managers and shareholders (Ali, 2020). The unethical managers may engage in corporate fraud by exploiting corporate assets and expropriating shareholders. In addition, the managers may issue FFR to hide their misconduct (Ali, 2020). The interests of managers and shareholders are unlikely to be completely aligned despite

monitoring and bonding. As a result, agency losses caused by conflicts of interest still exist. These are referred to as residual loss.

On the other hand, the agency conflict arises from the separation of ownership and control resulting in two opposite effects on the likelihood of fraud, namely entrenchment and alignment effects. The entrenchment effect assumes the positive effects to likelihood of fraud, indicating that the controlling shareholders engage in fraudulent behaviour. Meanwhile, the alignment effect assumes the negative effects to the likelihood of fraud, indicating the owners or controlling shareholders are less likely to engage in fraudulent behaviour to meet their personal interest. These effects are discussed in detail in section 3.3.2.

3.3.2 Entrenchment and Alignment Effects

The entrenchment effect is based on the argument that concentrated ownership creates opportunities for controlling shareholders to expropriate wealth from minority shareholders (Fama & Jensen, 1983). The entrenchment effect suggests that members may obtain private benefits from the firm as controlling shareholders at the expense of minority shareholders (Wang, 2006). The entrenchment effect motivates financial statement suppliers (firms) to opportunistically manage earnings (Wang, 2006). Meanwhile, the alignment effect is based on the controlling shareholders which are better aligned with non-controlling shareholders, where the controlling shareholders are less likely to expropriate the wealth from minority shareholders (Wang, 2006).

In family firms, the ownership structure induces the firms to behave differently. Family ownership affects the demand and supply of the quality of financial reporting due to entrenchment and alignment effect. The concentrated ownership by family firms creates incentives for the controlling shareholders to expropriate the wealth of minority shareholders (Shleifer & Vishny, 1997). Family members usually occupy significant positions on the board of directors as well as the management team. Consequently, these firms may have poor corporate governance as a result of the board's insufficient monitoring (Wang, 2006). Greater information asymmetry between founding families and other shareholders is another cause of entrenchment (Wang, 2006). The entrenchment effect predicts that family ownership is associated with the supply of lower earnings quality because the concentrated ownership limits the

accounting information flows to outside investors. In addition, the information asymmetry lowers the transparency of accounting disclosures. Therefore, these resulted the family members to have both incentives and opportunity to manipulate earnings and these may lead fraud (Wang, 2006).

In competing view is the alignment effect, where the firms with high concentrated family ownership are less likely to expropriate the wealth of minority shareholders due to having strong incentive to monitor employees as well as to create long-term loyalty in employees (Wang, 2006). The alignment effect implies in higher concentration of family ownership where they are less likely to engage in opportunistic behavior such as fraud that could potentially damage family reputation and succession plan (Hasnan et al., 2013). Therefore, the entrenchment and alignment effect suggest a different relationship between family ownership and financial statement fraud.

3.4 Integrating Fraud Prediction Models in Understanding Likelihood of Fraud

The increasing incidences of corporate fraud indicate that organizations prioritize ineffective fraud prevention and deterrence mechanisms (Razali & Arshad, 2014). There is a connection between bankruptcy and fraud while high chances of firm to verge into bankruptcy would engage in fraudulent activities or manipulation of financial statement (Deloitte Forensic Center, 2008). The managers are motivated to manipulate their financial statement to show better financial reports to the stakeholders in the point of bankruptcy. Hence, this creates a connection between distressed firm and fraud firms (Maccarthy, 2017).

Fraud prediction models have been empirically documented since early 1960. Beaver (1966) developed univariate analysis in predicting bankruptcy of the firm. This model uses financial ratios in assessing firms' health. Altman (1968) developed Z-score model in predicting bankruptcy by the proxy of financial distress risk or bankruptcy risk which could be an early sign of occurrence of fraud manipulation in the firm. In Z-score model, there are three zones of discrimination in which Z-scores with less than 1.81 ($Z < 1.81$) is an indicator that the organization is in "distress" zone, scores between 1.81 and 2.99 ($1.81 < Z < 2.99$) indicates that the organizations is in "grey" zone, and for scores that are more than 2.99 ($Z > 2.99$), it is an indicator that the organization is in "safe" zone.

Meanwhile, Beneish M-score was developed by Beneish (1999) which is similar to Altman Z-score but it focuses on the probability of manipulation than bankruptcy. The study assumes that any operation on the financial statement is associated with an increase of profit. Two main indicators are used which focus on two groups: fraudulent identification variables fraudulent and variables to identify fraudulent activities. The study used financial indicators to measure the manipulation of financial statement. For M-Score model, if the predictive score is greater than -2.22, it gives the signal of red flag which indicates that there is possibility of manipulation in the firm. Dechow et al. (2011) developed F-Score model with the objective to determine the probability of material misstatement in the financial statement using financial and non-financial variables. The name of F-score is based on 3 models used in 3 levels. The result stated that misrepresented financial statement of F-score I is 65.59%, F-Score II is 64.97% and F-Score III is 62.98%.

Although many models have been developed to predict material misstatement, bankruptcy or FFR, recently textual analysis has become one of the increasing interests of researchers in analysing firm disclosures as some of the studies produced compelling insights into how linguistic structure of text can be utilized to find fraud indicators (Loughran & McDonald, 2011; Goel & Uzuner, 2016; Li et al., 2023; Faccia et al., 2024). Accordingly, the use of textual analysis of the firm's disclosures has emerged as a new method in predicting the likelihood of fraud. Unlike the previous methods developed which focused on the structured or numerical data, this method emphasizes the unstructured data of annual reports such as MD&As section to predict the linguistic associated with deceptive or fraudulent behaviour.

3.5 Concept of Textual Analysis and Its Use in Accounting and Finance

Loughran and McDonald (2016) defined textual analysis as a set of techniques to extract information from textual sources for its use in data analysis, business intelligence or research purposes. According to Gandía and Huguet (2021), the concept of textual analysis is computational linguistics, natural language processing or content analysis in which it refers to the set of techniques used by researchers to extract information from textual sources. This technique is used in data analysis, business intelligence or research purposes. According to Loughran and McDonald (2016), textual studies are encompassed in two trends which are firstly, the study examines the

readability of text, i.e., those which measure the level of reader ability needed to understand the content of text; and secondly, the studies deal with the extraction of information from the text, either keyword search and targeted phrases, topic modelling, the use of similarity measures or sentiment analysis.

In relation to the study of the readability of text, it focuses on the estimation of a measuring the level of difficulty in reading comprehension of the text (Loughran & McDonald, 2016). The readability is measure based on the average sentence length and the percentage of complex words (i.e. the words with more than two syllables; which is considered as difficult words to understand) (Gandía & Huguet, 2021). For example, the study by Li (2008) measured the annual report readability using *Fog index* and the length of the annual report specifically in MD&A section and the notes of financial statements. Using the *Fog index*, the number of words per sentence is combined and the number of syllables per words is created to measure readability. In *Fog index*, the more syllables per word or more words per sentence, the harder it is to read the document. The study found that the annual report readability is related to earning persistence. The result revealed that the firms with more complicated reports have lower earning persistence when they are profitable (in other words, the profitable firms have fewer complex reports compared to losses firms). Similarly, Lo et al. (2017) who also used *Fog index* in measuring the annual report readability found the firms with complex MD&A are likely to manage earnings to meet or beat the benchmark of the prior year's earnings. A recent study by Li et al. (2023) measured the readability by using the frequency of sentences containing accounting terminology which is *Jieba* in measuring financial fraud risk. However, in the accounting field, long words do not necessarily involve in the greater complexity of the text, so it may create problems in measuring the readability (Loughran & McDonald, 2016).

In relation to keywords search and targeted phrases, it focuses on the small range of words or phrases of a wide list of expressions which involve greater ambiguity (Loughran & McDonald, 2016; Gandía & Huguet, 2021). For example, the study by Loughran et al. (2009) used the word “ethic” and its variants together with phrases “corporate responsibility,” “social responsibility,” and “socially responsible” to determine the count of “sin” stocks, corporate governance measures, and lawsuits actions. The result revealed that the firms whom their managers are more focused on the discussing of these topics are more likely to be labelled as sin stocks, lower

corporate governance measures, and be sued in the subsequent year after filing. For the Topic Modelling, it is the technique that looks for the underlying topics in a set of documents based on the correlation between words in those documents (Gandía & Huguet, 2021). For example, the study that used topic modelling was Huang et al. (2018) which investigated the roles of financial analyst in information discovery and information interpretation using topic modelling techniques. The topic modelling used is Latent Dirichlet Allocation (LDA) to extract topics from the analyst reports and conference calls.

For document similarity measures, it is a method of labelled cosine similarity in which the two words vectors (the document) use the normalised value that takes the value from 0 to 1 (Gandía & Huguet, 2021). Lastly, regarding the sentiment analysis, it is the textual analysis technique that relies on the identification and extraction of subjective information from text based on the polarity which is either positive or negative transmitted by it (Kearney & Liu, 2014). Figure 3.1 below shows the summary on the concept of textual analysis.

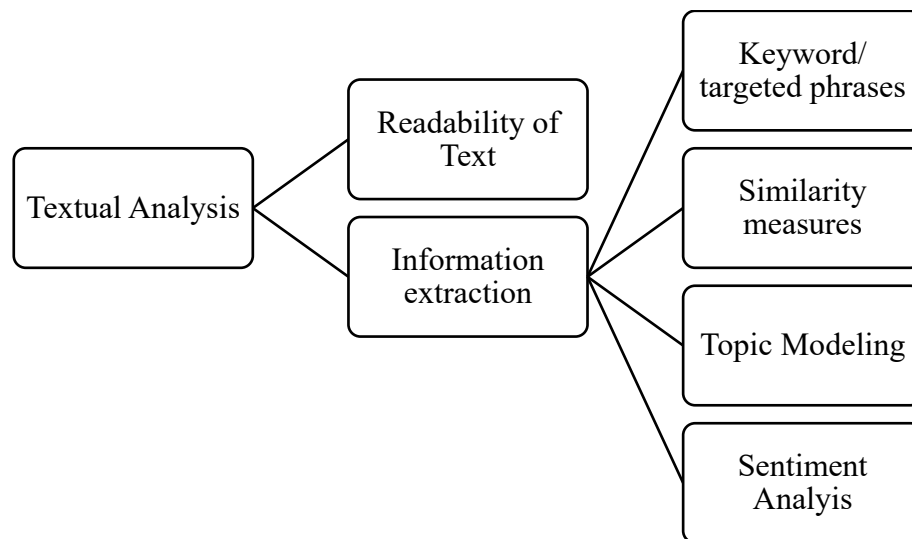


Figure 3.1 Concept of textual analysis

In addition, textual sources may contain information that does not support the perception of the financial statements, either because there is an intention to "sweeten" the actual financial situation and performance of the firm or because it is unintentionally exposing misleading quantitative information. This can be used to look for hidden cues in the corporate disclosures (Gandía & Huguet, 2021). For example, hidden cues may be related to differences between quantitative and textual information or the use of

imagery, pleasantness or ambiguity in the textual information (Humpherys et al., 2011). Thus, this helps users to “read between lines” to look at the hidden cues and help to detect potential fraudulent practices (Humpherys et al., 2011; Goel & Uzuner, 2016).

In the accounting and finance field, the use of textual analysis usually related to corporate disclosures. According to Gandía and Huguet (2021), corporate disclosures are a natural source of textual analysis because it offers communication from insiders who have access to the information and have a better knowledge of the firms than outsiders. In addition, the tone and writing styles of the reports may contain useful information to the future performance of the firm. Among the corporate disclosures used in accounting include annual report (Li, 2008; Goel et al., 2010), the 10-K report or the MD&A report (Loughran et al., 2009; Cecchini et al., 2010; Loughran & McDonald, 2011; Humpherys et al., 2011; Goel & Uzuner, 2016). These studies have looked for the detection of FFR from the reports. Some of these studies have used the sentiment analysis as the textual analysis technique in the detection of FFR (Refer to section 3.7.2 on the empirical works).

Goel et al. (2010) argued that the textual information contains indicators in the form of strategically placed phrases, selective use of sentence constructions, selective use of adjectives and adverbial phrases and similar variables to conceal fraudulent behaviour. Goel et al. (2010) in their initial study examined the verbal content (content, words, frequencies of usage, word patterns, etc.) and the presentation style of annual report in exploring linguistic features such as voice, uncertainty markers, readability index, tone, etc. in distinguishing fraudulent and non-fraudulent annual report. The study used Naïve Bayes’ approach to discover two issues which are fraud detection and the detection of different stages (level) of fraud. Among the top 25 discriminating words by information gained for detecting fraud are “alleges, cooperating, price, taxes, requirements, etc.). Furthermore, among the top 25 discriminating words by information gained for predicting levels of fraud are “weaknesses, qualitative, fraud, impaired, ethics, misleading, etc.) (Goel et al., 2010). In conclusion, the study found variations of communication and writing styles of annual report where the fraudulent annual report contained more passive-voice sentences, used more uncertainty markers, had higher type-token ration (lexical variety) and were difficult to read and comprehend than non-fraudulent annual reports.

Humpherys et al. (2011) hypothesized that fraudulent MD&As contained more active language and more words but had lower lexical diversity and more complex than non-fraudulent MD&As. Using Agent99 Analyzer to extract linguistic feature from MD&A section of 101 fraudulent and 101 non-fraudulent 10-Ks, the study found that the fraudulent MD&As have more active language than non-fraudulent MD&As which have more activation word ratio, imagery, pleasantness, and modal word ratio. The author argued that the manager attempts to show false image of success by exaggerating advantageous information and minimizing or hiding bad information. The study also found that the fraudulent MD&As had higher lexical word diversity and content word diversity than non-fraudulent MD&As. The manager perpetrating fraud is tasked to persuade readers on the veracity of their statements while distracting the reader from damaging information by generating quantity of irrelevant contents. The fraudulent MD&As are also more complex than non-fraudulent MD&As because they have longer words and more causality. The managers will make the harmful information more difficult to extract in order to avoid negative market responses. The deceitful managers can manipulate the content of financial statement by creating longer documents and using more complex words.

Meanwhile, Dong et al. (2016) investigated seven information types of topics, opinions, emotions, modality, personal pronouns, writing style and genres using Systemic Functional Linguistic theory (SFL) to investigate fraudulent behaviour of top management in MD&A section. The SFL helps the author to understand strategic language usage especially deceptive message by the writer. SFL is based on three interrelated information types which are ideational, interpersonal and textual metafunction. The ideational is verbalized, represented by topics, opinions, and emotions. The interpersonal is a written language that represents how the writer, and the readers interact and use the language to establish and maintain relations with them. The textual information is how the language is organized and structured to create a coherent and continuous flow of information. For the purpose of the study, Dong et al. (2016) used 805 fraud-year sample during the period of 1982 to 2014, in which the sample was matched with 805 of non-fraudulent firms. Using guidance from SFL theory, the study found that the seven information types could provide the average testing accuracy of 82.36%.

The use of textual analysis in accounting and finance is currently in initial stage especially in the emerging market such as Malaysia. However, it has great potential to be applied due to significant volumes of documentation that are used to disclose economic and financial information such as financial statements, audit reports, corporate social reports, management reports, accounting standards or analyst's reports among others, which rely more on the value of textual, but not numerical data (Amani & Fadlalla, 2017). Additionally, the use of digital tools and social media by firms has significantly increased the volume of unstructured documents that are available on the internet. The use of online articles, conference calls, registers from governmental agencies such as securities commission, or text from social networks like Facebook or Twitter provides a large number of sources for the application of these techniques (Loughran & McDonald, 2016). In accounting field, Li (2010) stated that "the textual information can provide a very useful context for understanding the financial data and testing interesting hypotheses".

Gandía and Huguet (2021) argued that even the managers have some discretion when reporting financial information, however, it is rather limited as long as the manager has to prepare the information according to accounting and principals' rules. These restrictions on managers' discretion are preferable as long as they mitigate earnings management and accounting manipulation. In addition, these prevent managers from being overly optimistic and help to improve the comparability and reliability of financial information and also make it difficult for managers to communicate data that do not meet reporting criteria (Gandía & Huguet, 2021). Therefore, text in corporate disclosures helps to better understand the number of financial statements.

As discussed above, the textual analysis has been used widely in accounting and finance particularly in detecting FFR. The use of annual reports particularly in MD&As section becomes the interest of the researchers to discover the hidden message written in the report. In Malaysia, the research regarding the textual analysis and fraud still remains under explored especially in relation to Topic Modeling and Sentiment Analysis. Therefore, this study fills this gap by identifying the narrative pattern using textual analysis (particularly in Topic Modeling and sentiment analysis) among the firms that have high likelihood of fraud and to investigate whether corporate governance and ownership structure can influence the likelihood of fraud.

3.6 Topic Modeling and Likelihood of Fraud

Topic modeling is one of the textual analyses that can be considered as labeled qualitative analysis (Loughran & McDonald, 2016). The topic modeling is one of the “bag-of-words” techniques that are used to classify the common theme of the documents or simply identify themes within a corpus of document (Loughran & McDonald, 2016). Topic modeling is often used for discovering hidden topical patterns which are present in similar documents and annotating the documents using discovered topic to facilitate document search, organization, and summarization (Sabbagh & Ameri, 2020).

The earliest approach in the classification of topic modeling was latent semantic analysis (LSA) which is also known as latent semantic indexing (LSI) (Deerwester et al., 1990). This approach uses a singular value decomposition of X to identify the linear subspace in the space of TF-IDF features to capture the most of the variance in the collection (Blei et al., 2003). Nevertheless, the features of LSI are augmented with some aspects of basic language notions such as synonyms and polysemy. The probabilistic LSA (pLSA) of Hofmann (1999) was then developed to substitute the LSA. This approach, which is also known as aspect model, uses the mixture of random variables that can be viewed as a representation of “Topic” in which the different words in a document can be generated from different topics (Blei et al., 2003). In this approach, each of the document is presented as a list of numbers (the mixing proportions for topics) but no generative probabilistic model for these numbers. Due to this, it develops several problems including; (i) the serious problem of overfitting which might occur as the number of parameter in the model grows linearly with the size of the corpus, and (ii) it is not clear how to assign probability to a document outside of the training set (Blei et al., 2003).

The advanced approach to extract meaningful topics from a large corpus document is Latent Dirichlet Allocation (LDA) which was developed by Blei et al. (2003) to substitute the claim regarding the pLSA. The LDA is an unsupervised and unstructured probabilistic model that discovers the latent thematic structure of words within a corpus of document (Brown et al., 2020). In other words, in LDA model, the documents are presented as a random mixtures over the latent topics, where each topic is characterized by a distribution over words (Blei et al., 2003). According to Huang et

al. (2018), LDA assumes that each word in a document is generated by two steps. Firstly, LDA assumes that each of the document has its own topic distribution, where a topic is randomly drawn based on the document's topic distribution. Secondly, LDA assumes that each of the topic has its own word distribution, where a word is randomly drawn from the word distribution of the topic selected in the previous step.

The characteristics of LDA have raised the attention due to its advanced technology that offers several advantages over manual coding. Firstly, LDA model does not require predetermined word dictionaries or topic categories, instead it relies on the frequent words that appear together in the corpus to be semantically related (Brown et al., 2020). Secondly, LDA functions as unsupervised machine learning framework, where the framework does not depend on predetermined categories by merely inputting textual content into the model suffices (Yang, 2024). Thirdly, LDA has the capability to scrutinize the quantitative distribution of an abstract across various thematic areas (Yang, 2024). Nevertheless, LDA does not directly provide the names of the topic identifies, instead it only generates the list of keywords for each topic. In assigning the names of the topics, one approach is to manually review the keywords and articles associated with each topic (Yang, 2024; Madah Marzuki et al., 2024).

In accounting and finance, the application of LDA model becomes an interest of the researchers. The earlier study by Huang et al. (2015) used the technique to examine the topical differences between conference call contents and subsequent analyst reports. Based on the sample of 17,750 conference call transcripts and over 160,000 prompt analyst reports from the year 2003 to 2012, they found that the conference calls contain an average of 29 topics while analyst reports contain an average of 26 topics. By using LDA, they found that the managers and analyst routinely discuss economically meaningful topics such as growth, financial performance (current and outlook), business outlook, cash flow and financing, and valuation. In addition, they also found that the managers and analyst discuss specific topics such as drilling in the energy industry, Internet advertising in the software industry, and drug trials in the health care industry.

Hoberg and Lewis (2017) examined whether misreporting firms provides abnormal MD&A disclosures and the underlying incentives for this behaviour. Using the sample from 1997 to 2008 from Accounting and Auditing Enforcement Releases

(AAERs), they revealed that relative to industry peers, the misreporting firms commonly disclose abnormal content. In their topic analysis, the AAER firms are more likely to grandstand manipulated revenue and R&D expenses performance during the misreporting years and less provide quantitative details about their financial results. In addition, AAER also discloses the topic related to liquidity challenges to mitigate the negative cost of capital effect. The managers also disassociate themselves during misreporting years by disclosing abnormally low levels of content relating to their participation in the firm's strategy and vision.

Brown et al. (2020) used LDA models to detect financial misreporting in US firms from the year 1994 to 2012. Using the sample of 131,528 10-K filings (AAERs, Auditing Analytic (AA) Restatement, 10-K Amendments (10-K/As)), the study compared the predictive power of topic against the traditional method by Dechow F-score and the textual style (style) features (Style). Using the aggregate 31 topic identified, the study found that the standalone topic performance has 68%, 61.6%, and 61.6% predictive power in predicting misreporting of AAERs, AA and 10-K/As, respectively. When examining the joint model of topic + F-score, the predictor of misreporting improved to 74.2% in AAERs samples, and 63.2% in AA samples, and 63% in 10-K/As samples. Meanwhile, when examining joint model of topic + Style, the predictor improved to 70.8%, 61.4%, and 66.9% in AAERs, AA, and 10-K/As respectively.

In Malaysia, the earliest study conducted by Madah Marzuki et al. (2024) used the combination of K-Means Clustering and LDA based topic modeling in analysing the narrative pattern among financially distressed firms for the year 2020. The result of the study revealed 7 distinct topics that have been discussed in MD&As report of financially distressed firms, such as Loss and impairment, non-performing activity, Business acquisition, etc. Additionally, this study highlighted similar financial characteristics that can be used in predicting fraud. Nevertheless, the sample of this study only focused on one year only.

3.7 Sentiment Analysis and Likelihood of Fraud

Sentiment analysis is defined as the analysis of public thought and opinions (Chauhan, 2017). The sentiment analysis presents the polarity of the text whether it has

a positive, negative, or neutral attitude. According to Gandía and Huguet (2021), the sentiment analysis in finance is linked to behavioral finance in which it requires the researchers to have great effort to understand how sentiment affects the decision-making process for individuals, institutions, and market. Accordingly, sentiment is divided into two categories which are investor sentiment and textual sentiment. The investor sentiment refers to the combination of belief about the future evolution of cash flows and investment risks, not justified by known and/or rational facts. The textual sentiment refers to the level of polarity of the text whether the texts are expressed in terms of positive or negative or other dimensions such as strong, weak, active or passive (Loughran & McDonald, 2011; Goel & Uzuner, 2016).

The sentiment analysis of accounting is theoretically affected by the behaviours of preparers and users of financial information. This is because when the information is presented in positive terms, it will result in more favourable evaluation as compared to the information presented in negative terms. Accordingly, the information transmitted affects the quality of the information and is expressed as the sentiment that affects the user's decision through the way they communicate the information (Gandía & Huguet, 2021). Due to these reasons, the sentiment analysis can provide accounting information to the researchers with a powerful tool to investigate the behaviour of the users and preparers of accounting information. According to Kearney and Liu (2014), textual sentiment consists of three sources which are media articles, internet messages, and public corporate disclosures/filings.

The media-expressed sentiment is positivity or negativity information contained in the news stories, in-depth commentaries or analyst reports. Generally, the sentiment in media talks about the economic conditions or financial market conditions and prospects, and individual industries and firms. With regard to the internet-expressed sentiment, internet posting becomes a useful source of sentiment due to the people spending a considerable amount of time every day reading and writing the internet posting about stocks. The internet-expressed sentiment is noisier than corporation-expressed or media-expressed sentiment because it contains more viewers of individual traders. Meanwhile, corporation-expressed sentiments are a natural source of textual sentiment where it uses corporate disclosures such as corporate annual or interim reports, or earning press releases and earnings conference calls (Kearney & Liu, 2014).

Research regarding the textual sentiment becomes an interest of the researchers. Given the complexity of fraud detection and absence of fraud indicators, this study discusses the highlight of research which has efficaciously used textual evaluation for fraud detection in accounting and different disciplines as to gain a richer information of language capabilities which have been determined to be effective for fraud detection. Cecchini et al. (2010) created dictionaries to predict the financial events; bankruptcy and fraud. The study used the sample of 78 MD&A of bankrupt firms and 78 control firms between 1994 to 1999 and 61 fraud firms and 61 non-fraud firms between 1993 to 2002. The study extended the VSM model to include WordNet and tuned the weights to discriminate between documents from two different domains (event and non-events). The study found “net income”, “gross margin” and “research and development” are the top list of discriminative power for bankruptcy. Meanwhile, “additional cost”, “cash generate” and “net increase” are the list of discriminative power of fraud. Overall, the result showed that the dictionaries are able to differentiate between fraud and non-fraud MD&A with the accuracy of 75%. In addition, the study documented differences between bankrupt and non-bankrupt with the accuracy of 80%.

The study further extended the methodology by comparing it with the quantitative methods which are Altman (1968) for discrimination of fraud and Beneish (1999) for bankruptcy. Both of the methods were tested using SVM. The result of Altman (1968) showed 66.67%. The study further combined Altman (1968) with text and achieved accuracy of 83.87%. In Beneish (1999), the result showed the accuracy of 40.16% and when the method was combined with text, the result showed the accuracy of 74.41% (Cecchini et al., 2010). The result showed that the MD&As contain information that is complementary to quantitative information to predict both fraud and bankruptcy (Cecchini et al., 2010).

Loughran and McDonald (2011) examined whether fraud firms and firms that self-report material weaknesses in internal controls differ in language usage differences. The study used two methods to calculate the word classifications which are proportional weights and term weighting procedure. Their word classifications are negative words from the Harvard Psychosociological Dictionary and six categories from a financial perspective: negative, positive, uncertainty, litigious, strong modal, and weak modal word categories of words list. The result using proportional weight indicated that none of the seven-word lists has a significant coefficient. Their study

found that the higher proportion of negative financial words or modal words are detected in material weaknesses in internal accounting control. Accordingly, when they use the term weighting procedure, the result indicated that fraud firms are significantly related to negative financial words, uncertainty, and litigious word. Significantly, firms that report a material weakness in internal controls are positively related to word categories except weak modals.

Hájek and Olej (2013) used financial ratios and sentiment analysis in predicting corporate financial distress. The study hypothesized that the use of sentiment is significantly more accurate in corporate financial distress prediction models. Financial distress is classified into two class problems which are investment grade (IG) and non-investment grade (NG). The study used six sentiment indicators which are negative, positive, uncertainty, litigious, modal strong and modal weak. The study found that the financially distressed firms have more negative, less positive, more uncertain, less litigious and more modal tone. Another study was conducted by Goel and Uzuner (2016) on the sentiment of the MD&A in fraud detection. The study used three different terms of sentiments namely polarity, subjectivity, and intensity. The study found that the MD&A of fraud firms exhibits both positive and negative sentiments, which on average contain three times more positive sentiment and four times more negative sentiment compared to truthful MD&As. Moreover, the MD&A of fraud firms significantly possess more subjective content compared to objective content. The results of fraud firms are characterised as using subjectivity, more adjectives and adverbs vis-à-vis non-fraud firms.

Li et al. (2023) hypothesized that the more positive and negative intonation of the language helps to identify financial fraud. Using the sample of MD&As text in the 2020 accounting reports of Chinese manufacturing listed firms including state owned firms and non-state-owned firms, the study compared three models which are logistic regression model, XGBoost model, and MLP NN model. The result found that positive sentiment is one of the significant indicators in these three models and commonly significant in Chinese manufacturing firms. The author concluded that the positive sentiment is negatively related to financial fraud. Meanwhile, Faccia et al. (2024) conducted three case studies of fraud firms namely Wirecard, Tesco, and Under Armour in detecting financial statement fraud. The study measured financial fraud using polarity measures (measures the overall positivity or negativity of the text) and

subjectivity (the degree of personal opinion and bias). Based on the analysis, the study found that in Wirecard, the polarity and subjectivity are consistent from the year 2014 but slightly decrease in 2018. The persistent tone might be due to maintaining the investor confidence. Meanwhile, for Tesco, the polarity and subjectivity increase in 2014, might be due to symbolize an attempt to project an optimistic picture with the actual financial situation. On the other hand, Under Armour shows a decrease in polarity and no clear pattern of subjectivity in fraud year. The inconsistency reflects the complexity of maintaining a fraudulent façade, though it is less conclusive.

The use of sentiment analysis techniques provides a new perspective, complementing the quantitative information that has been traditionally used (Kearney & Liu, 2014) especially in the accounting and finance. Analysing the sentiment of corporate disclosures is of interest to the extent that the tone in documents may contain hidden cues about the actual situation of firms, which cannot be explicitly shown by financial statements, such as financial constraints (Hájek & Olej, 2013) or accounting irregularities that may lead to fraud (Goel & Uzuner, 2016). Therefore, sentiment analysis can contribute to research in accounting because of the signaling effect of language and tone used in the documents.

3.8 Sentiment Analysis Approaches and Tools

The analysis of sentiment as a research technique requires specific methods to extract sentiment from text. According to Chauhan (2017), there are three approaches used in the classification of text which are Machine learning, Lexicon based, and hybrid approaches. These three approaches exhibit different techniques in extracting the sentiment from text. Figure 3.2 shows the summary of the sentiment analysis approaches.

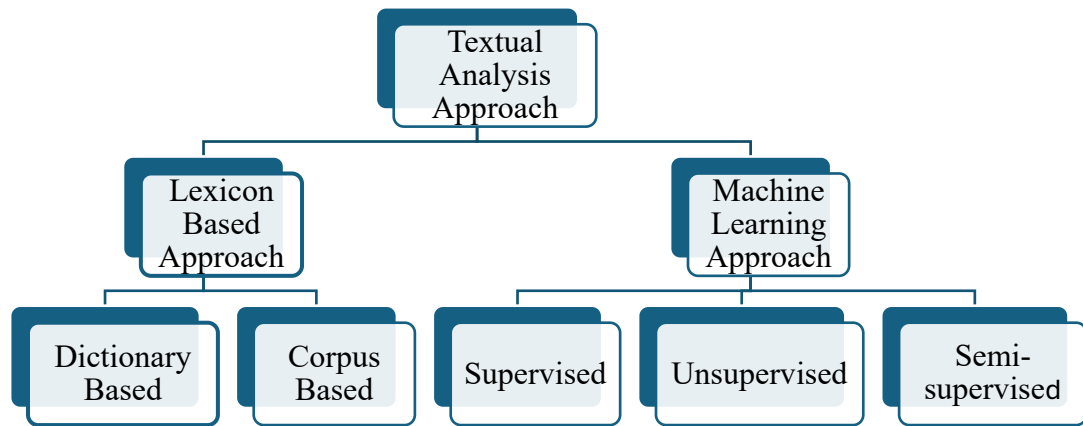


Figure 3.2 Sentiment analysis approaches

(A) Lexicon Based Approach

The most common approaches used are lexicon based and machine learning (Gandía & Huguet, 2021). There are two methods in lexicon-based approaches which are dictionary based and corpus based. The first category of lexicon-based approach is the dictionary-based method, where the dictionary is manually built by the text editor with some basic words that are assigned with positive or negative values (Chauhan, 2017). The dictionary approach is also known as bag-of words approach in which the tabulation of the words from a document into list discards all information that can be distilled from word sequences (Loughran & Mcdonald, 2016). The use of dictionary in measuring the tone of the text has several advantages. Firstly, the subjectivity of the researcher is avoided after the dictionary is selected. Secondly, the method scales for the large sample have computer program that tabulates the frequency of word counts. Lastly, since the dictionary is publicly available, it is easier for the researchers to replicate their analyses (Loughran & Mcdonald, 2016).

In accounting and finance, there are four different word lists that have been extensively used by researchers which are *Henry List*, *Harvard's GI*, *Diction*, and *Loughran & Mcdonald (2011) (hereafter LM dictionary)* (Loughran & Mcdonald, 2016). The recent dictionary that has been used includes SentiStrength and SentiWordNet (Esuli & Sebastiani, 2006). The *Henry Word List* were created by examining the earning press releases for telecommunications and computer services industries (Loughran & Mcdonald, 2016). This dictionary has obvious weakness where it has a limited number of words contained in the list, i.e. it has only 85 negative words (Loughran & Mcdonald, 2016). Meanwhile, *Harvard GI Word List* is a software that

maps text files based on the several dictionary categories (Gandía & Huguet, 2021) that contain 4,187 negative words (Loughran & McDonald, 2016). Loughran and McDonald (2011) argued that 75% of the words in *Harvard GI* do not have pessimistic meaning in the financial context. For example, *Harvard GI* negative words, such as *depreciation*, *liability and foreign*, are not predominate in 10-K filings as they do not have negative meaning when appearing in annual report. In addition, the *Harvard GI* negative words merely act as proxies for specific industry. The words like *cancer*, *crude*, and *mine* are merely a proxy for the oil, pharmaceutical, and mining industries. Thus, Loughran and McDonald (2016) suggested that the word list should be used in measuring sentiment of business text rather than financial context.

The *Diction Optimism and Pessimism (Diction) Word Lists* is similar to *Harvard GI*, but this dictionary has 35 different subcategories (Loughran & McDonald, 2016). According to Loughran and McDonald (2015), the vast majority of *Diction Word Lists* are likely misclassified. The word ‘respect’, ‘power’, and ‘trust’ are the top 10 words frequently used in *Diction Word Lists*, but it does not have positive meaning when the managers use it to describe the current or future operation. In addition, over 45% of all the *Diction Word Lists* use the words ‘not’ and ‘no’, in which it is the common stop word in the business context and does not generally indicate negative tone. On the other hand, the *LM dictionary* is created with 6 different word lists which are negative, positive, uncertainty, litigious, strong modal, and weak modal (Loughran & McDonald, 2011). The *LM dictionary* is relatively comprehensive in which no commonly appearing positive or negative words are missing (Loughran & McDonald, 2015; Loughran & McDonald, 2016). The word lists created contain only words that are potentially used by managers in 10-K filings and have financial communication in mind (Loughran & McDonald, 2016).

The second category of lexicon-based dictionary is Corpus-based where this method uses the word list as a general-purpose sentiment lexicon for a specific domain (Chauhan, 2017). The corpus-based approach uses statistical or semantic approaches. Among the popular corpus-based approach is SentiWordNet (Esuli & Sebastiani, 2006). The main idea of this approach is to automatically determine whether the text opinion has a positive or a negative connotation. The SentiWordNet assigns three numerical scores to each WordNet synset which re the degree of positivity, negativity, and objectivity of the text.

(B) Machine Learning Approach

Machine learning approach is part of artificial intelligence (AI) usually used in computational science and mathematics (Gandía & Huguet, 2021). There are three types of machine learning methods which are supervised, unsupervised, and semi-supervised methods. The supervised learning method is an algorithm trained which is able to predict the output for every new input (Chauhan, 2017). The supervised learning uses regression and classification techniques to develop a predictive model. Among the supervised machine learning techniques are SVM, Neural Network, Naïve Bayes, and Decision Tree. Meanwhile, the unsupervised learning technique uses the classification of text. The common unsupervised learning technique is clustering while the popular variant of clustering is K-means clustering. Among the popular tools of unsupervised machine learning is RapidMiner Studio. The RapidMiner Studio is a combination of machine learning and big data for better analysis (Devipriya & Kalpana, 2019). The RapidMiner Studio offers several advantages. Firstly, the software offers a robust and very powerful tool that has plenty of features. Secondly, the software has a visual workflow designer that enables the user to create, design, and deploy analytical processes, virtual presentations, and models. Thirdly, the software is able to create plans and models with a strong set of functionalities and tools to extricate or extract critical statistics and information (Devipriya & Kalpana, 2019). Lastly, the semi-supervised machine learning is the combination of supervised and unsupervised learning where the classification of data uses a large amount of labelled as well as unlabeled data (Chauhan, 2017).

3.9 Corporate Governance and Likelihood of Fraud

Corporate governance is defined as the process and structure used to direct and manage business and affairs of the firm towards promoting business prosperity and corporate accountability with the ultimate objective of realizing long-term shareholder value while taking into account the interest of other stakeholders. In other words, the corporate governance is the system that shows directions between management, boards, shareholders, and stakeholders by providing proper structure in achieving the organizations objectives as well as achieving optimal performance (Lutui & Ahokovi, 2017; Devarajar et al., 2022). Accordingly, governance indicates the overall guidance of the organizations in ensuring compliance with obligations (Lutui & Ahokovi,

2017). In addition, corporate governance is also seen as a set of mechanisms to help stakeholders from opportunistic behaviour of managers (Hasnan et al., 2021). The good corporate governance practices are influenced by its characteristics which focus on the accountability, transparency, and responsibility of the stakeholders (Devarajar et al., 2022). Costa (2017) stated that corporate governance is issued as a tool or mechanism of monitoring which controls the shareholder's interests and assures that the resources being used are properly managed by aligning its purpose and proper disclosure must be done by managers to ensure its accountability.

Effective governance is important because it is an essential element of market discipline (Kaituko et al., 2023) and it is one of the elements that the big firm collapsed due to fraud (Devarajar et al., 2022). The corporate governance can function properly if there is a balance between three important elements which are board structure, ownership structure and corporate control (Kaituko et al., 2023). If corporate governance mechanisms achieve its best practices within the balance of governance, the firms are likely to achieve optimum growth without incurring management problems, therefore this increases firm's wealth, generates greater number of job opportunities and economic activities that contribute to the development of the country (Vargas-Hernández & Teodoro Cruz, 2018). However, poor corporate governance is defined as any activity that makes corporate governance procedures ineffective, which is expected to lead in business failure, such as FFR (Madah Marzuki et al., 2019). The major fraud cases, such as Adelphia, Royal Ahold, Enron and WorldCom, are attributed by the corporations' poor corporate governance (Girau et al., 2022). Poor corporate governance suggests that an organization's monitoring and controlling mechanisms are ineffective, which will give its management the chance to commit fraud (Girau et al., 2022). According to Zam et al. (2014) and Rezaei and Rostami (2022), when the corporate governance is weak or control mechanism is ineffective, there is a likelihood of the management to commit financial transgression.

Empirically, according to Hasnan et al. (2013) who provided initial evidence of FFR in Malaysia, the firms that engage in fraudulent activities have a high level of earnings management prior to committing fraud. Besides, the firms might be involved in fraudulent activities because of accounting failures and poor corporate governance (Hasnan et al., 2014). In addition, Md Nasir et al.'s (2018) study based on a sample of 65 fraud and non-fraud firms found that the firms are engaged in real earning

management activities prior to the FFR. In Malaysia, the different structure and institutional environment have substantial implications for corporate governance and FFR (Hasnan et al., 2013). This includes firms with concentrated family ownership, group of firms with pyramid-ownership structures, the use of nominees to conceal identities of influential shareholders, the presence of politically connected firms and cross-directorships on the boards of Malaysia publicly listed firms (PLCs) (Hasnan et al., 2013). With these institutional features together with poor investor protection, this creates conditions that contribute to FFR.

The series of corporate collapsed resulted from the loopholes and shortcomings of corporate governance and this lead to the improvement of the laws and regulations (Devarajar et al., 2022). According to Jensen and Meckling (1976), the FFR can be mitigated with two types of internal governance mechanisms, namely agent-side and control side mechanisms. Agent-side mechanisms refer to the incentives provided to the executive such as share ownership to align the interests of agents and principals. Meanwhile, control side mechanisms refer to the board of directors as the main internal monitor to reduce the agency problems. The board carries out their duties and responsibilities by appointing or removing managers, determining their salaries, and monitoring their activities to prevent FFR (Ebaid, 2023). In Malaysia, a new MCCG 2017 was released and took effect on April 26, 2017, replacing the earlier MCCG 2012. The new MCCG 2017 introduced several substantial changes and recommendations to improve the standards of corporate governance in Malaysia. This includes the characteristics of the board such as board independence, board tenure, board diversity, board meetings, and board remuneration. The MCCG also highlighted changes of the Audit Committee and recommendation to establish Risk Management Committee (RMC) in the firms.

Board of directors is the highest management body in an organization that bears the responsibilities to exercise leadership, supervision, and control to achieve the business continuity and prosperity (Girau et al., 2022; Ebaid, 2023). The board of directors plays a crucial role for setting the firm's goals and strategies that are aligned with the interest of shareholders (Ebaid, 2023; Salleh & Othman, 2016). According to Devarajar et al. (2022), the managerial decision in competitive business environment in an organization is influenced by how well the board is organized. The board of directors should acknowledge the business judgement rule where the directors must act

in good faith and sincerely believe that their actions are in the firm's and shareholders best interest (Salleh & Othman, 2016). Under business judgement rules, the board of directors have four duties to get along with which are; (1) Fiduciary duty where the directors have to conduct business or activities to increase the firm's profit and share value; (2) Duty of loyalty and fair dealing where the directors have to keep their own personal interests to satisfy the shareholder's interest; (3) Duty of care where the directors' have to always be alert about any situation occurred and are being informed about all the activities; and (4) Duty of supervision where the directors have to create and implement ethics or rules and ensure the rules are properly disclosed to all the firm members and the staff (Salleh & Othman, 2016).

3.9.1 Board Characteristics and Likelihood of Fraud

3.9.1.1 Board Independence and Likelihood of Fraud

The independence of board of directors plays a crucial role in monitoring unethical behaviours in the organization. Independence is defined as a quality that can be possessed by individuals and is an important element of professionalism and professional behaviour (ACCA, 2011). Independence refers to the avoidance of being influenced by vested interest and to being free from any limitation that might impair the decision to be made. Accordingly, independence is an ability to "stay apart" from any influences and to be free of managerial capture, and able to make the right decision on the issue that arises (ACCA, 2011). The independent element is an important aspect in a firm's corporate governance in order to avoid the firms from being dominated by top executives who are intent in pursuing their personal interests which might lead to fraud occurrence (Zam et al., 2014). According to Ismail et al. (2020), the board independence is defined as a board of independent directors who has no relationship with the firm, either being appointed as a professional advisor by the firm or having any business relationship with the firm such as customer or supplier (Haron et al., 2021). The independent directors are not involved in the business operations but their role is to provide the outsiders contribution and oversight to the board. The independent directors are responsible to reduce potential conflict of interest in an organization (Girau et al., 2022).

Agency theory as contended by Devarajar et al. (2022) noted that board independence is an important ingredient to achieve statutory board responsibilities because of their crucial roles in ensuring the strong corporate governance framework. In addition, the presence of independent directors are also lauded as an essential mechanism in combating corporate fraud (Girau et al., 2024). Bursa Malaysia enforces the requirement of representation of independent directors to ensure the effectiveness of the board. Abdullah et al. (2016) evidenced that monitoring and advisory roles as independent directors are important criteria to be independent directors. This is because it is important for independent directors to have the ability to protect minority shareholders, challenge management, provide objective views and opinions, ensure good governance, complied with Bursa Malaysia and be transparent with all shareholders. The advisory roles as independent directors are crucial because the independent directors are expected to have suggestions, advice and ideas especially during the decision-making process. In addition, independent directors can act as a source of networking and utilize the existing capacity of experience in bringing the firm to the next level (Abdullah et al., 2016).

In Australia, the role of independence directors has taken significance since the 1980s. The requirement of independence of directors is highlighted in the study of McCabe and Nowak (2008). The independent directors are (1) able to demonstrate the independence in which the independent director must demonstrate an independence in mind, independence in source of information, independence in relationship with the organization and independence with income, (2) must be responsible to shareholders, and (3) must be appointed for a limited time and able to allocate sufficient time for board duties. According to Haron et al. (2021), independence of income means that independent directors should have their own source of earnings and do not rely financially on any single board. Meanwhile, independence in mind means that independent directors must possess diverse and critical thinking skills to effectively question and challenge the decisions of senior management. Lastly, independence of sources of information means that independent directors should have access to internal information and management resources to make well-informed and unbiased decisions. The involvement of an independent director on board is important to the firm for the purpose of monitoring management in an acute agency setting. The firm should appoint

the independent directors who could exercise proper oversight function in monitoring governance, internal control and risk management (Faatihah et al., 2016).

The degree of board independence is linked to its composition. The higher composition of independent directors is generally related to the more effective monitoring of the board executives' activities and better decision control on behalf of the shareholders (Girau et al., 2022). The percentage of independent directors in organizations is important because they would monitor management in order to solve agency problems and instate decision control over top management in preventing fraud (Jensen & Meckling, 1976; Beasley, 1996). The independent director is not involved in day to day operation, therefore it is believed that the independent directors are not subjected to any pressure of the internal organization of the firm (Razali & Arshad, 2014; Ebaid, 2023). Thus, they are more likely to act independently and act in the shareholder's interest. In order to ensure the responsibilities of the board are effectively fulfilled by the independent directors, the composition of independent directors is frequently updated by MCCG since 2007. The MCCG (2007) requires the firms to have at least one-third of the directors as independent. The MCCG (2012) requires the board to comprise a majority of the independent directors, while MCCG (2017) requires at least half of the board to be comprised of independent directors. MCCG 2017 also highlights that Large Firms should comprise majority of independent directors. As for the MCCG (2021), no amendment has been made regarding the composition of the independent directors.

Prior studies have documented mixed evidence on the involvement of independent directors on board. Earlier study conducted by Beasley (1996) in United States evidenced that the percentage of independent directors on board is lower for fraud firms than no-fraud firms. Board independence has proven to be a key factor that influences the quality of financial reporting. Accordingly, Uzun et al. (2004) and Carcello and Nagy (2004) also documented that non-fraud firms have larger percentage of outside directors as compared to fraud firms. Nevertheless, the study by Persons (2005) reported the insignificant relationship between independence of directors and fraud because the independence of Audit Committee is more important than board independence in reducing the likelihood of fraud. In China, Chen et al. (2006) documented that the large proportion of outside directors are less likely to commit fraud. However, Yang et al. (2017) found that the proportion of independence directors

are not significantly related to fraud, suggesting that it does not play a role in reducing the likelihood of fraud. In the study of earning management, Wu et al. (2007) evidenced that the higher percentage of independence of directors on board can reduce the probability of earning management activities in a firm. This is because an organization with a higher percentage of independent directors than one third tends to generate better quality of financial reporting.

In Nigeria, the studies of Ilaboya and Lodikero (2017) and Moses (2019) found a negative relationship between independent board of directors and fraud. They believed that the higher number of board independent is more likely to kick against fraud if they are aware of the occurrence and the board members can reinforce the control mechanism of the board to reduce the likelihood of fraud. In addition, the study in France conducted by Khoufi and Khoufi (2018) highlighted that the larger board gives an advantage to the board to increase the efficiency of the control and promotes a more efficient management to prevent the fraudulent practices. The recent study in Indonesia also documented that a composition of board independent has a negative effect on the FFR. Sudarman et al. (2019) argued that when there is a tight control by the independent directors over the management, the possibility of fraud will be reduced. The study is supported by Abbas et al. (2021) who found a positive relationship between board independent and financial statement integrity. They explained that when the management is effective in supervising the management, it will give positive impact on the financial credibility and at the same time preventing FFR. According to Mousavi et al. (2022), board independent is considered as a primary determinant of board efficiency. The independent directors are motivated to monitor the behaviour of managers on unethical behaviour when they intend to have good corporate governance mechanism in the firm. Additionally, the conflict of interest between shareholders and managers is less likely to occur when the firms have a large percentage of independent directors. Moreover, external supervision and control over the board members also strengthen the relationship (Rezaei & Rostami, 2022). Kaituko et al. (2023), Amin et al. (2022), and Ebaid (2023) also found board independence has a negative effect on the likelihood of fraud. According to agency theory of Jensen and Meckling (1976), the independent directors are an efficient monitoring tool to protect shareholders and discourage the managers from acting in their own best interest, which decreases the agency cost. The higher independent directors on board are better in carrying out the

monitoring function and improving the firm's performance (Kaituko et al., 2023). Apart from that, Rathnasiri et al. (2018) also evidenced that board independence has a negative association with the relationship of board gender and financial statement fraud. The lack of familiarity or financial relationships with the management would minimize the fraudulent activities. The presence of independent directors would help in reliability, faithful representation and timeline of financial reporting (Rathnasiri et al., 2018).

In Malaysia, the research relating to independent of directors and FFR presents a mixed result. The earlier study conducted by Shan et al. (2013) found insignificant relationship between board independent and fraud. The study evidenced that the independent directors may not prevent the fraud occurrence in Malaysia. The study is supported by Hasnan et al. (2014) who found a similar result. They raised questions of whether the independent directors in Malaysia are truly independent or just to fulfil the MCGG requirements. This can be explained where the directors are chosen according to their interest in the CEO/insider directors rather than according to their director's qualification or track record. Therefore, the directors are not truly independent and they are incapable of protecting the shareholders' interest. In addition, Johari et al. (2009) evidenced that the board independence influences the level of discretionary accrual which indicates that the board independence is negatively related with the accruals. The study also found that the minimum level of board independence could influence the effectiveness of the governance, where the study concluded that minimum composition of independent directors, which is one third as suggested in MCGG 2012 is not adequate to monitor the management on earning management.

In addition, Aziz et al.'s (2017) study on the relationship between board independent and financial restatement found insignificant result. They argued that the firms simply comply with the requirement by MCGG in the form rather than the substance, thus leading to insignificant result. The argument is supported by Devarajar et al. (2022) and Sadique et al. (2019) who also found similar findings of board independent in reducing the likelihood of fraud. A recent study by Girau et al. (2022) also exhibited insignificant findings, indicating that the independent directors may not prevent the occurrence of fraud in firms in Malaysia. The insignificant result is due to the decision of the firms to appoint the independent directors by merely complying to the requirement of Bursa Malaysia and MCGG requirements.

Nevertheless, the study of Razali and Arshad (2014) found a contradicting result. They found that the independent non-executive directors are negatively related to fraud because it can be an effective corporate governance mechanism to improve the quality of financial reporting, thus reducing the likelihood of fraud. The finding is supported by Ghafoor et al. (2019) which also documented that if there is more independent directors on board, the quality of the financial reporting will be high and the likelihood of fraud will be low. Ismail et al. (2020) also found a significant negative relationship between board independence and earning management practices among financially distressed firms in Malaysia. The study concluded that having a large percentage of independent directors on board will lead the firm to perform earning management and suffer financial distress.

3.9.1.2 Board Tenure and Likelihood of Fraud

The tenure of directors has gained the attention of researchers in both Malaysia and abroad. The expert and market participants show considerable concern about the long-tenure directors (Huang & Hilary, 2018). Tenure is one of the characteristics of the board of directors owing to their relationship with commitment, experience, and decision-making process in the firms (Sun & Bhuiyan, 2020). The tenure is associated with familiarity and strategic changes, which bring expertise and confidence to the firm's decision making. The long-term directors would create undue differences to the management while short tenure directors would be ineffective in their roles (Huang & Hilary, 2018). Accordingly, short tenure directors may face less significant governance problems than long tenure directors; however, short tenure directors have incomplete understanding about the firm's business and history which would result in ineffective monitoring and advisory (Huang & Hilary, 2018). According to Jia (2017) and Livnat et al. (2020), longer tenure directors are associated with two benefits which include better monitoring management because they are less susceptible and less likely to be controlled by manager. Meanwhile, the other stream is longer tenure directors are better in advising because the tenure allows them to learn more about the firm's operations and understand the economic environment in financial reports. Nevertheless, longer tenure directors could affect the objectivity of the board to monitor the manager, thus resulted in decreasing the independence of the board and contributed to the erosion of firm value (Livnat et al., 2020).

Limited studies have established the links between board tenure and firm outcomes with likelihood of fraud. Earlier study by Vafeas (2003) presented conflicting views regarding the effect of directors' tenure on their behaviour and effectiveness of the board (Liu & Sun, 2010; Roden et al., 2016). The long tenure of the directors is associated with greater experience, commitment, and competence because the directors provide important knowledge about the firms and business environment. Moreover, forcing directors to retire leads to a waste of talent and experience (Vafeas, 2003). This is because the tenure of a director can be expressed with the level of knowledge possessed by the director about the firm and the familiarity between firm and the director (Kim et al., 2013; Yaacob & Wan Mohd Yusof, 2020). In addition, the longer tenure of the director, the better opportunity to gain more knowledge about the firm which may result in the director giving the best performance and increasing firm value. The longer service of the director on board can provide better knowledge about the firm and the directors are efficient in decision making (Kim et al., 2013). Apart from that, Jia (2017) augmented that longer tenure directors are more tolerant of short-term failure which can be shown as important factor in motivating innovation. Nevertheless, a major criticism is that longer tenure directors fail to refresh to the technological changes and development so that they are unable to offer new insights into corporate issues.

Kim et al. (2013) suggested that the frequent turnover of board of directors should be encouraged by introducing the term of limits to reduce the likelihood of creating an entrenched board. According to Gao et al. (2017), the director tenure has an ambiguous effect on the outside director's to detect the fraud because they have more times, opportunities and more familiar to the firms, so they have better monitors based on their knowledge of the firms and management. In addition, the longer tenure directors become laxer in monitoring the firms' management because they may simply overlook the management misbehaviour and choose to stay without reporting the fraudulent activities (Gao et al., 2017). Apart from that, the long tenure directors may have good reputation that builds over time. These directors are likely to focus on job performance as the poor performance will affect their career reputation (Liu & Sun, 2010). Liu and Sun (2010) argued that as business operations are becoming more complex and changing rapidly, it is difficult for the long tenure directors to keep with the technology changes, financial dealings and business strategies. The new directors

can bring fresh ideas and critical thinking to the board, but longer tenure may lack the experience of dealing with the new issues.

Huang and Hilary (2018) in their study on board tenure and firm performance documented that a moderate board tenure will enhance the firm performance through accumulated knowledge and experience; thus, increases the firm's value. Accordingly, the maximum tenure of the board of directors should not be more than 10 years of tenure to achieve the maximum firm value while the shorter tenure would lead to ineffectiveness of the board. Various corporate bodies have already implemented the tenure limitation in their organizations to maintain their effectiveness in monitoring and advisory roles. For example, the UK Financial Reporting Council (2016) stated that the independent directors should not serve the board for more than 9 years. If the independent directors continue to serve the board, they are subject to annual re-election. In addition, the firm should disclose the reasons for re-elected of such directors. This is similar to Hong Kong which requires the listed firms to obtain an approval for re-election of the independent directors who serve the board more than 9 years (Huang & Hilary, 2018).

In Malaysia, the regulator is not left behind in introducing the tenure limit of the independent directors. In MCCG (2012), the tenure of the independent directors must not exceed 9 years of service. If such directors continue to serve the board, they can serve as non-dependent directors. In 2017, MICG once again take further steps to improve the tenure of the independent directors. Through MCCG (2017), the tenure of the independent directors is limited to 9 years. The directors may remain non-independent directors. If the board intends to remain independent directors beyond 9 years, they should obtain an annual shareholder's approval. The new revision of MCCG (2021) continues with the limit of 9 years. However, the independent directors are not given no further extension. Nevertheless, annual shareholders' approval through a two-tier voting process is given if the board intends to remain as independent directors beyond 9 years of services.

Empirical research on the tenure of the directors found a mixed result. Vafeas (2003) conducted two sets of analysis which investigate whether director quality improves the director's tenure (expertise hypothesis) or deteriorations (management-friendliness hypothesis). The group of directors were categorized into three groups

which are Senior (longest tenure with twenty years tenure and more), Median, and Junior (shortest tenure). The result showed that the seasoned directors are more likely to be friends with the management, thus resulted in reducing their independence and oversight capacity, which supported the management-friendliness hypothesis. In addition, the long tenure directors are more likely to fall under category “grey directors” (consultants, lawyers, bankers, or individuals with special relationships to the firms). These longer tenure directors may create conflict of interest and reduce independence from management. This would result in higher likelihood of the firms to commit unethical behaviour. Vafeas (2005) documented that for longer tenure of committee members, the directors may become entrenched with their position, potentially to protect the management rather than shareholders.

Beasley (1996) in his study suggested that the likelihood of FFR decreases as the number of years of board service for outside directors increases. This is because the years of service of the outside directors may increase the ability of the directors in monitoring the management effectively and at the same time prevent FFR. Kim et al. (2013) investigated the effectiveness of the independent audit committee in constraining earning management. However, the study found negative and significant coefficient between independent audit committee tenure and earning management. The study found that the independent audit committee with a high proportion of long tenure directors is more effective in constraining earning management than that with low proportion of long tenure directors. Liu and Sun (2010) in their study on the effect of director tenure on the effectiveness of independent Audit Committee in constraining earning management also found that higher proportion of long tenure directors is more effective in constraining earning management. A recent study by Sadique et al. (2019) also found that chairman tenure reduces the likelihood of fraud. They evidenced that the longer tenure chairman has more knowledge and experience to deter the fraud. Additionally, since the longer tenure directors have good reputation, they are more likely to be reluctant to take risks that could destroy their reputations by engaging to unethical behaviour.

In contradict, Persons (2005) documented that financial statement fraud is increasing when the independent of Audit Committee has shorter tenure. They argued that shorter tenure implies that the directors may lack seniority on the board and adversely affect the ability of the independent directors to monitor the top executives.

In the same case, the study by Chen et al. (2006) documented that the shorter tenure of the Chairman, the more likely it is to commit fraud. This is because, the Chairman with short tenure has less experience of the business and they may be less able to deter fraud. However, Persons (2006) evidenced that the longer tenure of CEO on board, the independence of the board is greatly compromised as they can exert an undue influence over the other board members. The study by Wan Mohammad et al. (2014) also suggested that the longer tenure directors are associated with higher earnings management. The longer tenure CEO will engage in earnings management to meet the stakeholders' expectations and maintain their reputation in the market. A recent study by Jayanto and Widyastuti (2020) found that board tenure does not influence the FFR. They documented that the increase in board tenure confirms the knowledge and expertise of the board but does not influence in detecting FFR.

A recent study by Yaacob and Wan Mohd Yusof (2020) on 32 fraudulent and 32 non-fraudulent firms in Malaysia revealed that the long director tenure is significant and positively associated with corporate fraud. The study argued that the longer tenure offers the directors the opportunity to commit fraud even though the long tenure also gives them enough time to gain knowledge and allows them to broaden their expertise. The finding is supported by Wang et al. (2024) who found that the CEO tenure is significantly positive in fraud commission models.

3.9.1.3 Board Gender and Likelihood of Fraud

Board diversity has been an intense debate over the decades due to the role of women in corporate board (Orazalin, 2020). Diversity is a multi-dimensional concept (Firoozi et al., 2016) where it is important to highlight in the board. Diversity means the variety of thoughts, geography, age, career experience as well as the more traditional categories of "gender and ethnicity". According to Guizani and Abdalkrim (2023), board gender plays a significant role in strategic decision making as it monitors the manager's behaviour. Accordingly, female directors are considered as one of the governance tools that could influence the quality of the governance, transparency, monitoring and protections of shareholder's right. Moreover, female directors can improve the independence of the board as well as the monitoring roles in the firm (Orazalin, 2020).

Women generally are more risk averse who take less risk (Wahyuningtyas & Aisyaturrahmi, 2022; Wang et al., 2022; Maulidi, 2023; Byrnes et al., 1999), less optimistic, have different core values (Adams & Funk, 2012) and ethical sensitivity (Orazalin, 2020), more conservative and less aggressive (Ho et al., 2014; Wahyuningtyas & Aisyaturrahmi, 2022). Gender differences have been discussed in many literatures to identify the specific characteristics between men and women. The psychology report by Byrnes et al. (1999) stated that women are risk averse than men in majority of environment and tasks. The risk aversion and risk taking may influence the economic outcome (Allemand et al., 2017). In addition, female directors are open to seek advice from the experts resulting the risks of breaching laws or regulations are lower (Wang et al., 2022). Accordingly, with the presence of women on board, the firms are less likely to underestimate the risks of fraud and lawsuits.

In a study of Byrnes et al. (1999), the report stated three theories and expectation regarding gender differences in risk taking. The first category is the theory that explains the difference between people who regularly take risks and people who regularly avoid risks. In this theory, the direction of gender differences does not vary by context which men would always take more risks than women. The second category is the theory that explains the differences between situations that promote risk taking and risk aversion situations. In this theory, people seem to prefer the risky situation over a thing when the choices are framed in a positive way. The third category is the theory that explains the differences among people and the situation in promoting risk taking. In this theory, it describes the reason why only certain people take certain risks in certain situation. People take those risks because they believe that they will be successful and value success as they have different expectation and values. The result of the study clearly supported the idea that women are risk averse than men. The study clearly supported the argument of risk taking as an “*attribute of the masculine psychology*” (p.66) that evolved in response to the competitive demands of primate societies.

Adams and Funk (2012) highlighted those women have different core value than men. This is because male directors are more caring about the achievement and power while female directors are more universalism, benevolence and stimulation. However, female directors in the sample of study are less care about security and tradition than man directors. Therefore, the study supported the idea that “*men consistently attribute more importance to self enhancement values (achievement and*

power), whereas women emphasize self-transcendence values (universalism and benevolence)” (p.220). Croson and Gneezy (2009) in their literature highlighted that managers and professional populations are in exception when it comes to decision making characteristic where women and men show similar propensity and make similar decision. Besides that, women also have ethical value which can promote accounting conservatism (Ho et al., 2014). In financial matters, women can become an internal whistle-blowers where they more likely to speak out against unethical behaviour (Wang et al., 2022). In relation to corporate fraud, female directors do not directly stop the fraud attempt, instead they exert influence in the firms and set an improved standard of morals (Maulidi, 2023).

According to Ilaboya and Lodikero (2017), the role of women on the board may be viewed from two perspectives which are positive and negative roles. In the positive view, the increase of the women representation on board is seen as idea that can help in reducing the financial statement fraud because women are capable in multitasking. In addition, women are better in the acquisition of voluntary information that can help in reducing the information asymmetry because they are more cautious, risk-averse and less aggressive in decision making. On the other hand, in the negative view, the women representation in heterogeneous board may create communication problem due to the low level of identity. Since the women are less risk taking due to the nature of risk averseness, this resulted in low level of economic resources and below average performance.

Some countries have already established quotas for women on board such as Norway which requires their listed firms to have at least 40% of women in boardrooms and have full compliance in 2009 (Khaw & Liao, 2018; Karim et al., 2023). In France, a new law called Loi Cope Zimmermann was adopted in 2011 which requires the public firms to have at least 40% of women on the board (Adams & Funk, 2012; Allemand et al., 2017). Other countries such as Belgium, Iceland and Italy have also mandated to have women on boardroom which ranged from 25% to 40%. Not to be left behind, the US also adopted policy that mandates public firms to disclose their diversity policy in 2010, followed by Canada in 2014 (Firoozi et al., 2016). Asian countries such as India, Japan and Singapore are also following the suit (Khaw & Liao, 2018).

Malaysian regulators also announced a policy that requires public listed firms to have at least 30% of female directors on board by 2016. Former Prime Minister of Malaysia Dato' Seri Najib Tun Razak has announced that Malaysian cabinet has approved the policy of corporate firms in private sector to have at least 30% representation of women in decision making (Madah Marzuki et al., 2019; Guizani & Abdalkrim, 2023). The policy was echoed in MCCG 2012 that focuses on the strengthening of the structure and composition of corporate board in which one of the recommendations is board nominating committee to ensure more women in the boardroom. However, as for June, 2016, according to Bursa Malaysia, the target ratio only reached 15.2% for the Top 100 listed firms based on their market capitalisation and 10.7% across the public listed firms (Khaw & Liao, 2018). Therefore, Securities Commission of Malaysia (SC) released new MCCG 2017 with the aim to increase the female director's ration of the Top 100 firms from 16.8% as of April 2017 to 30% by 2020 (Khaw & Liao, 2018).

The presence of women in corporate governance has left one to wonder how ongoing gender diversity efforts could change the corporate leadership. The decision made by female executives is different from the decision made by male executives (Francis, 2015). In the study of Srinidhi et al. (2011) on the earning quality and female participation on board, they found that greater female participation on board gives higher earning quality. This is because the earning quality is an important outcome of good corporate governance as demanded by stakeholders and at the same time the improvement constitutes an important objective of the board. Khaw and Liao (2018) also supported that the women on board are associated with less risk taking in which the women director can mitigate the risk-taking behaviour among Malaysian listed firms. The study supported that gender diversity can be one of the effective governance tools mainly in weaker governance environment like emerging market because women are more cautious, can change the decision-making dynamic of the boards, tougher in monitoring, more active in joining monitoring committees and more demanding for a higher audit quality than male directors. Some evidence suggested that many firms are reluctant to appoint women to leadership position because they are too risk aversion or conservative. However, in the study of Adams and Funk (2012), women leadership position does not satisfy the gender stereotypes. This is because, women directors act

like men directors which show that gender is not big deal in monitoring the organization.

Orazalin (2020) in their study on board gender and earning management documented that the firms with larger proportion of gender diversity tend to follow more conservative accounting practices. In the high litigious industries, the presence of higher proportion of women is seen to reduce the earnings management due to the reducing of information asymmetry and diminishing managerial incentives in manipulating the firm's earning. The finding is similar to Githaiga (2023) who documented that having women on board will increase efficiency of the board and reduce the earning management practices. The presence of women will also improve the firms performance as they have better monitoring skills (Amin et al., 2022).

In relation to financial statement fraud, the presence of women on board becomes an important tool in reducing the fraud. Kim et al. (2013) documented that the presence of female directors has a significant impact in modifying the board's behaviour and improving their oversight function. They found that with the addition of one female director on a typical board with ten directors, the probability of fraud is reduced from 50% to 30.4%. Cumming et al. (2015) in their study on the effect of gender diversity within firm's board on the likelihood of committing security fraud found that the women reduce the severity of fraud. Besides, the involvement of women in male-dominated industries can reduce the frequency and severity of fraud. Ilaboya and Lodikero (2017) also found significant negative relationship between board gender and fraud. The presence of women on board is known to be less taking, innovative, better at networking and less aggressive in decision making. Therefore, the quality of financial reporting is increased as well as reducing the likelihood of fraud.

According to Martins and Júnior (2020), the presence of women on board is seen as a good practice for the better quality of the board; thus, it should be a plurality in the gender. This is because the plurality will improve the board's performance in terms of understanding individuals among the board members and resulting in better-quality decision making. As such, the study found that the presence of women improves the efficiency of the board and at the same time reduces FFR. The finding is similar to Gao et al. (2017) who evidenced that the women have negative relationships with fraud. They noted that women directors are less likely to be in non-fraud firms but more likely

to depart fraud firms. This is because since women are more effective in monitoring financial statement activities, they are able to detect fraud, and thus they are more likely to depart fraud firms before public discovery of the fraud. Wang et al. (2022) also documented that higher women representation on board will reduce the likelihood of fraud and increase the fraud detection in the firms. According to them, women are less likely to be involved in unethical activities (Gupta et al., 2017; Liao et al., 2019; Wahyuningtyas & Aisyaturrahmi, 2022).

Recent study conducted by Kaituko et al. (2023) also documented that the higher percentage of women on board will reduce the likelihood of fraud. The finding is similar to Maulidi et al. (2023) and Maulidi (2023) who documented that the presence of women as corporate leaders will reduce the fraud in US. This is because women are more concerned about the moral sensitivities and tend to avoid fraud perpetration. Nevertheless, Ebaid (2023) found contradict result where the presence of women is negatively but not significantly related to the fraud in the Saudi Arabia. The insignificant result could be due to lower involvement of women on board. In Saudi Arabia, before 2016, the women have a very conservative society in which they are not allowed to work even if they have good educational qualification and able to take the leadership responsibility. Accordingly, they are not allowed to hold senior position whether in government sector or private sector (Ebaid, 2023). Rathnasiri et al. (2018) also found insignificant relationship between board gender and likelihood of fraud. However, the univariate analysis shows negative coefficient which indicates that the higher percentage of women would result in the decrease of FFR.

In Malaysia, there have been much research regarding the presence of women as a leader. An early study conducted by Kamarudin and Wan Ismail (2014) showed no evidence of audit committee gender on FFR. Kamarudin et al. (2018) found similar finding in which the presence of women is not related to the FFR. Hasnan et al. (2017) in their study on the effect of board characteristics and financial restatement also found insignificant result. Nevertheless, the study by Khaw and Liao (2018) on non-financial public listed firms from the year 2004 to 2014 found the presence of women on board relatively mitigates the likelihood of fraud. Accordingly, the presence of women is related to volatility of firm's return on Asset (ROA) of the three-year overlapping periods, difference between maximum and minimum ROA in three-year interval, stock return, and systematic risk.

Besides that, Ghafoor et al. (2019) and Madah Marzuki et al. (2019) also found negative association between women and fraud. They documented those women may provide diversity among the board members and reduce the likelihood of fraud. A recent study by Haron et al. (2021) found similar result. According to them, the presence of women may improve the firm's performance and better governance quality as women are more ethical and better in monitoring. Therefore, it may result in reducing the likelihood of fraud.

3.9.1.4 Board Remuneration and Likelihood of Fraud

The aftermath of the economic recession in 2008 has made the policymakers, scholars, and investors realized that the misuse of compensation packages raised major concerns about the accountability of the management, the effectiveness of board oversight and the involvement of the shareholders in public listed firms (Mumu & Saona, 2025). The remuneration and compensation are considered as one of the factors of corporate governance charged to shareholders as a cost and it serves as an incentive for the manager to efficiently carry out their duties and responsibilities as well as improving the performance of the firms to maximize shareholders value (Khatib et al., 2023). The excessive payment of remuneration to the directors has raised an issue among the minority shareholders, shareholders activist, regulators, and the public at large on their transparency on the remuneration policies disclosed (M. Y. Jaafar et al., 2014).

The remuneration or compensation is defined as packages tailored to the business leaders, senior management, and executive-level staff (Khatib et al., 2023). Dias et al. (2024) addressed three categories of remunerations which are fixed, variable, and benefits. Fixed remuneration is the salary or remuneration paid on a regular basis both in periodicity and amount. For example, basic salary, holidays, and bonuses. Variable remuneration refers to the amount that is associated with other periods resulting from performance including short-term and long-term results. Lastly, benefits do not represent the monetary transfer between employer and employee but rather in terms of, for example, pension plans, health insurance, and family support. According to Talha et al. (2009), the directors' remuneration consists of various remuneration packages such as basic salary, bonus, share option, restricted share plans, pension and meeting fees, benefits-in-kind, and etc. Kim et al. (2013) defined compensation to

outside board members as the combination of cash, stock and stock options. The base salary is “the standard remuneration that an executive receives in terms of his/her contract with the firm and it is not related to firm’s or executives’ performance” (Mallin, 2010, p.192 as cited Neokleous, 2012). Apart from that, remunerations can also be non-monetary benefits such as power, prestige or public recognition that is also quite important in corporate environment (Dias et al., 2024).

Inspired by agency theory (Jensen & Meckling, 1976), identifying the remuneration packages is a tool to manage conflict between shareholders and board members. The agency theory states that the shareholders are the owners of the firms, while the board of directors are hired to monitor and control the decision-making process on behalf of the shareholders, and the managers are responsible for overseeing the daily decision-making process. Accordingly, when the contract is based on reasonable compensation, the directors are more inclined to act in the best interests of shareholders (Radwan et al., 2022; Girau et al., 2022). However, conflict of interest occurs when both shareholders and managers try to maximize their own interest on the expense of the others. The shareholders aims to achieve higher firms value (Jaafar et al., 2014) and maximize the profitability of their investments (Dias et al., 2024) while the managers may take advantage of their power to use the firm’s asset to improve their lifestyles by living in luxurious perks (Christian Ionela Neokleous, 2015) and remuneration (Jaafar et al., 2014). Thus, in order to protect the interest and investment of the shareholders, appropriate actions should be taken to monitor the manager’s behaviour which requires the manager to disclose their perks and remuneration so that they do not misappropriate the firms’ assets and expropriate shareholders’ wealth through excessive compensation (Jaafar et al., 2014).

Board of directors’ remuneration and compensation is one of the incentive acts for the management to commit fraudulent activities. This is because the active investors and fund managers are increasingly pressuring organizations to use performance-based board compensation to push the directors for more profitability (Kim et al., 2013). In Malaysia, the firms are required to disclose the information regarding the remuneration of the directors in annual report since early 2000 by issuing the mandate in MCCG 2000. The aim for disclosing the remuneration of the directors is to ensure the transparency and quality of the directors’ (Jaafar et al., 2014). The director’s compensation packages are important to disclose in the annual report to ensure the

transparency and accountability of the information as demanded by minority shareholders, regulators, and other stakeholders (Jaafar et al., 2014). According to Jensen et al. (2005, page 22) “Corporate governance and remuneration policies are highly inter-related: bad governance can easily lead to value-destroying pay practices, and many notorious excesses in pay can be traced to poor governance”. The MCCG clearly states that the remuneration of the directors should reflect the responsibilities, complexities and performance of the firms as well as the skills and experience of the directors. In addition, the remuneration packages should align with the business strategy and long-term objectives of the firms (MCCG, 2017). In current practice, the board is required to disclose on named basis for the remuneration of each of the directors including fees, salary, bonus, benefits in-kind and other emoluments. Besides, the board is also required to disclose on the named basis of the top five senior management’s remuneration in bands of RM50,000. As a further step in MCCG 2017, firms are encouraged to fully disclose the remuneration packages of each member of senior management on a named basis. This in line with the agency theory so that the directors and managers do not misappropriate the assets of the firms in the form of remuneration.

The higher remuneration or compensation offered to the directors is one of the factors that contributes to the unethical behaviour of directors on the expense of shareholders’ (Girau et al., 2022). As the practice in the MCCG is to reward the directors according to their responsibilities and complexity of the job, the excessive remuneration may lead to the directors to lose their independence and engage in unethical behaviour. The study by Kim et al. (2013) discussed three types of board compensation which are cash compensation, stock compensation and stock option compensation. Cash compensation is usually paid on behalf of the annual retainers and meeting fees. Cash salary is the most effective way to encourage directors to be diligent and restraint practices that compromise the financial statement quality (Kim et al., 2013). The stock compensation, such as stock options, is incentive-based equity compensation with the potential of the executives and directors to manipulate earning in order to achieve the particular targets. The study indicated that the three types of compensation have significant impact on the likelihood of fraud (Kim et al., 2013). This is because as the compensation becomes closer to stock prices, incentives are created to manipulate earnings and hide performance. Besides, the use of stock options

compromises the director's independence and impairs the ability of directors to provide objective oversight.

Owning substantial shares in firm is also one of the factors of fraud occurrence because the large percentage of ownership owned by firm's management can provide a great voting power and may lead the management to commit fraud (Zam et al., 2014). The director may struggle to perform their monitoring roles when the form of compensation compromises their independence (Kim et al., 2013). Therefore, as director's compensation becomes close to stock prices, the incentives are created in manipulating earning and hiding poor performance in organization (Kim et al., 2013). According to Scholtz (2009) and Rezaee (2005), the CEOs face dilemmas as they are required to set increasing financial target and at the same time they are offered to improve their own compensation packages. For example, Enron corporation paid large salaries to its executives including bonuses and share options in order to achieve certain share price target (Scholtz, 2009).

Prior studies found different opinions and mixed empirical evidence about the effect between board and executive remuneration on the likelihood of fraud. The study by Archambeault et al. (2008) found a positive relationship between short-term option grants and long-term grants for audit committee members and the likelihood of financial restatement. This is because the short-term options may reduce the oversight quality and cause audit committee members to focus on the short-term performance. Besides, the uncertain payoff to audit committee members may fail to motivate diligent oversight, thus increasing the likelihood of corporate failure. Persons (2006) found that after the revelation of fraud or lawsuits, cash compensation significantly increases due to an increase in salary. However, the increase in the cash compensation is smaller than non-fraud firms. In addition, the firms are likely to reduce cash compensation when profitability declines, firms involved in fraud, and compensation committee size is small. Chen et al. (2021) studied on the relationship between CEO's option incentives and financial statement fraud which found that the increase in executive's option incentives raises the likelihood of fraud. The study suggested that higher executive option's incentives increase the likelihood of fraud. The study argued that when the CEOs hold a large number of stock options, they are motivated to commit fraud; thus, the CEOs may intentionally hire low-quality auditors instead of high-quality auditors to exert influence and to hide the fraudulent act. This is because when the firm hires

low-quality auditors, the auditor gives less effort in finding the significant issues that may arise in the financial statement. Davidson (2022) also documented that higher equity incentives are positively associated with fraud.

In contrast, Conyon and He (2016) found that CEO pay is negatively related to the seriousness of fraud. The study is supported by Zhou et al. (2018) on the Chinese stock market which found that the executive pay especially CEO pay is negatively associated with the fraud incidence in China, nevertheless the firms are under pressure of delisting from main market. The high compensation has deterred the effect of fraud when the business is healthy, while this effect disappears under delisting pressure. Martins and Júnior (2020) also found similar result. They argued that the better paid board is more effective in reducing fraud because higher remuneration is an incentive for the directors to align with the objectives of the firm. The finding is supported by a recent study of Radwan et al. (2022) which supported the presumption that cash compensation to independent directors is aligned with the interest of the shareholders. They added that the higher compensation provided to the directors will increase the board effectiveness and result in effective management to monitor the firms as well as reducing the FFR. A recent study by Dias et al. (2024) on the effect of remuneration structures of the board members on earnings management found that fixed remuneration to the board members resulted in lower of earnings management. This is because when board members are better remunerated with base pay, they tend to retain the shareholder's trust and are less likely to engage in earnings management practices. Nevertheless, the earning management practices increase when the board members receive variable remuneration. The directors tend to engage the earnings management practices when they are offered remuneration based on the performance.

In Malaysia, various empirical research has been conducted on the effect of the director's remuneration and fraud, and the result is mixed. An earlier study conducted by Zam et al. (2014) on 57 scandal firms matched with 57 non-scandal firms among public listed firms in Malaysia found no significant difference on compensation structure and fraud occurrence in Malaysia publicly listed firms. They argued that even the average of the compensation received by the directors of the scandal firms is much lower than non-scandal firms, it cannot provide clear evidence that compensation structure can be one of the factors of FFR in Malaysia. The result is similar to Ghafoor et al. (2019) who found CEO compensation is not significant to the fraud. Yaacob and

Wan Mohd Yusof (2020) also documented insignificant relationship between remuneration and corporate fraud. They argued that the remuneration for the directors should reflect the responsibility of the directors, expertise, and complexity of the firm's activities.

Nevertheless, Md Nasir et al. (2018) found contradict result. They evidenced that the higher payment of director's remuneration, the FFR is less likely to occur. They noted that the remunerations should be appropriate with the responsibilities and contribution delivered by the directors. Hasnan et al. (2021) documented that higher compensation level paid to the directors, the lower is financial restatement. This is because, when the high compensation is received, the likelihood of the management to engage in opportunistic behaviour will be lower. Recent studies by Girau et al. (2022) and Girau et al. (2024) also evidenced that when compensation increases, the likelihood of corporate fraud decreases. They noted that when the managers receive higher compensation, they can be incentivized to act in the best interests of shareholders and mitigate agency conflicts.

3.9.1.5 Board Meetings and Likelihood of Fraud

Board meeting refers to the frequency of board meetings within the financial year (Salleh & Othman, 2016). The frequency of board meetings is usually related to the level of board activities or vigilance of the board members of the firm (Shan et al., 2013a). According to Lipton and Lorsch (1992) and Ebaid (2023), the frequency of board meetings is one of the characteristics of the effective board. The typical board meets less than eight times annually. The directors rarely spend as much as a working day together and around each meeting leads to ineffectiveness of the board due to the limited time to exchange ideas and information with the management. Accordingly, Lipton and Lorsch (1992) suggested that the board meetings should take place at least twice a month, which include committee session and other related activities. In addition, the frequent board meetings give an independent director more opportunities to gain private knowledge about the firm (Vafeas, 1999). Kamarudin et al. (2018) argued that the effective of the board is linked to the small frequency of board meeting because they only focus on the core problems or issues.

According to Vafeas (1999), there are two conflicting views of the board meetings. First, the board meetings are beneficial to the shareholders where the directors meet regularly, and they are more likely to perform their duties in accordance with shareholders' interest. In this view, board meetings play a significant role in improving the effectiveness of the board. In addition, the decision made by the board will be better since they have the opportunity and time to process, consider, and exchange the information (Salleh & Othman, 2016; Hossain & Oon, 2022). Meanwhile, in the opposing view, the board meeting is not beneficial due to the limited time spent by the outside directors exchanging meaningful information and ideas among themselves and management. This is because the agenda of the board meetings is always set by the CEOs (Jensen, 1993). Moreover, board meetings cannot be considered as an effective tool of the board because of other factors such as length of the meeting that need to be considered (Jensen, 1993). Hossain and Oon (2022) argued that frequent board meeting could lead to lower efficiency in decision making due to risk of overload of the information and compromising resources and time.

The frequency of board meetings is among the MCCG requirements, and the Code requires the firms to disclose the numbers of board meetings in the annual report. In MCCG 2007, it was suggested that the board of directors should meet regularly in order to discuss issues regarding the corporation activities. All the information on the meeting, including the number of meetings and details of attendance, should be disclosed in the annual report. As for MCCG 2017, all the directors should attend general meetings to engage with shareholders. This enables the shareholders to identify whether the board is in control and whether the directors are committed to doing their jobs (Hashim & Devi, 2008). The board that meets regularly is more active in ensuring the firm is running in the best of shareholders' interest (Salleh & Othman, 2016). Girau et al. (2022) argued that the frequency of board meetings reflects the higher monitoring and oversight of the top management of the firm, thereby it can improve corporate governance. In addition to that, the Firm Act 2016 also requires the firms to have at least 4 board meetings in a year.

The effect of board meetings has been discussed worldwide particularly in relation to fraud. According to Kamardin and Haron (2011), the higher frequency of board meetings would provide knowledge of the directors about the firms and contribute to monitoring the strategy implementation. Due to this, the directors can use

the knowledge to combat fraud in the firm. However, the lower frequency of meeting is also likely to be related to higher risk taking (Ng et al., 2013). The study stated that the higher frequency of meetings does not necessarily result in better discussion. The prior research found mixed results on the board meeting frequency and the FFR. An earlier study conducted by Beasley (1996) found the number of board meetings held by the audit committee does not significantly reduce the likelihood of financial statement fraud. The findings are similar to Uzun et al. (2004) in their study who found the frequency of board meeting does not affect the effectiveness of boards in monitoring fraud. The board meeting has a negative impact on the earnings management quality of financial reporting where the more hardworking directors, the poorer quality of earnings information (Wu et al., 2007). Nevertheless, Chen et al. (2006) found that the frequency of board meeting is positively associated with fraud because any questionable or illegal activities will be discussed by the board over a number of meetings. Besides, the study added that the frequency of meeting shows a signal of increased vigilance and oversight of the top management of the firm. The number of meetings is also high if the firm is facing financial distress situation. The finding contradicts with Owens-Jackson et al. (2009) where the number of committee meetings is negatively associated with existence of fraud.

Besides that, Gao et al. (2017) and Zhou et al. (2018) evidenced that the board meetings are positively associated with fraud in China. The frequent board meetings show a signal of increasing board efforts in dealing with unusual or emergency situation. Accordingly, the Chinese Listed firms are always hyped with the speculation, so the firms are often linked to high turnover or irregular activities (Zhou et al., 2018). In addition, frequent meetings give the opportunity to detect fraud prior to the public discovery (Gao et al., 2017). Nevertheless, Sudarman et al. (2019) documented that the frequency of board meetings can reduce the possibility of fraud in financial statement. They claimed that the board meetings are not only routine and formalities to fulfill the regulations, but also the opportunities to the board to optimize their performance so that they are able to address the FFR. The finding is similar to Rezaei and Rostami (2022) where the board meetings proxied by boards' effort will reflect the awareness of the firms' activities and the ability of the board to monitor the quality of financial reporting. Therefore, when the board efforts increase, FFR will decrease. A recent study by Kaituko et al. (2023) also evidenced that the frequency of board meetings has an

influence to mitigate the fraud but the finding contradicts to Ebaid (2023) who found insignificant result of board meetings and fraud.

In Malaysia, various academic research has been done on board meetings and fraud. An earlier study by Shan et al. (2013) of 200 public listed firms from 2007 to 2009 found that high frequency of board meetings is associated with high probability of fraud. They believe that the number of board meetings is higher during times of fraudulent activities. The result contradicts with other studies (Mohd Salleh & Othman, 2016; Kamarudin et al., 2018; Sadique et al., 2019) which documented that board meeting contributes to deter corporate fraud in Malaysia. This is because through board meetings, the occurrence of corporate fraud can be prevented as high frequency of board meetings gives the directors opportunities to know about the firms and be able to monitor the firm's operation. Nevertheless, Ismail et al. (2020) in their study on earning management in financial distress firms found frequency of board meetings has significant negative effect of earning management practices on the firms. The result indicates that the higher level of board activity has no relationship with the occurrence of earning management because an active board is better for shareholder's interests since board directors would spend more time and energy on the firm affairs. Recent studies by Girau et al. (2022) and Girau et al. (2024) also documented that board meetings have an insignificant relationship with FFR.

3.9.2 Independent Audit Committee and Likelihood of Fraud

Audit Committee is defined by Sarbanes-Oxley Act (SOX 2002, section 2(a)(3)) as quoted in Archambeault et al. (2008) as a "committee or equivalent body that is established by and amongst the board of directors of an issuer for the purpose of overseeing the accounting and financial reporting processes of the issuer and audits of the financial statements of the issuer". The audit committee shall review the significant issues arise in the firms and made judgements in connection with preparation of firms financial reporting including interim reports, preliminary announcement, and other related formal statements (Anisykurlillah et al., 2025; Mardessi, 2022). The audit committee is a component of the supervisory system that monitors the preparation of firm financial statements. Before the firm's external stakeholders are given access to its financial information, the audit committee has the authority to review it so that any unusual information can be immediately identified (Dewi & Anisykurlillah, 2021;

Johari et al., 2025; Ismail et al., 2025). In accordance with its responsibilities and objectives, the audit committee plays a significant role in quality and integrity of the financial statement issued by the firm. It means that financial statements must be truthful and comply with accepted accounting principles.

Beasley (1996) noted that the presence of the audit committee is viewed as monitoring mechanism to reduce the agency cost situation and improve the information flow between principal and agent. Therefore, audit committee can improve the boards of directors' capacity to act in accordance with the shareholder's expectations by providing detailed knowledge and understanding of the financial information required by the firms. Thus, the existence of an audit committee can be considered as high monitoring tools that have high quality monitoring and should have significant effect in reducing the FFR. Archambeault et al. (2008) documented that audit committee has positive effect on the likelihood of accounting restatement in terms of short term and long-term option grants (Archambeault et al., 2008). The study reported that when the firms issue short-term options to audit committee members, the quality of oversight is reduced, and they are more focused on the short-term performance. Besides, the options grant issued by the firm will demotivate the audit committee to carry oversight obligation and thus increase the likelihood of financial reporting failure.

The independence of audit committee is one of the most broadly characteristics that has been discussed broadly. The independence directors is seen as an important mechanism in combating fraud (Madah Marzuki et al., 2019; Girau et al., 2024) and to ensure the strong corporate governance framework (Devarajar et al., 2022). Thus, the presence of independent audit committee is crucial in managing risks of the organization and better monitoring as well as reducing the likelihood of fraud (Razali & Arshad 2014). Therefore, independent audit committee should be free from management influence as it enables objective oversight and unbiased judgement (Johari et al., 2025; Ismail et al., (2025). Abbott et al. (2004) suggested that the independence of Audit Committee is associated with two reasons. Firstly, the independent audit committee does not have economic or psychological ties to the management as to interfere with their ability to question the management. Secondly, the independence of audit committee has reputational capital preservation and development to provide motivation for better monitoring. Nevertheless, Abbott et al. (2000) argued that although the services provided by the audit committee may increase director's

reputation as a financial monitor, it also has potential reputational damage in the financial statement when the directors serve the board. Therefore, the firm should appoint an independent audit committee to get better monitoring of the firms. Accordingly, members of the audit committee should be independent of the day-to-day operations, unaffiliated with the firm's management, and possess the necessary knowledge to carry out the oversight obligations in order for them to be effective in their oversight duty (Oktaviana & Paramitha, 2021).

In order to improve the quality of the monitoring of the firms as well as managing risks in the firms, the regulators have already specified the audit committee requirements which affected the composition of the board. For example, in June 1978, the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) required the firms to have audit committee composed by entirely of independent directors (Beasley, 1996). Accordingly, the National Association of Securities Dealers (NASDAQ) also required their listed firms to have an audit committee with at least consists of majority independent directors. Razali and Arshad (2014) supported that when the firm has a strong audit committee, it will promote impartial assessment and judgement, as well as better monitoring, therefore it will impede fraud occurrences. However, Yang et al. (2017) noted that even when the audit committee's oversight function has been recognized in the theory, it does not give the negative effect to the fraud in China. It seems to convince the investors that they have a "good" corporate governance structure. Malaysia has also taken further action in improving the monitoring mechanisms of the firms since early 2000 by issuing mandate of audit committee in MCCG 2000. In MCCG 2000, the firms should establish an audit committee that comprises majority of independent directors. In ensuring the financial statement is reliable to the stakeholders and assessing risks in the firms, the MCCG 2017 takes further step by requiring the firms to rearrange the composition of Audit Committee which comprises solely of Independent Directors. It is clearly stated in MCCG 2017 (page 34) that "An independent Audit Committee is better positioned to rigorously challenge and ask probing questions on the firm's financial reporting process, internal controls, risk management and governance".

Prior studies have looked at the link between audit committee characteristics and financial reporting with auditing outcomes, and numerous publications have highlighted the audit committee's significant role in supporting credible financial

reporting. An earlier study by Beasley (1996) evidenced that the presence of audit committee has insignificant effect on the likelihood of financial statement fraud. The study proved that audit committee effectively carries out their duties if they are largely or entirely consisting of outside directors. Inconsistent with Beasley (1996), Abbott et al. (2000) documented that the presence of audit committee with the minimum threshold of independence is associated with reducing financial statement fraud. Abbott et al.,(2004) found negative association between independent audit committee with accounting restatement. The independence of the audit committee will improve the monitoring and reduce the likelihood of restatement in two ways. Firstly, when the internal audit function reports directly to an audit committee which excludes the current or former member of management, its independence and efficacy are reinforced. Secondly, the independent audit committee may demand greater audit scope to avoid possibilities of financial restatement, therefore the detection of misstatement will increase. The study is supported by Persons (2005) where financial statement fraud is lower when the firm comprises solely of independent audit committee.

Nevertheless, the study conducted on audit committee characteristics on earning management in Korea by Choi et al. (2004) found that the proportion of outside directors does not decrease earning management because the independent directors are not actually independent as there is no specific regulation on the definition of “independent director” in Korea. However, if the audit committee members own shares in the firm, there is a significant relationship with earning management because independence is impaired when they own the shares in the firm. The study is supported by Owens-Jackson et al. (2009) who also documented that audit committee composition (proxies of fully independent audit committee) does not eliminate FFR. This is because the presence of totally independent audit committee reduces the influence of contracting environment and nature of the firm on the likelihood of fraud. These findings contradict with the study of Beasley (1996) where higher proportion of outside directors can reduce the likelihood of fraud. Independence does not affect the integrity of financial statements because audit committee is still influenced by the commissioners. It is challenging to apply independence within its purview because it calls for objectivity and independence from outside influence. Since many members may struggle to fulfil their separate duties and the audit committee is still subjected to commissioner

influence, its existence does not guarantee that the firm will perform well (Savitri, 2016).

On the other hand, the presence of independence of audit committee in Agriculture sector has insignificant relationship to financial reporting quality in Nigeria (Echobu et al., 2017). The insignificant result is due to the inability of the independent of audit committee to monitor the income smoothening activities of management. This is because the independence of the audit committee lacks of knowledge, skills and exposure to adequately perform their duties and responsibilities. Dewi and Anisykurlillah (2021) studied on the effect of fraud pentagon on FFR with the audit committee as a moderating variable. The study found that audit committee significantly moderates the effect of growth, the effectiveness of supervision and the experience of directors of FFR. As the role of audit committee is responsible to reviewing information presented by the firm to the external parties, the audit committee supervises and monitors the financial information. Nevertheless, there are illegalities in the financial statement since the audit committee can prevent the report to be presented with misstatement. Therefore, the effect of firm growth will be weaker with the presence of the audit committee. The effectiveness of supervision has moderate relationship with FFR due to the interference of certain parties that leads to the element of power. Thus, audit committee situation leads to audit committee being unable to strengthen corporate governance system in minimizing the FFR.

A recent study by Abbas et al. (2021) found that audit committee does not influence the integrity of financial statements since the presence of audit committee is limited only to review of financial statements and accounting details, but not specifically involved in resolving the firm's economic problems. Therefore, the existence of audit committee is less capable to improve the financial integrity and reducing FFR. Mousavi et al. (2022) found a negative impact of independent audit committee and FFR. The presence of audit committee independence improves the quality of the financial statement and lowers errors. Bader et al. (2024) noted that the presence of independent audit committee is freer committees impartial when they apply the laws and take necessary actions after discovering fraud in the firms. The higher percentage of independent audit committees would lead to reducing the likelihood of fraud due the effectiveness of independent audit committee in assessing risks in the firms.

In Malaysia, Razali and Arshad (2014) found that the effectiveness of audit committee has a negative relationship with the likelihood of fraud. The study is supported by Madah Marzuki et al. (2019) on audit committee characteristics and FFR. They found that audit committee characteristics which are audit committee composition, audit committee expertise and audit committee meeting have negative relationship with FFR. Hasan et al. (2020) also found that the independence of audit committee has a negative effect on real earning management. This is because financial expertise in the audit committee is effective in reducing the earning management activities. In contrast, Kamarudin and Wan Ismail (2014) in their study on audit committee effectiveness among Malaysian public firms from 2005 to 2010 found that audit committee independence is positively associated with corporate fraud. The study augmented that in Malaysia's context, the higher proportion of independent audit committee members and corporate fraud can be explained in two ways. Firstly, the situation of corporate fraud is due to lack of knowledge of the independent directors of the firm affairs, thus they fail to oversee the firm, and the condition worsens when the independent audit committee members have multiple directorships (the situation is common in Malaysia). Secondly, the study augmented that the investors perceive good corporate firm, thus the firm involved in FFR may prefer to have more independent directors.

The result is similar to Sadique et al. (2019) who found the percentage of independent directors is not a significant factor on the effectiveness of corporate governance in fraud deterrence. They argued that the minimum requirement of independence of the audit committee of 66.67% which is not effective in fraud deterrence. Wan Mohammad and Wasiuzzaman (2020) also documented that the percentage of independent audit committee has a positive relationship with earning management. They argued that the appointment of higher independent directors in the audit committee is only an illusion to shareholders of active board monitoring. Even though the full compliance of the firms gives a positive signal to the market, it is indecisive whether it can help in reducing the earning management. A recent study by Ismail et al. (2025) found that audit committee independence is positively associated with fraud risk mitigation, which implies that independent audit committee plays a crucial role in mitigating the likelihood of FFR.

3.9.3 Risk Management Committee and Likelihood of Fraud

Risk management is defined as the “process of understanding and managing risks that the entity is inevitably subject to in attempting to achieve its corporate objectives” (CIMA, 2005 as cited in Lutui & Ahokovi, 2017; Alazzabi et al., 2019; Bensaid et al., 2021). Risk management involves the process of the firms to methodically address the risks attached in their activities and to pursue the objectives across the portfolio of all their activities (Burke, 2007; Bensaid et al., 2021). The aim of risk management is to address and treat risks in the organizations in accordance with the organization’s risk appetite. In the firm, risks are one of the potential events that might occur and influence the achievement of the firm’s objectives. The risk management is seen as the understanding of the nature of risks which represents threats, addressing plans and mitigate the risks (Lutui & Ahokovi, 2017). Originally, the risk management approach known as Enterprise Risk Management (ERM) has been developed by Committee of Sponsoring Organizations of the Treadway (COSO). According to COSO (2004), the ERM is defined as *“a process, affected by an entity’s board of directors, management and other personnel, applied strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives”*.

One of the risks is fraud, which is considered a major risk in the firms because it not only affects the financial health but also image and reputation of the firm. A firm's governance, management, and operations all depend on effective risk management and internal control. Internal control helps in fending off risks and taking advantage of opportunities, while risk management focuses on recognizing threats and opportunities. Effective risk management and internal control help businesses to decide how much risk they want to accept and apply the required controls to successfully achieve their goals (MCCG, 2017). Traditionally, risk management functions are managed by and under the responsibility of the audit committee. Similar to other countries, in Malaysia, the risk management function is transferred into the responsibility of audit committee which already has many crucial areas of tasks to look into (Abdullah & Said, 2019). According to Ng et al. (2013), a separate risk committee must be formed to handle the specific risk management issues apart from the audit committee's tasks. The risk

management committee (RMC) offers a corporation several advantages. An organization with a RMC should have stronger internal control (Rimin et al., 2020). Delegating a distinct risk management function in addition to the committee reduces the time and attention constraints experienced by individuals assigned with risk management obligations (Iselin, 2019). In addition, the separate RMC is likely to evaluate the firms viability in future and reduce the risk of going concern because of the expertise to evaluate the external environment especially business opportunity and investment (Rimin et al., 2020). RMC also creates innovation so that it discourages the firm to take risks and inculcates attention to detail, which resulted in preventing false financial reporting (Madah Marzuki et al., 2024).

Furthermore, the establishment of RMC will support adequate industry health and strength, or at the very least, a successful RMC should help firms to achieve their objectives, protect their reputation, and give better financial reporting (Abdullah & Said, 2019). Besides, RMC will independently complete its role with the audit committees so they may oversee risk management more efficiently (Buckby et al., 2015). Based on the agency theory, risk management acts as an agent to the shareholders in achieving the business objectives as well as maximizing the firms' value (Jensen & Meckling, 1976; Madah Marzuki et al., 2024). The establishment of RMC also helps to reduce the agency costs through extensive internal control and risk assessment in the firms (Malik et al., 2023) as well as assume effective monitoring so that the managers are less likely to engage in opportunistic behaviour, thus reduces the agency cost (Elhaj et al., 2022; Musa & Ibrahim, 2024). This will help in adding value to the firms and support overall firm's economic growth by lowering the cost of capital and reducing uncertainties in commercial activities (Madah Marzuki, et al., 2024). Additionally, the establishment of RMC not only helps the firm to assess and control risks, but it can also help the managers to improve their understanding of the firms' processes (Johnston & Soileau, 2020).

The formation of stand-alone RMC has been introduced in many countries. For example, Australian Security Exchange Corporate Governance Council (ASX CGC) provides primary guidance to the firms for risk management disclosure and illustrates the importance of risk management as part of corporate governance practices (Jia et al., 2019). It also provides an ideal setting on the impact on the stand-alone risk management existence. In the UK, the Combined Code of Conduct describes the duties

of the role of the board in corporate risk management. This regulation is similar to USA Sarbanes-Oxley Act that requires the listed firms to establish ERM system (Brown et al., 2009; Malik et al., 2023). In South Africa, the firms listed under Johannesburg Securities Exchange (JSE) must comply with the requirement to set establish additional committee such as RMC to improve the board capacity in managing risks (Malik et al., 2023). In general, the establishment of a new subcommittee with a focus on risk management serves as a crucial governance support mechanism for the supervision of an organization's risk management policies, procedures, and strategies (Novatiani et al., 2022).

In Malaysia, there is no explicit regulation that requires the public listed firms to establish a robust corporate or ERM system like USA; however, the closest reference lies under MCCG (Malik et al., 2023). Nonetheless, Bank Negara Malaysia (BNM) made a compulsory regulation that requires all the Malaysian Insurance firms to have a separate RMC in 2003 (Ng et al., 2013). The roles and responsibilities of RMC are comprehensively specified in BNM (2010). The roles of RMC include reviewing and making recommendations to the board regarding the risk management strategies, policies and risk tolerance levels, reviewing the effectiveness of risk management policies and framework, ensuring that all the resources needed for risk management system is adequate, and periodically reviewing the risk report (Ng et al., 2013; Rimin et al., 2020). In addition, Rimin et al. (2020) highlighted four general areas of RMC duties which are; (i) to consider the firms risk management policy, (ii) to review the firms' management activities, (iii) to evaluate the firm's financial statements, and (iv) to ensure the firms comply with relevant law and regulations. Therefore, the RMC can monitor the potential risks such as FFR. In 2013, Bursa Malaysia published the Statement on Risk Management and Internal Control (RMIC) to improve the governance practices voluntarily in respect of controlling risks (Malik et al., 2023). The guidelines resulted in greater transparency for the regulator, business, and other stakeholders that requires the enterprises to disclose their risks together with how the risks are being handled.

With the adoption of MCGG in early 2000, the corporate governance structure has started to become more significant. The risk issue is mentioned in a few areas of MCGG 2000; for example, under paragraph 4.14, the board of directors should protect the shareholder's interests by maintaining effective internal control including risk

management. The roles of board of directors in managing risks assessment are scrutinized in paragraph 4.17. In 2007, the MCCG was revised for the first time. In this amendment, the MCCG gives attention to the roles of board of directors and the Audit Committee in which the Chief of Internal Audit should strengthen more in the evaluations of auditing internal controls, risk management, and governance procedures. MCCG once again was revised in 2012 with improved principles and recommendations. Under Principle 6 – Recognize and Manage Risk, two recommendations were provided which are the firm should form a risk management framework, and the board of directors establish an internal audit function that reports to the Audit Committee.

In April 2017, a revised version of MCCG was published to replace MCCG 2012 aiming to enhance the Malaysia's corporate governance practices. In MCCG 2017, the code emphasizes the significance of risk management and the importance of having adequate internal control system in place to manage risks. Under the section of risk management and internal control framework, the Code clearly states that risk management focuses on identifying threats and opportunities while internal control helps to counter the threats and takes advantage of the opportunities. This can assist businesses to make strategic business decisions while taking into account the degree of risks prepared to tolerate and take the necessary actions to achieve their goals (Malik et al., 2023). The Code has made a new recommendation that the board should establish an RMC, which comprises a majority of independent directors to oversee the firm's risk management frameworks and policies.

In spite of the recommendation of MCCG 2017 to establish RMC alone in assessing risks in the firms, the stand-alone RMC still causes many debates among the researchers. Using the sample of 6,066 P&C insurer-year observation from 2007 to 2013, Ames et al. (2018) found that board risk committee reported higher financial strength during post-financial crisis period. The study evidenced that from the period before committee creation to the period after committee formation, the initial formation of a board risk committee has a positive impact on financial strength ratings. Abdul Rahman and Al-Dhaimesh (2018) in their study investigated the impact of risk management based on COSO framework which found that risk management is able to reduce internal control risk as well as reducing the FFR. They added that the components of internal environment variables, events identification, risk assessment,

response variable, and control activities are significantly affected by the FFR. The study is supported by Abdullah and Said (2019) on separated audit committee with risk committee on financial crime which found that risk committee has significant negative relationship with corporate financial crime incidence. The study indicates that the stand-alone risk committee can be an effective mechanism in combating corporate financial crime. Another study by Jia et al. (2019) also documented that stand-alone RMC give benefits to the firms to increase risk monitoring and reduce agency cost as well as information asymmetry.

Rahayu et al. (2021) revealed that the existence of risk management committee has positive and significant correlation with audit fees. The study augmented the positive relationship which confirms audit pricing theory from the demand side. This is because the auditors will improve their work at the request of the risk management committee, which is reflected in the higher audit fee. Thus, risk management effectiveness will help the organization to achieve the goal and secure the organization's reputation by providing higher quality of financial reporting. Novatiani et al. (2022) revealed that the establishment of RMC can provide oversight role of firm's risk management strategies, policies, and processes to serve as an important governance support mechanism. In addition, false finance reporting could be prevented as good risk management creates innovation, less risk taking, and inculcated attention to detail. Jaswadi et al. (2024) also revealed that fraud cases are reduced after the introduction of risk-based supervision. Moreover, the establishment of RMC can reduce the likelihood of fraud through accurately assessing risks and potential issues in the firms (Wan Fauzi et al., 2022).

Nevertheless, Malik et al. (2023) argued that the RMC may be a hindrance to the board ability to monitor the risks effectively because it is related to business strategies and operation. In addition, the establishment of RMC is not being considered as the best strategy for all the corporate firms because large firms such as Lehman Brothers and Wachovia do have RMC that is responsible to monitor risks, but they still collapsed. Madah Marzuki et al. (2024) revealed that the establishment of RMC has an insignificant effect on the likelihood of fraud due to the lower rate of the firm that establishes RMC. This argument is supported by previous study which also found the lower rate of establishment of RMC in Malaysia. For example, Yatim (2009) found only 246 firms out of 690 public listed firms established RMC in 2003. Abdullah et al.

(2017) also found the establishment of RMC in Malaysian listed firms is only 34.6% in 2011, while Malik et al. (2021) reported that a total of 496 firms established RMC during the period of 2015 to 2017.

On the other hand, the independence of committee is one of the key elements in corporate governance. MCCG 2017 encourages the board to establish Risk Management Committee which comprises a majority of independent directors to oversee the firm's risk management framework and policies. The independent directors play a crucial role in monitoring the management actions because they do not have personal interest in the firms and make fair judgement without fear and favour (Fama & Jensen, 1983). Empirically, Buckby et al. (2015) hypothesized that risk management disclosure is positively related to the proportion of independent directors on the board. They found that board independent does not have an impact on the level of disclosure provided in annual report as it does not appear to reflect how the real underlying risks. Ng et al. (2013) in their study focused on risk management committee and risk taking of insurance firms in Malaysia. Using the sample of 368 observations from 2003 to 2011 that comprise of general business, life insurance and composite insurance firms, the research found that independent risk management committee is insignificant to risk taking because the higher proportion of independent directors in risk management committee will result into the board being more objective and rational in decision making; thus, they are able to mitigate risk taking. The author added that the presence of the risk management committee appears to be related to risk management and internal control mechanisms.

Olayinka et al. (2019) found RMC independence has a positive relationship with the discretionary accruals, indicating the independence of RMC to carry out the oversight function of risk implementation, risk governance, and risk disclosure. However, Jia et al. (2019) found the RMC's independent as insignificant to risk management quality disclosure. In relation to the performance of the firm, independent RMC is negatively correlated. The negative correlation is due to the lack of experience and knowledge of the firms as well as the due to lack of professional expertise and experience in rigorous monitoring of the firm (Malik et al., 2021). The finding is similar to Elhaj et al. (2022) who found insignificant relationship of RMC independence and real earnings management. They argued that the insignificant result can be explained due to the insufficient oversight of RMC independence which is related to lack of

professional knowledge and experience in motoring the firms. However, the study by Musa and Ibrahim (2024) also found that RMC independence does not reduce accrual earning management but is negatively associated with real earning management. The study added that the inclusion of independence of RMC is aligned with agency theory because the directors are concerned about their reputation and try to avoid any risks that might affect the firm's financial integrity.

3.10 Ownership Structure and Likelihood of Fraud

3.10.1 Family Ownership and Likelihood of Fraud

Family ownership is defined as the family members either founders or descendants who continue to hold the position in the top management and/or of the board and they are the largest stockholders (Bardhan et al., 2015). According to Hwang et al. (2019), family ownership is defined as the largest shareholder held by family members and the family is also the largest vote holders; for example, IOI Group Berhad and Genting Berhad. Hashim et al. (2021) posited three criteria of family firms which are; (i) the CEO or the inheritor is related by blood or related, (ii) at least two members hold the board of directors positions, and (iii) the equity owned by the family firms is at least 20% or more (Teh et al., 2017). The larger equity owned by controlling family in family firm, the controlling family is more likely to exploit the interest of non-controlling shareholders because they have the right to choose the accounting policies and decide the extent to which accounting information to be disclosed to the stakeholders (La Porta et al., 1999; Teh et al., 2017). However, Nuhu et al. (2024) argued that the presence of family ownership creates a unique resources and capabilities that contributes to job creation, wealth generation, and competitiveness.

Based on Agency Theory, the agency cost could prevent the agency problem (Jensen & Meckling, 1976). This is because the study used the term “ownership structure” rather than “capital structure” due to the fact that the crucial aspect to be determined is not only the amount of debt and equity (Hasnan et al., 2022). The agency theory predicts the concentration of family ownership which resulted in the financial reporting quality and at the same time the fraudulent activities could be prevented (Jensen & Meckling, 1976). This is because the domination of family members in the firm will posit the private and firm interests by closely monitoring the behaviours of

the managers to reduce agency cost and control of the firm activities (Kusuma & Fitriani, 2020). Ghafoor et al. (2019) argued that fraud in family ownership system of corporate governance in Malaysia is related to the Type II agency problem as compared to dispersed ownership systems such as in the USA in which corporate governance generates Type I agency conflict.

Instead of Agency Theory that discusses reducing agency cost in the family ownership, there are two arguments about financial reporting quality and family firms which are alignment effect and entrenchment effect (Wang, 2006). The effect of the entrenchment and alignment affects the demand and supply of the quality financial reporting (Hasnan et al., 2013; Teh et al., 2017; AlQadasi & Abidin, 2018; Karim et al., 2023). The entrenchment effect is of more concern because of the conflict between the majority of shareholders and minority shareholders in offering the opportunities to the family owner to expropriate the wealth of minority shareholders by controlling over management and decision policies (Shleifer & Vishny, 1997; Wang, 2006; Teh et al., 2017). The family members who hold the management positions and boards will lessen corporate governance and ineffective board monitoring. Additionally, the greater information asymmetry between families and other shareholders resulted in the family members having both incentive and opportunity to manipulate earnings (Hasnan et al., 2013). Apart from that, the controlling families cover up their self-oriented behaviours by manipulating earning figures. This is because they are more concerned with the family and firm's reputation that leads them to manage earning to retain the current family-controlled positioned and the related benefits form of the firm (Teh et al., 2017). Accordingly, the entrenchment effect implies that the family firms are most likely to engage in opportunistic behaviours such as FFR.

On the other hand, for the alignment effect, the family firms are less likely to expropriate wealth from other shareholders because of strong monitoring mechanisms that motivate the family members to effectively communicate with other shareholders to get higher quality accounting information (Wang, 2006). The long-term presence of the family members in the firms and the intention to preserve the family reputation and incentive to the future generation lead them to forgo the short-term benefits that accrue from managing earnings (Wang, 2006). Therefore, the alignment effect implies that the family firms are less likely to engage in fraudulent activities that could potentially damage the family's reputation and succession plan (Hasnan et al., 2013; Teh et al., 2017). Furthermore, Bardhan et al. (2015) argued that the founding family has more

capabilities in establishing and maintaining an effective internal control system because of the superior knowledge in business and the participation of senior management and board of directors. In Malaysia, the family ownership involves direct and indirect equity ownership. Besides direct equity ownership, the shares are also indirectly held by the member of the same family in which the controlling families can have influence on the decision-making process of the firm (Teh et al., 2017). The indirect control rights possessed by family ownership exert greater control over firm's operations (Wan Mohammad et al., 2014). The indirect family ownership can indirectly influence the decision made by the firm through direct equity shares held by family members (Teh et al., 2017).

The effect of family firms on corporate governance has been widely discussed by the researchers. Hashim and Devi (2008) found a positive relationship between family ownership and earning quality. The study suggested that the presence of family members in the firm could have greater expertise especially in firms' operation to effectively monitor the activities of the firms. Hashmi et al. (2018) also found that family ownership has negative influence on the political connection of the earning quality because the family ownership diminishes the cost of political connection and improves the earning quality. The study is supported by Tee and Kasipillai (2022) where family firms are significantly associated with higher earning quality. In addition, the interaction coefficient shows that the presence of female directors on board also improves the effectiveness of monitoring in family firms. In relation to earning management, Wan Mohammad et al. (2014) documented that strong presence of family members in the firms is able to reduce the earning management practices. Chi et al. (2015) also found the interaction of board independence and earning management is significant in the presence of family firms. The result is similar to Teh et al (2017) where the indirect ownership of the controlling family in family firms does not provide greater opportunity to them in managing earning through direct ownership. This is because the decision process in relation to accounting policies and procedures is made by direct shareholders. Therefore, controlling families has limited power to influence the decision made.

In addition to that, the study by Wan Mohammad and Wasiuzzaman (2020) also found that family ownership is negatively associated with earning management. The study argued that when the level of ownership is within the range of 5%-25%, the alignment effect will be dominant, but when the percentage of ownership is at a higher

level, the entrenchment effect is more dominant. However, Alhebri et al. (2021) found contradictory evidence where larger family ownership creates conflicts with other shareholder's and resulted the manager to manage earning opportunistically. In addition, the interaction between board independent and earning management in family also resulted into significant relationship, indicating independent directors effectively reduce earning management of family firms. On the other hand, Amrah and Obaid (2019) also revealed that the presence of family ownership leads the financial reporting quality to become weak. They argued that family business creates mechanisms of corporate governance to comply with the legal requirement, and the firms without family ownership creates mechanism to control agency cost and improve the quality of financial reporting. Nevertheless, Aziz et al. (2017) documented that family ownership has insignificant effect on financial restatement.

In relation to FFR, the effect of family ownerships has a mixed result. Hasnan et al. (2013) and Hasnan et al. (2014) found that fraud is lower when they have larger family ownerships. The family ownership has no effect on FFR because high percentage of family ownership could prevent the likelihood of committing fraud and at the same time it can affect the financial reporting quality and earning manipulation (Kusuma & Fitriani, 2020). Nevertheless, a recent study conducted by Madah Marzuki et al. (2024) found that the family firms have less potential to engage in fraudulent activities due to alignment effects of the firms in reducing Type I agency conflict between principals and agents. Interestingly, Wan Mohd Zin et al. (2023) evidenced that family firms have low significant relationship with FFR. They claimed that conflict of interest occurs when they want to sustain the image of the family members which then leads to the owners to engage in immoral behaviour.

3.10.2 Institutional Ownership and Likelihood of Fraud

Institutional investors are known as large investors, other than natural person who exercise discretion over investment of others (Yang et al., 2009). Organizations considered as institutional ownership by Lang and McNichols (1997) as quoted in Yang et al. (2009) are "insurance firms (life and non-life), pension funds, investment trusts (including unit trusts), financial institutions (including banks, finance firms, building societies and credit cooperatives), investment firms, and other nominee firms associated with the above categories of institutions". In Malaysia, there are five largest

institutional investors which are Employee Provident Fund (EPF), Lembaga Tabung Angkatan Tentera (LTAT), Permodalan Nasional Berhad (PNB), Lembaga Tabung Haji and National Social Security Organization of Malaysia (PERKESO). Their shareholdings represent about 70 percent of total institutional shareholdings in firms' listed in Bursa Malaysia's Main Board (Abdul Wahab et al., 2008). MSWG was established in 2001 with the purpose of stimulating the monitoring roles of institutional investors especially the firms' corporate governance structure (Abdul Wahab et al., 2008).

According to agency theory, institutional ownership plays a crucial roles in reducing the agency conflict (Jensen & Meckling, 1976) and improve the effectiveness of governance (Malik et al., 2023). The larger institutional ownership will increase the control over the firms exercised by the external party (Yendrawati et al., 2023). The institutional ownership faced free-rider problems and liquidity issues so that the institutional investors may require a higher level of governance and strategies to minimize risks in the firms (Malik et al., 2023). Under institutional ownership, corporate performance can be more effectively monitored, which could help the management makes more informed decisions (Savitri, 2016). Although the percentage of shares may affect how financial statements are prepared, this does not rule out the possibility of manipulation by management for its own gain (Oktaviana & Paramitha, 2021). The institution can monitor the performance of the firm's management and encourage managers to place greater emphasis in enhancing the firm's performance, which will lessen the management team's opportunistic behaviour and help to minimize fraud incident.

According to Githaiga (2023), the presence of institutional ownership in incorporate control can be viewed in three perspectives which are efficient monitoring, strategic alignment hypothesis and conflict of interest. Efficient monitoring proposes that institutional ownership mitigates unethical behaviour due to their expertise and experience. Meanwhile, strategic alignment argues that institutional ownership exacerbates unethical behaviour such as fraud for the benefits and at the expense of minority shareholders. Lastly, conflict-of-interest hypothesis posits that in the event of conflict between the firm's stakeholders, the institutional ownership tends to support managerial actions that promote their interests. Ghafoor et al. (2019) argued that institutional investors differ according to their investment horizon. The investors with long-term investment horizons actively monitor the management decisions. They are

dedicated to mitigate the opportunistic and unethical behaviour of managers and reduce the likelihood of fraud. On the other hand, the investors with short-term horizon or transient investors are less likely to monitor the behaviour of the manager because they only focus on their returns. Thus, the transient investors allow the managers to make fewer valuable decisions at the expense of shareholder's benefits.

Numerous empirical has provided evidence on the institutional ownership and corporate governance. Institutional ownership shows a positive significant relationship with earning quality because the institutional investors are likely to actively monitor their investment as they have invested a large amount of money into the firms (Hashim & Devi, 2008). Nevertheless, institutional ownership has a negative sign to the earning management (Yang et al., 2009). The study argued that institutional shareholders in Malaysian firms are not an effective mechanism to constrain earning management. However, in the construction sector, there is a negative and significant coefficient for the institutional ownership variable which indicates that the institutional shareholding is able to mitigate earning management. The result is supported by Abdullah et al. (2010) who evidenced that higher ownership of institutional investors can help in mitigating financial misstatement. Since Malaysian firms consist of highly concentrated of family ownership, the holding by the outsiders could increase the control and monitoring of the firms' activities.

Contradict to Abdullah et al. (2010), the study conducted by Aziz et al. (2017) found that institutional ownership shows insignificant link with financial restatement since the institutional investors are mainly focused on the short term of financial result and tend to engage in earning management by giving managerial incentives as the blockholders are focused on the personal profit rather than considering interest of minority shareholders. Hwang et al. (2019) argued that the large ownership of institutional investors does not increase the information asymmetry since the institutional investors have higher incentives and resources to monitor the firm's better. In addition, Githaiga (2023) also stated that the large institutional owners will improve the corporate governance and reduce earning management by monitoring and disciplining managers as they are more active and sophisticated in overseeing their investment portfolios.

In relation to FFR, Ghafoor et al. (2019) documented that the presence of institutional investors provides an oversight function in reducing the likelihood of fraud. The study is supported by Gupta et al. (2019) and Rathnasiri et al. (2018) where

the higher ownership of institutional investors provides a better monitoring in deterring the risk of fraudulent or financial misleading practices. However, Oktaviana and Paramitha (2021) found that institutional ownership impacts the financial statement integrity as the firms that have higher percentage of institutional ownership tend to present overstated financial statement to show better performance as to persuade the investors to invest in long term and with respect of the investors, they want to receive large dividends. Recent studies by Kusuma and Fitriani (2020) and Wang et al. (2024) found that higher institutional ownership is able to reduce the likelihood of fraud. In addition, the presence of institutional ownership could minimize the information asymmetry and at the same time increases the understanding of risk preference as most professional investors will have comparative advantage to collect and process the investee firm. Yendrawati et al. (2023) also reported that the presence of institutional investors does not compromise the FFR and creates better alignment among the shareholders.

3.11 Conclusion

In conclusion, this chapter discusses the corporate governance mechanisms in reducing the likelihood of fraud. This chapter thoroughly discusses the factors that contribute to FFR, corporate governance characteristics and mechanisms that will help the firm to reduce fraud. On the other hand, this chapter also discusses fraud detection techniques that can be used by the regulators and researchers in detecting the likelihood of fraud. Besides, this chapter also presents the ownership structures of the firms which is one of the factors that contribute to reduce the likelihood of fraud. Overall, besides discussing corporate governance mechanisms worldwide, this chapter also discusses on corporate governance in Malaysia. This provides an idea on how corporate governance practices in Malaysia could help the firm in reducing the fraud.

CHAPTER FOUR

HYPOTHESES DEVELOPMENT

4.1 Introduction

This chapter presents the hypotheses development for each of the variables in this study. Section 4.2 discusses board characteristics and the likelihood of fraud which are board independent, board tenure, board gender, board remuneration, and board meetings (section 4.2.1 until 4.2.4). This chapter is followed by section 4.3 which is audit committee and the likelihood of fraud. Section 4.4 discusses the risk management committee and the likelihood of fraud. Section 4.5 comprehensively discusses on ownerships structures and the likelihood of fraud which are family ownerships and institutional ownerships (section 4.5.1 until 4.5.2). Lastly, section 4.6 summarizes the research hypotheses and research framework for this study.

4.2 Board Characteristics and Likelihood of Fraud

4.2. Board Independent and Likelihood of Fraud

The presence of independent directors is an essential mechanism to the firms because of its crucial role to ensure the statutory board responsibilities in producing strong corporate governance framework (Devarajar et al., 2022) and as a tool in combating corporate fraud (Girau et al., 2024). From the agency theory perspective, the board of directors should be completely independent from senior management so that they are able to monitor the management to reduce the agency problem and instate decision control over top management in preventing fraud (Jensen & Meckling, 1976; Haron et al., 2021). Accordingly, the higher number of independent directors is better to carry out monitoring functions to reduce the likelihood of fraud. This is because independent directors can be seen as efficient monitoring tools to protect shareholders by controlling the managers from acting in their own interest and reduce the agency cost (Jensen & Meckling, 1976).

Within the context of the FFR, the presence of independent directors on board exhibits a mixed result. For example, Ilaboya and Lodikero (2017) and Moses (2019) found a negative relationship between independent board of directors and fraud in Nigeria.

They augmented that the higher number of board independent can improve the internal control mechanism in the firms; thus, it is able to mitigate the likelihood of fraud. Abbas et al. (2021) documented that board independent improves the integrity of financial statements because the independent boards are effective in supervising the management, resulting in an increase the financial credibility as well as preventing the FFR. Recent studies (Rezaei & Rostami, 2022; Kaituko et al., 2023; Amin et al., 2022; Ebaid, 2023) also found negative effect of board independent and the likelihood of fraud. On the other hand, Rathnasiri et al. (2018) also evidenced a negative relationship between board independent and fraud. They argued that the lack of familiarity relationship between board independent and the firm improves the reliability and faithful representation of financial reporting. Thus, reducing the likelihood of FFR.

Nevertheless, in Malaysia, the evidence regarding board independent and FFR exhibits mixed results. Studies by Sadique et al. (2019), Devarajar et al. (2022) and Girau et al. (2022) found insignificant relationship between board independent and FFR. These findings indicate that the independent directors is not a tool in preventing fraud in Malaysia. However, studies by Ghafoor et al. (2019) and Ismail et al. (2020) found a negative relationship between board independence and FFR. A recent study by Haron et al. (2021) also found similar result. They documented that the higher number of independent directors eventually reduces the number of corporate fraud occurrences.

Although previous research documented mixed results, MCCG 2017 now requires the firms to have at least half of the independent directors on board to ensure the efficiency of the management to meet the objectives and goals of the firms. With the improvement of MCCG 2017 recommendation, it is expected that the likelihood of fraud in Malaysia will be lower. As the number of independent directors increases, the directors are expected to efficiently perform duties and responsibilities to mitigate the likelihood fraud. Therefore, the hypothesis is as follows:

***H1_(a):** There is a significant negative relationship between percentage of independent directors and the likelihood of fraud.*

4.2.2 Board Tenure and Likelihood of Fraud

Board tenure is one of the corporate governance characteristics that has gained attention in Malaysia. This is because the tenure of board of directors reflects

commitment, experience (Sun & Bhuiyan, 2020) as well as familiarity, strategic changes, and brings expertise and confidence to the firm's decision making (Huang & Hilary, 2018). The longer tenure directors are associated with monitoring and advising of the management (Livnat et al., 2020). The longer tenure directors tend to exert better monitoring management because they are less susceptible and less likely to be controlled by managers. In addition, longer tenure directors reflect better advising because the directors have enough time to learn more about the firm's operation. However, longer tenure directors could compromise the objectivity of the board to monitor the manager thus resulted in decreasing independence of the board and contribute to erosion of firm value (Livnat et al., 2020).

The agency theory posits that the appointment of independent directors could strengthen the monitoring of the firms. Thus, the involvement of independent directors could prevent the agency conflicts between the principals and the agents (Jensen & Meckling, 1976). However, the longer tenure of the directors serving the board could weaken their independence and create new agency conflicts. With this regard, MCGG 2017 recommends that the independent directors' tenure should not exceed nine years of services. Accordingly, the directors who remain on board for more than nine years should obtain an annual shareholder's approval. This recommendation is congruence with agency theory in reducing the conflict of interest between the principal and the agent. This is because, the familiarity (Gao et al., 2017) of the director could give them opportunity to misbehavior and this results in the increase of agency problems (Yaacob & Wan Mohd Yusof, 2020).

Empirical evidence on board tenure and fraud found a mixed result. Sadique et al. (2019) found that chairman tenure reduces the likelihood of FFR. Liu and Sun (2010) and Kim et al. (2013) found a negative relationship between director's tenure and earning management. This is because the longer tenure of the directors improves the effectiveness of them in monitoring the firms. The study is supported by Sadique et al. (2019) who found the longer chairman tenure reduces the likelihood of fraud. They documented that the longer tenure directors have a good reputation, so they are less likely to be involved in unethical behaviour that can destroy their reputation. Nevertheless, Jayanto and Widyastuti (2020) found contradict result where longer tenure directors do not influence the FFR. Yaacob and Wan Mohd Yusof (2020) evidenced that longer tenure directors are associated with corporate fraud. This study

is supported with a recent study by Wang et al. (2024) who found that the CEO tenure is positively associated with fraud commission.

Based on the arguments above, this study concluded that the longer tenure of the directors has a negative effect on the likelihood of fraud. The longer tenure directors might lose their independence due to the familiarity of the firms and create agency conflicts; thus, they are more likely to be involved in fraudulent behaviour. Accordingly, with the recommendation of MCCG 2017 on the tenure limits, it is expected the likelihood of fraud will be lower. Therefore, for the purpose of this study, the hypothesis is as follows:

***H1_(b)**: There is a significant positive relationship between board tenure and the likelihood of fraud.*

4.2.3 Board Gender and Likelihood of Fraud

Gender diversity is now a crucial factors towards effective board of directors as it brings substantial benefits to the board including new ideas and preferred interaction styles as well as preventing the corporate fraud (Haron et al., 2021). The presence of female directors on board is seen as strategic corporate issue that influences corporate governance practices (Guizani & Abdalkrim, 2023). This is because the female directors are less overconfident (Guizani & Abdalkrim, 2023), risk averse (Wahyuningtyas & Aisyaturrahmi 2022; Y. Wang et al., 2022; Maulidi, 2023), less optimistic, have different core values (Adams & Funk, 2012) and ethical sensitivity (Orazalin, 2020), more conservative and less aggressive (Ho et al., 2014; Wahyuningtyas & Aisyaturrahmi, 2022).

The managers may actively engage in unethical behaviour or fraud to meet their personal interests. The agency theory posits that board of directors have crucial roles in preventing agency problems and monitoring decisions to protect shareholders' interests as well as ensuring the higher quality of financial reporting (Fama & Jensen, 1983). Effective board characteristics, including board gender diversity, play a crucial role in controlling and improving the quality of financial reporting as well as preventing the likelihood of FFR. Therefore, the appointment of female on board is seen as one of the indicators to enhance internal control mechanism over the activities of the managers and executives (Orazalin, 2020). The appointment of female on board is also considered

as a monitoring strategy to ensure the shareholders' interests are protected and aligned with those managers (Guizani & Abdalkrim, 2023). In addition, agency theory also suggests that the higher number of female directors on board lowers securities fraud as gender diverse affects the ethical decision made by the board as a whole (Cumming et al., 2015).

Empirical evidence has highlighted that the presence of female directors resulted in different perspectives. Orazalin (2020) and Githaiga (2023) found that higher proportion of female directors can reduce earning management practices as the board is efficiently monitored. In relation to FFR, Wahyuningtyas and Aisyaturrahmi (2022) evidenced that female CFOs are associated with lower accounting fraud because the female representation enhances functioning and efficiency of corporate board, which affect the managerial behaviour. Recent studies (Martins & Júnior, 2020; Wang et al., 2022; Kaituko et al., 2023; Maulidi et al., 2023; Maulidi, 2023) found similar results where the presence of female directors will reduce the FFR. Nevertheless, Rathnasiri et al. (2018) and Ebaid (2023) found contradict result where the presence of female directors is negatively but not significantly related to the FFR. In Malaysia, Haron et al. (2021) found that higher proportion of female directors will reduce the likelihood of FFR. This is because of the female's unique characteristics of being meticulous and ethical behaviour. Studies by Ghafoor et al. (2019) and Madah Marzuki et al. (2019) also found similar evidence.

From the argument's above, this study concludes that the presence of women on boards is one of the important tools in mitigating the likelihood of fraud in Malaysia. With regard to the MCCG 2017's recommendation that the board should have at least 30% female directors, it is expected that having higher proportion of women directors on board in the Malaysian firms could help in reducing the agency conflict as well as reducing the likelihood of fraud. As the number of women on board increases, it is expected that the board can strengthen the monitoring functions and reduce the likelihood of fraud. Therefore, for the purpose of this study, the hypothesis is presented as follows:

H1(c): *There is a significant negative relationship between the percentage of women on board and the likelihood of fraud.*

4.2.4 Board Remuneration and Likelihood of Fraud

Board remuneration and FFR have been debatable topics for decades. Extensive research has highlighted the prime question whether board remuneration can be justifiable for the best interest of the shareholders (Kim et al., 2013; Dah & Frye, 2017; Radwan et al., 2022; Dias et al., 2024). Agency theory suggests that remuneration package is a tool to manage conflict between shareholders and managers. The remuneration scheme can motivate managers to limit risk in the firms (Rehman et al., 2021). Therefore, this leads to better corporate governance mechanisms due to the effective monitoring powered by the board (Rehman et al., 2021), thus in turn decreases the likelihood of FFR (Martins & Júnior, 2020; Radwan et al., 2022)). However, according to Dah and Frye (2017), the excessive remuneration offered to the directors may lead the directors to lose their independence. This will lead to fraudulent behaviour. The issue becomes worse when the remuneration schemes are tied to the management's performance. This may enable the management to be involved in FFR as to meet the shareholder's expectations or ensure they will receive the incentive or bonus and receive a significant increase in their compensation (Girau et al., 2022).

MCCG clearly states that the remuneration schemes should reflect the responsibilities, complexities and performance of the firms as well as the skills and experience of the directors. If the directors are not well paid, they are more likely to engage unethical behaviour at the shareholder's expense (Girau et al., 2022). Previous research has evidenced the role of remunerations in monitoring fraud in the firms (Mumu & Saona, 2025). Chen et al. (2021) and Davidson (2022) found that higher incentives option increases the likelihood of FFR. Besides that, Zhou et al. (2018) also documented that CEOs and CFOs with lower remuneration are more likely to commit fraud especially when they are under pressure of delisting from main market. In contrast, Martins and Júnior (2020), Radwan et al. (2022), and Dias et al. (2024) found that higher remuneration is negatively associated with FFR. When the directors are well remunerated, the board is more efficient in motoring the management, so they are less likely to be involved in unethical behaviour.

In Malaysia, previous research has found mixed results of remunerations and FFR. Ghafoor et al. (2019) and Yaacob and Wan Mohd Yusof (2020) found insignificant relationship between board remuneration and corporate fraud. They

argued that the remuneration of the directors should reflect the duties and responsibilities of the directors as well as complexity and expertise of the firm's activities. Hasnan et al. (2021) evidenced that higher remuneration paid to the directors leads to the lower financial restatement. Recent studies by Girau et al. (2022) and Girau et al. (2024) found that the likelihood of corporate fraud decreases when the remuneration increases.

Despite the empirical results that evidenced negative relationship between board remuneration and fraud, the argument by Dah and Frye (2017) comes to question because when the compensation of the directors is excessive, they might lose their independence, resulted in a negative effect of board monitoring. This could lead the directors to be involved in fraudulent behaviour. For the purpose of this study, it is expected that higher remuneration paid could lead to higher likelihood of fraud. Therefore, the hypothesis is as follows:

***H1_(a):** There is a significant positive relationship between board remuneration and the likelihood of fraud.*

4.2.5 Board Meetings and Likelihood of Fraud

The occurrence of corporate fraud is linked to how actively and effectively the board is involved and exerts its efforts (Kaituko et al., 2023). Board effort is linked to the work and effort, such as board meetings (Mousavi et al., 2022). The board meetings is one of the corporate governance tools to ensure corporate pursuits such as major issues and future business strategies can be discussed over the board meetings (Girau et al., 2022). Shan et al. (2013) posited that the frequency of board meetings is the proxy to oversee the board activities.

Agency theory posits that the challenges of the firms is to reduce information asymmetries between shareholders and the manager (Ali, 2020; Jensen & Meckling, 1976). The agency cost occurs when the managers or directors act against the shareholder's interest. The director may engage in unethical behaviour to increase their personal wealth at the expense of shareholder's wealth. Therefore, board meetings are one of the corporate governance tools to monitor and oversee the board activities and reduce the agency costs. MCCG clearly states that the board should regularly meet to

discuss the issues regarding corporation activities. According to Vafeas (1999), frequent board meeting can improve the effectiveness of the board. This is because the board has enough time and opportunity to process, consider, and exchange information (Salleh & Othman, 2016; Hossain & Oon, 2022). However, Kamarudin et al. (2018) argued that the small frequency of board meeting is linked to the effectiveness of the board. This is because higher frequency of board meetings shows a signal of illegal or questionable activities that are being confronted (Shan et al., 2013a).

The literature regarding the frequency of board meetings and fraud provided mixed empirical evidence. Chen et al. (2006), Shan et al. (2013), Gao et al. (2017) and Zhou et al. (2018) found that higher frequency of board meetings is associated with fraud. The higher board meetings frequency reflects the increasing of board efforts in dealing with unusual or emergency situations. It is contrary to several studies (Mohd Salleh & Othman, 2016; Kamarudin et al., 2018; Sadique et al., 2019; Sudarman et al., 2019; Ismail et al., 2020; Rezaei & Rostami, 2022; Kaituko et al., 2023) as they evidenced that the frequency of board meetings contributes to deterring corporate fraud. The frequency of board meetings is not only routines and formalities as well as requirements by the regulators, but it is also opportunities of the board to optimize the performance of the firms as well as addressing the FFR (Sudarman et al., 2019). Nevertheless, recent studies by Ebaid (2023), Girau et al. (2022), and Girau et al. (2024) documented that board meetings have an insignificant relationship to FFR.

Despite the mixed results regarding board meetings and fraud, this study argues that the higher frequency of the board meetings is expected to lower the likelihood of fraud. This is because when the board meets regularly, it has provided opportunities to deliberate on key operational and financial issues, make informed decisions, and provide prompt strategic guidance, thereby reducing the likelihood of fraud. Therefore, the hypothesis for this variable is as follows:

H1(e): There is a significant negative relationship between board meeting frequency and the likelihood of fraud.

4.3 Independent Audit Committee and Likelihood of Fraud

Audit committee is the ultimate board-level to oversee the process of financial reporting to ensure the financial statements are presented with objectivity, honesty, and

protecting external auditors from bias (McLaughlin et al., 2021). The presence of independent directors particularly in audit committee plays a crucial role in ensuring the effectiveness of monitoring as well as reducing the FFR (Abbott et al., 2004; Madah Marzuki et al., 2019; Girau et al., 2024; Devarajar et al., 2022). According to Beasley (1996), the presence of audit committee is crucial in reducing agency cost as they can improve the quality of monitoring by providing detailed knowledge and understanding of the financial information's required by the firms (R. J. Johari et al., 2025). Moreover, the presence of independent of audit committee could lead to better monitoring as well as reducing the likelihood of fraud as they have the ability to question the management and are free from any influence so that they are able to effectively perform their monitoring duties in the firms (Abbott et al., 2004).

Prior studies on the independent of audit committee presented a mixed result. The studies by Abbott et al. (2000), Abbott et al. (2004), Mousavi et al. (2022) and Bader et al. (2024) found that higher percentage of independent of audit committee will reduce the FFR. The presence of audit committee improves the effectiveness in assessing risks in the firms and they tend to take necessary actions when discovering fraud in the firms (Bader et al., 2024). However, Choi et al. (2004), Owens-Jackson et al. (2009), Savitri (2016) and Abbas et al. (2021) documented that the independent audit committee does not reduce the FFR. The independent audit committee is not specifically involved in the firms' economic problems since they are limited to only review the financial statement and accounting details (Abbas et al., (2021). In Malaysia, Razali and Arshad (2014) and Madah Marzuki et al. (2019) reported a negative relationship between audit committee and fraud. A recent study by Ismail et al. (2025) found that independent audit committee reduces the likelihood of FFR.

However, the studies by Kamarudin and Wan Ismail (2014) and Sadique et al. (2019) evidenced that independent audit committee is effective in reducing the FFR. Wan Mohammad and Wasiuzzaman (2020) also documented that the percentage of independent audit committee has a positive relationship to earning management. They argued that higher independent directors in the audit committee are only an illusion to shareholders of active board monitoring, but it cannot help in reducing the earning management.

Although the empirical evidence showed a mixed result on the appointment of independent audit committee, the requirement of MCCG 2017 needs them to appoint audit committee that consists solely of independent directors. Thus, it is expected that with the involvement of fully independent directors in audit committee, they are able to objectively monitor the firms as well as assessing the possible threat or unethical behaviour so that the likelihood of fraud will be lower. Therefore, this study hypothesizes that:

H2: There is a significant negative relationship between Independence Audit Committee and the likelihood of fraud.

4.4 Risk Management Committee and Likelihood of Fraud

Risk management practices is one of the corporate governance tools in reducing the financial scandals and malpractices (Elhaj et al., 2022). The main objective of RMC practices is to address and monitor the risks appetite in the firms to achieve its corporate objectives (Alazzabi et al., 2019; Bensaid et al., 2021; Madah Marzuki et al., 2024). The establishment of RMC offers several advantages including strong internal control and monitoring (Rimin et al., 2020), reduce time and attention in the additional committee despite depending on the Audit Committee (Iselin, 2019), reduce risk of going concern (Rimin et al., 2020), and create innovation so that discourage firms to take risks and preventing false financial reporting (Madah Marzuki et al., 2024).

Based on the agency theory, the RMC can reduce the agency conflict between the managers and shareholders through extensive internal control and risk assessments as well as maximize the firms value (Jensen & Meckling, 1976; Madah Marzuki et al., 2024; Malik et al., 2023). The effective monitoring through RMC would help to reduce the opportunistic behaviour of the management (Elhaj et al., 2022; Musa & Ibrahim, 2024) and lower cost of capital as well as reduce the uncertainties in commercial activities (Madah Marzuki et al., 2024). In Malaysia, risk management practice is driven by MCCG and Bursa Malaysia Listing Requirement. The establishment of RMC in Malaysia is seen as a significant milestone to achieve the firms sustainability as risk management practices emphasizes on the need of strong internal control and risk management functions (Rimin et al., 2020).

The establishment of RMC is seen as a vital role in reducing operational risks and enhance the effectiveness of the board monitoring by addressing risk assessment policies and procedures (Bensaid et al., 2021). MCCG 2017 recommends that the firms in Malaysia establish stand-alone RMC to oversee the risks. The establishment of RMC becomes a debate among the researchers. Ames et al. (2018) documented RMC to improve financial strength ratings. Abdul Rahman and Al-Dhaimesh (2018), Novatiani et al. (2022), Jaswadi et al. (2024), and Wan Fauzi et al. (2022) evidenced that RMC could prevent the likelihood of FFR as the risks are controlled by the committee. Similar to Abdullah and Said (2019), they found that RMC reduces financial crime incidence. The RMC also increases the risk monitoring and reduces the agency cost (Jia et al., 2019). In contrast, Malik et al. (2023) evidenced that the establishment of RMC may be a hindrance of the board ability to effectively monitor the risks as it is related to business strategies and operation. However, Madah Marzuki et al. (2024) argued that lower compliance among the Malaysian firms resulted to an insignificant effect of RMC to reduce the likelihood of FFR. The finding is similar to Yatim (2009), Abdullah et al. (2017) and Malik et al. (2021) which concluded that the establishment of RMC is still lower in Malaysian firms.

On the other hand, MCCG 2017 also recommends that the RMC should comprise of majority of independent directors. According to Musa and Ibrahim (2024), the independent director is considered as effective corporate governance mechanism in motoring the opportunistic behaviour of the manager. Agency theory posits that the presence of independent directors can improve the effectiveness of the board monitoring due to incentives in developing reputations as well as experts in decision-making (Fama & Jensen, 1983; Musa & Ibrahim, 2024). Numerous studies have documented that independent directors tend to demand better governance so that that managers are less likely to commit unethical behaviour particularly the FFR (Rezaei & Rostami, 2022; Kaituko et al., 2023; Amin et al., 2022; Ebaid, 2023). In relation to RMC independent, Olayinka et al. (2019) evidenced that RMC independence improves the oversight function of risk implementation, risk governance, and risk disclosure. However, Jia et al. (2019) found RMC to be independently insignificant to risk management quality disclosure. Malik et al. (2021) argued that RMC independence has negative correlation to firms' performance due to the lack of experience, knowledge and professional expertise of the firms to rigorously monitor the firm.

From the argument's above the establishment of RMC which consists of independence of RMC produces a mixed result. Although the mixed results are presented, the recommendation of MCCG 2017 is seen as a new milestone to the Malaysian firms to specifically assess risks in the firms by establishing RMC. In this study, the establishment of RMC is seen as one of monitoring tools in mitigating the possible risks that occur in the firms and at the same time the existence of RMC is seen to help the firms to reduce the likelihood of fraud. Therefore, the hypotheses for this variable are as follows:

H3_(a): There is a significant negative relationship between risk management committee and the likelihood of fraud.

H3_(b): There is a negative relationship between independent of risk management committee and the likelihood of fraud.

4.5 Ownership Structures and Likelihood of Fraud

4.5.1 Family Ownerships and Likelihood of Fraud

The role of family ownerships in business has attracted the attention of the researchers due to its unique management structures and cultural values (Khuong et al., 2024). Family ownership is one of the types of controlling shareholders that can play an important role to influence the firm's management practices and strategic behaviour (F. Hashim et al., 2021). This is because family ownership creates unique resources that contribute to effective cost management (Khuong et al., 2024), job creation, wealth generation, and competitiveness (Nuhu et al., 2024). However, family ownership also faces challenges especially regarding corporate governance when they hold the controlling power in the firms (Khuong et al., 2024).

Agency theory posits that family ownership can improve financial reporting quality and reduce the likelihood of fraud (Jensen & Meckling, 1976). This is because the domination of family ownership can improve the monitoring behaviour of managers, therefore reduce the agency cost (Kusuma & Fitriani, 2020). However, Jong and Ho (2020) stated that family ownership can be the center of conflict of interest on principal-principal problem (Type II agency conflict) due to the controlling shareholders who do not act with the interest of minority shareholders. Nevertheless, Wang (2006) argued that the agency costs in family-owned firms occur through two mechanisms which are alignment effect and entrenchment effects. The alignment effect

aligns with the interests of owners and managers so that they are less likely to engage in unethical behaviour (Hasnan et al., 2013; Teh et al., 2017). Meanwhile, the entrenchment effect aligns with self-serving behaviour by controlling the shareholders where they opportunistically expropriate the wealth of minority shareholders policies (Shleifer & Vishny, 1997; Wang, 2006; Teh et al., 2017).

Empirical studies on the effect of family ownerships on corporate governance and fraud have presented mixed results. Hashmi et al. (2018) and Tee and Kasipillai (2022) evidenced that larger family ownership is associated with higher earning quality. Wan Mohammad et al. (2014) and Wan Mohammad and Wasiuzzaman (2020) found that family ownership reduces the earnings management practices. Nevertheless, Alhebri et al. (2021) documented that larger family ownership offers the manager to opportunistically manage earnings. In relation to FFR, earlier studies by Hasnan et al. (2013) and Hasnan et al. (2014) found that fraud is lower when they have larger family ownership. The study is supported by Madah Marzuki et al. (2024) who argued that managers are less likely to engage in unethical behaviour in the family firms. However, Ghafoor et al. (2019) and Kusuma and Fitriani (2020) reported that larger family ownership has insignificant relationship to the likelihood of fraud. Interestingly, a recent study by Wan Mohd Zin et al. (2023) found low significant relationship between family ownership and FFR.

From the arguments, the presence of larger family ownership can lead to both alignment and entrenchment effects. The findings reveal that larger family ownership can enhance monitoring and long-term commitment, but can also resulted in opportunistic behaviour of the controlling shareholders. For the purpose of this study, the presence of corporate governance mechanism in the firm is expected to be weak in the presence of family ownership due to the increase of agency conflict. This is because family ownership might expropriate the wealth of minority shareholders to meet their own interest. Therefore, it is expected that with the involvement of larger family ownership in the firms, the likelihood of fraud will increase even if good corporate governance mechanisms are in place. Thus, the hypotheses are presented as follows:

H4(a1): Family ownership moderates a positive relationship between percentage of independent of directors and the likelihood of fraud.

H4_(a2): Family ownership moderates a positive relationship between board tenure and the likelihood of fraud.

H4_(a3): Family ownership moderates a positive relationship between board gender and the likelihood of fraud.

H4_(a4): Family ownership moderates a positive relationship between director's remuneration and the likelihood of fraud.

H4_(a5): Family ownership moderates a positive relationship between board meeting frequency and the likelihood of fraud.

H4_(a6): Family ownership moderates a positive relationship between independent audit committee and the likelihood of fraud.

H4_(a7): Family ownership moderates a positive relationship between risk management committee and the likelihood of fraud.

H4_(a8): Family ownership moderates a positive relationship between independent of risk management committee and the likelihood of fraud.

4.5.2 Institutional Ownership and Likelihood of Fraud

Institutional ownership plays a significant role in strengthening the corporate governance of their investee firms through constructive engagement and shareholder activism (Qasem et al., 2021). Agency theory posits that institutional investors play as a vital corporate governance tool because of their sophisticated and efficiency in receiving and processing the information; thus, they tend to be more effective in business judgement and reduce agency conflicts (Githaiga, 2023; Jensen & Meckling, 1976). Ghafoor et al. (2019) presented two investors' behaviour in the firms which are long-term horizon and short-term horizon. Long-term horizon investors focus on effective monitoring so that the likelihood of fraud will be reduced. Meanwhile, short-term horizon investors are less likely to monitor the managers because they only focus on their investment returns. This results in the managers to engage in opportunistic behaviour such as fraud.

Previous studies have documented institutional investors and corporate governance. Abdullah et al. (2010) stated that institutional investors help in reducing the financial misstatement due to the increase of control power by the outsiders to monitor the firms' activities. Aziz et al. (2017) evidenced insignificant relationship between institutional ownership and financial restatement as they focused on the short-

term of financial result; thus, they are more likely to engage in earnings management practices. The study contradicts to Hwang et al. (2019) who evidenced that institutional ownership cannot reduce the information asymmetry since they have enough resources and have higher expertise to monitor the firm. This study is supported by Githaiga (2023) who revealed that the presence of institutional ownership improves the monitoring and disciplines the managers; thus, corporate governance improves and reduces earning management practices. Ghafoor et al. (2019), Gupta et al. (2019) and Rathnasiri et al. (2018) evidenced that institutional investors reduce the likelihood of fraud due to better monitoring in assessing risks of the firms. Recent studies by Kusuma and Fitriani (2020), Wang et al. (2024) and Yendrawati et al. (2023) also presented similar findings.

In the context of this study, larger ownership of institutional investors is seen to be a good sign of corporate governance to mitigate the likelihood of fraud. The presence of large institutional ownership is expected to reduce the agency problems in the firms. With the implementation of good governance mechanisms, the involvement of larger institutional ownership will be able to reduce the likelihood of fraud. This is because institutional investors possess resources, expertise, and incentive to perform strong monitoring. Accordingly, with the larger institutional ownership the likelihood of fraud will be lower as they demand corporate transparency and enforce stricter governance mechanism. Therefore, the hypotheses are as follows:

H4_(b1): Institutional ownership moderates a negative relationship between percentage of independent of directors and the likelihood of fraud.

H4_(b2): Institutional ownership moderates a negative relationship between board tenure and the likelihood of fraud.

H4_(b3): Institutional ownership moderates a negative relationship between board gender and the likelihood of fraud.

H4_(b4): Institutional ownership moderates a negative relationship between the director's remuneration and the likelihood of fraud.

H4_(b5): Institutional ownership moderates a negative relationship between board meeting frequency and the likelihood of fraud.

H4_(b6): Institutional ownership moderates a negative relationship between independent audit committee and the likelihood of fraud.

H4_(b7): Institutional ownership moderates a negative relationship between risk management committee and the likelihood of fraud.

H4_(b8): Institutional ownership moderates a negative relationship between independent of risk management committee and the likelihood of fraud.

4.6 Research Framework

Figure 4.1(a) and Figure 4.1 (b) below present the research framework for this study.

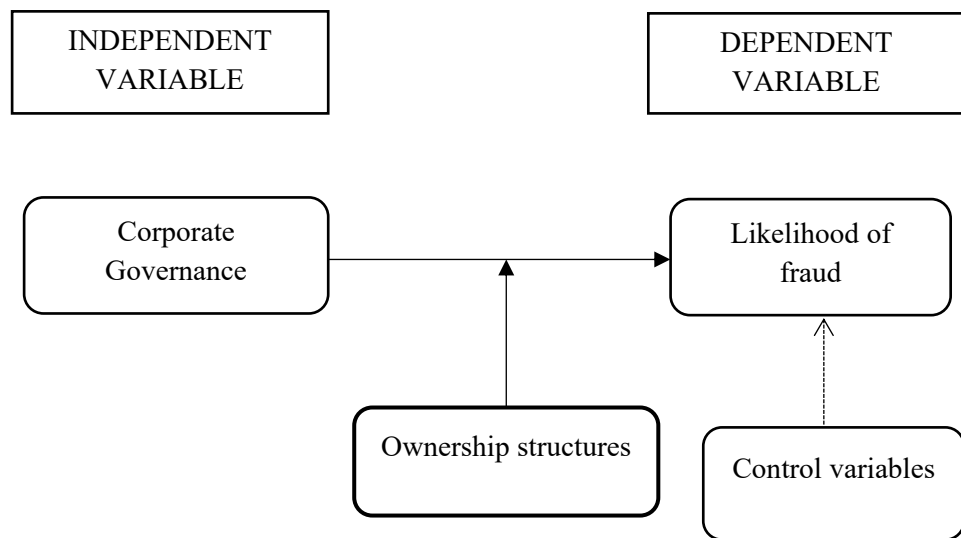


Figure 4.1 (a): Research Framework of This Study

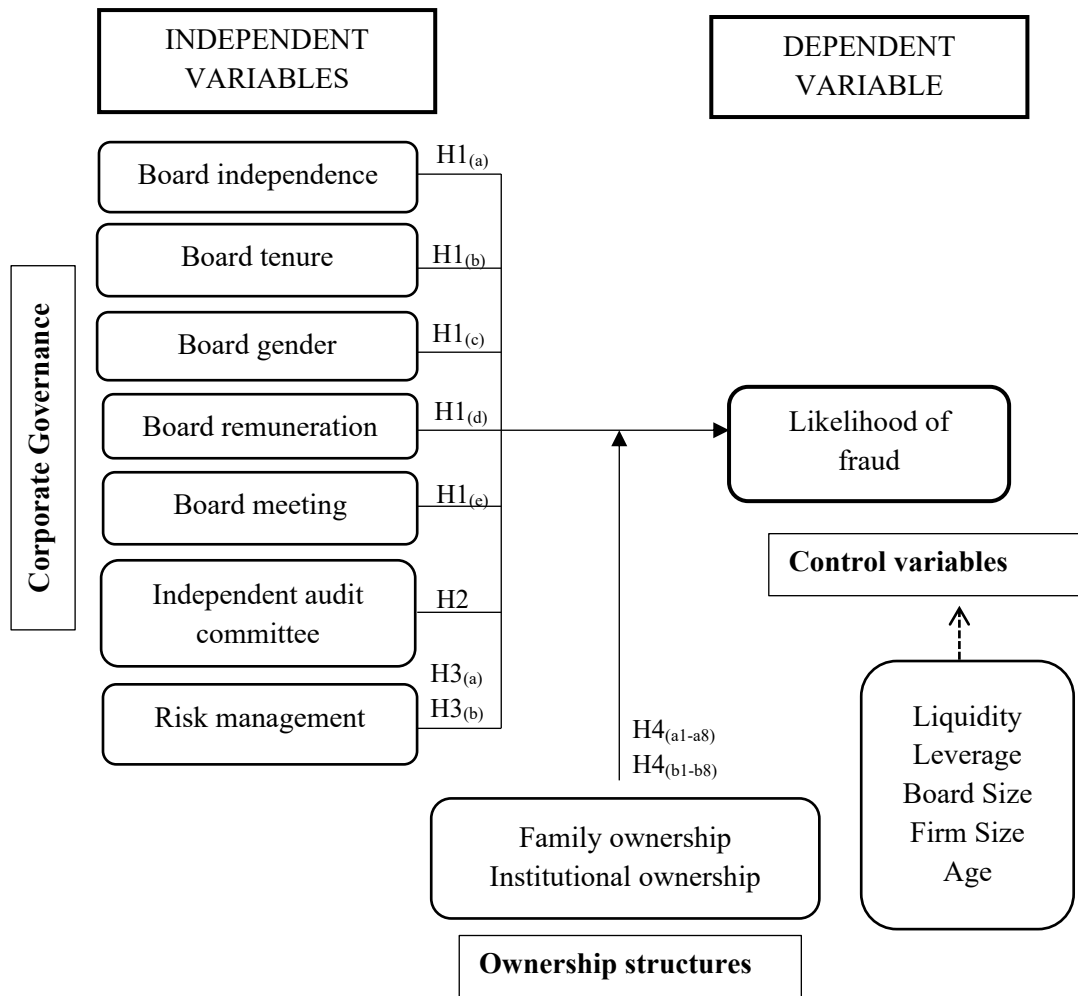


Figure 4.1(b): Extended Research Framework

Table 4.1

Summary of research hypotheses for this study

Variables	Hypothesis	Relationship
Board Independent and the likelihood of fraud	H1 _(a)	Negative
Board Tenure and the likelihood of fraud	H1 _(b)	Positive
Board Gender and the likelihood of fraud	H1 _(c)	Negative
Board Remuneration and the likelihood of fraud	H1 _(d)	Positive
Board Meeting and the likelihood of fraud	H1 _(e)	Negative
Independent Audit Committee and the likelihood of fraud	H2	Negative
Risk Management Committee and the likelihood of fraud	H3 _(a)	Negative
Independent Risk Management Committee and the likelihood of fraud	H3 _(b)	Negative
Family ownership and the likelihood of fraud	H4 _(a1) – H4 _(a8)	Moderate Positive
Institutional ownership and the likelihood of fraud	H4 _(b1) – H4 _(b8)	Moderate Negative

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

This chapter delineates the comprehensive research methodology employed to investigate the relationship between corporate governance, likelihood of fraud, and ownership structure. It begins by outlining the overarching multi-phase research design (Section 5.2). Subsequently, it details the sample selection strategy and data collection process (Section 5.3), followed by a thorough explanation of how all variables—dependent, independent, moderating, and control—are defined and measured (Section 5.4). The empirical models used to test the hypotheses are then specified (Section 5.5), and the suite of data analysis techniques is described (Section 5.6). The chapter concludes with a discussion of robust further analyses (Section 5.7) to validate the core findings.

5.2 Research Methodology

The method in this study involves several phases. Figure 5.1 shows the overview of research framework for this study. This study involves 3 phases. The first phase is the measuring of the compliance status of the selected firms. This phase aims to achieve objective 1 which is to analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms. To achieve objective 1, descriptive statistics are conducted to measure the level of compliance among the firms. The firms are considered complying with the MCCG 2017 recommendations when they meet the thresholds as stated in the MCCG 2017. The requirements of MCCG 2017 used in this phase are treated as the independent variables (IV) for this study. This is to ensure a consistent and stable regulatory framework for observation throughout the entire 2017-2022 study period, avoiding the confounding effects of a mid-period code change. The recommendations mandated in MCCG 2017 are as follows:

- 1) The board should comprise of at least half of the independent directors
- 2) The tenure of the board of directors should not exceed nine years of service
- 3) The firms should have at least 30% of women directors on board

- 4) The firms are to disclose the detailed remuneration of each of their directors
- 5) The firms are required to disclose the number of their board meetings to the public
- 6) The firms are encouraged to establish an Audit Committee that consisted solely of independent directors
- 7) The firms are encouraged to establish a Risk Management Committee (RMC)
- 8) The majority of the RMC comprises of independent directors.

The second phase is to identify the narrative pattern among the selected firms and to identify the main dependent variables (DV) for this study. The aim for phase 2 is to achieve objective 2 which is to identify the narrative pattern of likelihood and non-likelihood fraud firms using Textual Analysis. RapidMiner Studio is chosen in this phase for its user-friendly visual interface and powerful, integrated text mining operators, which streamline the complex process of textual analysis (Devipriya & Kalpana, 2019). The process starts from text pre-processing and text analysis. The text analysis of this study generates two outputs which are Topic Modelling and Sentiment Analysis. For topic modelling, this study uses document clustering and topic modelling via K-means and Latent Dirichlet Allocation (LDA) algorithm. In this process, the data from MD&As are matched with Loughran and McDonald's (2011) dictionary to obtain the words that appear to be positive or negative. At the end of this process, this study tabulates the top 30 most frequent words that appear in MD&As for fraud and non-fraud firms from 2017-2022 which are coded as financial characteristics that contribute to fraud. In this phase, it is expected that the fraud firms present higher negative sentiment and lower positive sentiment. Meanwhile, for non-fraud firms, it is expected that the firms present lower negative sentiment and higher positive sentiment. The detail for this process is discussed in section 5.4.1.1 to section 5.4.1.2.

Meanwhile, for the sentiment analysis, the same process is conducted except for document clustering and topic modelling. Nevertheless, this process uses another dictionary which is SentiwordNet (Esuli & Sebastiani, 2006) to obtain the polarity sentiment for each of the MD&As in this study. The polarity sentiment could be positive, negative, or neutral. The polarity sentiment is tabulated in the form of frequency of sentiment. This polarity sentiment is used as DV for this study to run regression analyses. The likelihood of fraud is then regressed with corporate

governance variables to assess its influence. The process is further discussed in detail in section 5.4.1.2.

In phase 3, regression analysis is adopted to determine the relationship between the likelihood of fraud and MCCG compliance. The aim for this phase is to achieve objective 3 of this study which is to determine the relationship between the likelihood of fraud and corporate governance among likelihood and non-likelihood fraud firms. Lastly, the last phase is conducted to regress an analysis in determining the effect of ownership structure on the relationship between the likelihood of fraud and MCCG. This phase aims to achieve objective 4 of this study which is to determine whether ownership structure can moderate the relationship between the likelihood of fraud and the MCCG among likelihood and non-likelihood fraud firms. In these phases, multivariate analyses are conducted using Ordinary Least Square (OLS) regression. The E-views software version 13 is adopted in this study to determine the correlation analysis, univariate analysis, and multivariate analysis for its robust capabilities in handling panel data and performing regression diagnostics. Figure 5.1 illustrates the methodology used in this study.

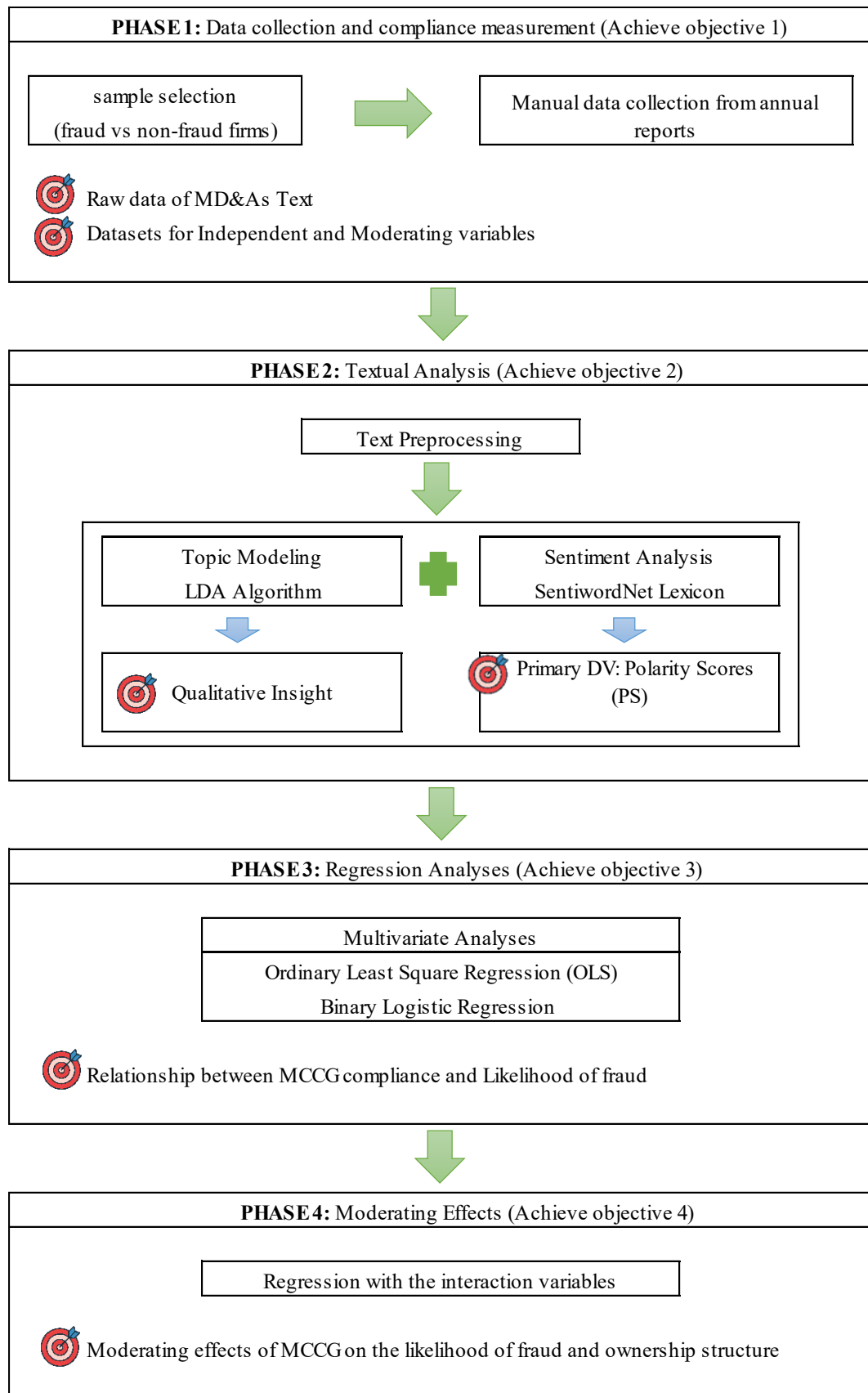


Figure 5.1 Research methodology for this study (Source: Author's own work)

5.3 Sample Size and Data Collection

5.3.1 Likelihood of Fraud vs non-likelihood of fraud firms

The main sample used for the purpose of this study consists of public Listed firms in Main Market of Bursa Malaysia and ACE markets that are listed under the SC's litigation press releases, criminal prosecution, civil actions and regulatory settlement. All the sample under SC investigation is included if the appropriate corporate governance information is available in the annual reports. This sample is named as "Likelihood of Fraud firms". The SC investigated 123 firms between 2017-2022 with the total sample of 897 firm-year observations. However, 93 firms were excluded from the sample. The samples included financial institution, private firms, firms delisted from Bursa Malaysia and firms with no annual report available from 2017-2022. Hence, the final sample consisted of 30 firms.

The initial sample for this study consists of 30 likelihoods of fraud firms for the six years of 2017-2022. Therefore, the total observations consist of 180 firm-year observations (30 firms x 6 years) likelihood of fraud firms. Nevertheless, 30 of the observations were excluded due to unavailability of data in annual report. Therefore, the final sample of likelihood of fraud sample consists of 150 firm-year observations. Consistent with Goel and Uzuner (2016) and Hasnan et al. (2022), this study adopted a matched sample approach where the 150 firm-year observations of likelihood of fraud firms are matched with 150 firm-year observations of non- likelihood of fraud firms which is defined according to their industry specific and total assets.

Based on the selected firms, this study selected six years of data to determine the likelihood of fraud expressed in the financial report. The final sample of 150 firm-year observations of likelihood of fraud are matched with 150 non- likelihood of fraud firms according to the following criteria: excluding the financial institution and insurance firms because they are subjected to different regulations. The firms that do not have complete data are excluded from the sample selection. Table 5.1 describes the profile of the likelihood of fraud firms.

Table 5.1
The Profile for Likelihood of Fraud Firms

Panel A: Sample of Likelihood of Fraud Firms		<u>Number</u>
Initial Firms listed under Criminal Prosecution, Civil Actions & Regulatory Settlement in SCM		123
(-) Financial institution		-14
(-) Private firms		-43
(-) firms delisted from bursa malaysia		-5
(-) firms with no annual report available from 2017-2022		-31
Total number likelihood of fraud firms		30
Panel B: Sample of the likelihood of fraud observations		<u>Number</u>
Initial sample of observations (30 firms x 6 years)		180
(Less) Unavailability of data		-30
Total sample of likelihood of fraud observations		150
Total observations (150 likelihood of fraud firms vs 150 non-likelihood of fraud firms)		300
Panel C: Distribution of likelihood of fraud firms among Industry Sectors		
<u>Industry</u>	<u>Percentage</u>	<u>Number of likelihood of fraud firms</u>
Construction	7%	2
Consumer product and services	27%	8
Energy	7%	2
Industrial product and services	20%	6
Technology	13%	4
Plantation	3%	1
Property	13%	4
Telecommunication and Media	3%	1
Transportation and Logistics	7%	2
	100%	Total: 30 firms

Panel C in Table 5.1 describes the industry sectors among the likelihood of fraud firms. From the total samples, the consumer product and services show the highest number of fraud cases with 27% of the total firms, followed by industrial product and services with 20% of the total firms. The telecommunication and media sector has the lowest case among the total firms with a total of 3% only.

This study uses secondary data which is content analysis and all the data are manually collected by hand. The DV for this study, which is the likelihood of fraud, is manually collected from annual report of MD&As sections. The MD&A is defined as

the section in financial statement, which is written by the top management to the investors on how the business was performed in the past, its current condition as well as projections of future outlook (Dong et al., 2016). Meanwhile, the IV which is MCCG variables are also collected from the annual report from the section of board profile, corporate governance report, risk management report, audit committee report, and financial statement report. On the other hand, the moderating variables of ownerships structures are also collected from annual report of the analysis of shareholding's section.

5.4 Research Design and Variables Measurement

5.4.1 Dependent Variable

The dependent variable for this study is the likelihood of fraud where it is measured by two indicators which are polarity sentiment and dummy variable of likelihood of fraud firms. Firstly, the polarity sentiment is the public opinion used to define the polarity of the textile where the text can have a positive, negative, or neutral attitude. In other ways, sentiment can be categorized into n-point scales such as very good, good, bad, very bad and satisfactory (Chauhan, 2017). Polarity sentiment focuses on attitude or opinion whereas text mining focuses on the facts. In determining polarity sentiment, the text of MD&A section in all samples was extracted from the annual report. The text of MD&As can be distinguished as being more positive or more negative or more neutral (Goel & Uzuner, 2016). Polarity sentiment is positive if the sentiment is more than 0 (>0), the sentiment is negative if the sentiment is less than 0 (<0), and the sentiment is neutral when the sentiment is 0 ($=0$). This study used polarity sentiment as a proxy for likelihood of fraud because according to Goel & Uzuner (2016) evidenced that the fraudulent MD&As contained three times more positive sentiment and four times negative sentiment words as compared to non-fraudulent MD&As. Furthermore, the recent study by Li et al. (2023) also documented that the more positive intonation of the language is less likelihood of fraud. The polarity sentiment is literated as "PS" where it is measured by the polarity scores.

Secondly, this study used dummy variable as a proxy of the likelihood of fraud. The dummy variable for fraud and non-fraud is literated as "FFR". The likelihood of fraud firm is coded as "1" while the non-likelihood of fraud firm is coded as "0"

(Hasnan et al., 2014; Ismail Khan & Muhammad Hapiz, 2022). The firms are defined as likelihood of fraud firm as the firms listed under the SC's litigation press releases, criminal prosecution, civil actions and regulatory settlement which have higher possibility to be classified as fraud firms. The summary of these variables are presented in Table 5.3.

After the MD&A text is created, this study performs two cleaning steps which are (i) remove all the tables containing financial information from the text of MD&As and (ii) remove all the numeric information of the text of MD&As as the numbers do not carry any narrative pattern information. The MD&A text obtained in the annual report is then converted to Excel datafile format using adobe reader or converting online via <https://www.ilovepdf.com/>. However, some of the MD&As are presented in scanned pdf format. Therefore, the MD&As in scanned pdf format is converted to Microsoft words via <https://www.investintech.com/pdf-ocr/> since excel file is unable to read the scanned format. To analyse polarity sentiment, two dictionary approaches are conducted which include Loughran and McDonald's (2011) dictionary and SentiWordNet dictionary (Esuli & Sebastiani, 2006).

Then, machine learning technique (Rapid Miner studio) version 9.10.013 is employed to explore the narrative pattern among the selected firms. Rapid Miner studio is a visual workflow designer used for predictive analysis (Devipriya & Kalpana, 2019). Rapid Miner is a system that facilitates data access, manages accessed data, loads and evaluates data such as texts, images and audio tracks. This software allows the users to structure the data by mending and arranging it, which is then used to create model and plans with a strong set of tools and functionalities that are easier for the user to extract critical statistics and information (Devipriya & Kalpana, 2019). Rapid Miner starts by reading the excel sheet (phase 2). The design process in Rapid Miner is shown in Figure 5.2.

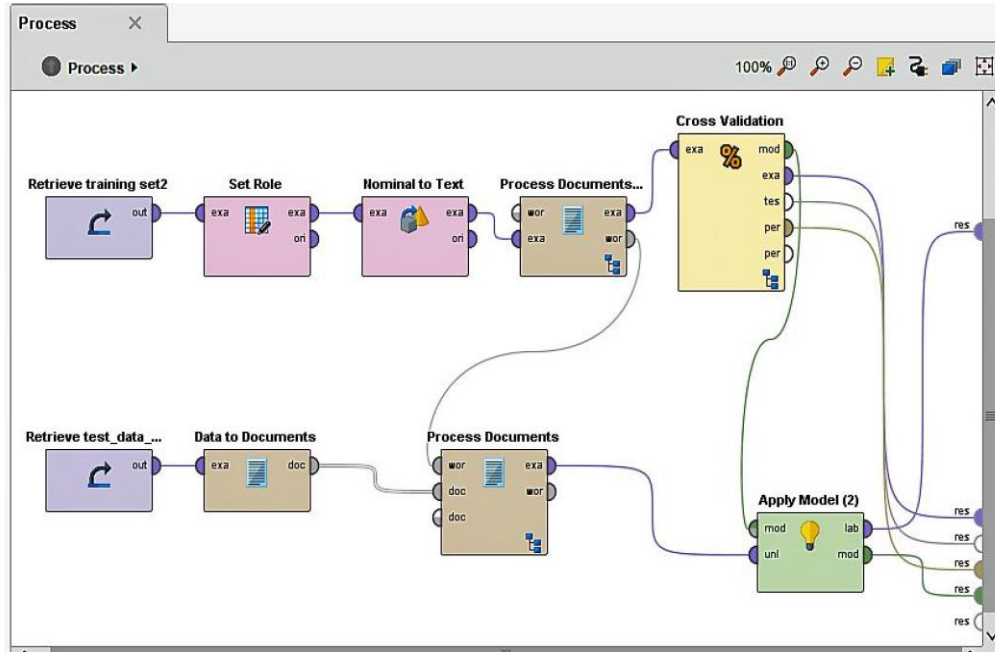


Figure 5.2 Rapid Miner studio process extracted from Chauhan (2017)

The raw data converted from pdf format are then exported into Rapid Miner Studio. The sample of fraud vs. non-fraud data is analysed year by year since 2017-2022 by using new repository in Rapid Miner Studio. There are five steps in Rapid Miner Studio used in this study to define the dependent variable. The steps are discussed in section 5.4.1.1 to section 5.4.1.2.

5.4.1.1 Text Pre-Processing and Text-Processing

(i) Text Pre-Processing

The first process in RapidMiner Studio is text pre-processing. Text pre-processing is a cleaning process carried out to ensure the selected documents are noise-free by deleting duplicates and less informative phrases from the text. This cleaning process also removes typographical errors or validates and corrects values against a known list of entities. In general, the pre-processing is the process of separating a set of characters from the text stream into classes, which is the process of transition from one state to the next on the occurrence of the particular characters (Palomino & Aider, 2022). Figure 5.3 shows the process of pre-processing in RapidMiner Studio.

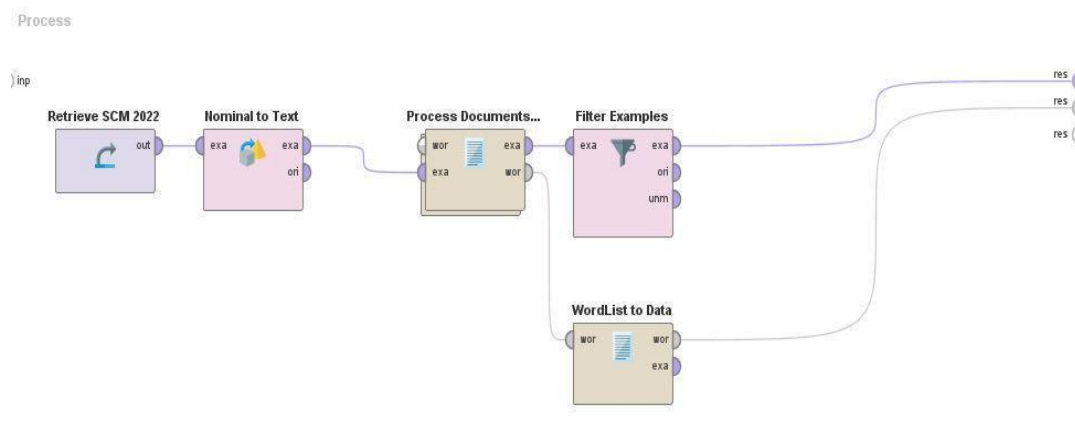


Figure 5.3 Text pre-processing in RapidMiner Studio

The text pre-processing starts from reading the excel operator that is imported from Microsoft excel spreadsheet. The main task of this operator is to import data from Microsoft Excel Spreadsheet. This operation is able to read the spreadsheets in the workbook and the table which have a format; for example, each row represents an example and each column represents an attribute. Nominal to text operator changes the type of nominal attributes to the readable text, which transforms attributes as an input to the next operator. This operator focuses on the mapping values of the attributes to the respective string values. The main objective of nominal value is to serve directly as string value of the new attributes; if the value is missing in the nominal attribute, the new value will also be missing (Devipriya & Kalpana, 2019).

Next is the cleaning process known as Process Documents from Data. This process includes a few steps of Tokenize, transform cases, Filter Tokens, Filter Stopwords and Stem (Porter) as shown in Figure 5.3. Tokenize is an important step in language processing tasks as it is used in text, parsing, word counting, corpus generation and spell checking. Tokenize deconstructs the text of a document into a sequence of tokens. Tokenize will construct several tokens consisting of one word. Besides, tokenize is used to identify the meaningful keywords and transform the abbreviations and acronyms to a standard form (Verma et al., 2014). The transform case is used to change one case to another either upper to lower or vice-versa (Devipriya & Kalpana, 2019).

In the analysis, some of the tokens may be not useful and can be eliminated; for instance, very short words that do not convey much independent meaning or words that may have special vocabulary terms which are common in the text to be analysed but

does not have value. Token can be filtered using the “Filter Tokens” operator. The filter tokens operator consists of Filter Token by Length and Filter Tokens by Content. Filter Tokens (by Length) operator is used to filter the size of the tokens. The Filter Tokens (by Length) operator removes all the words collected of less than minimum characters and more than maximum characters (Matej & Miroslav, 2014). For example, words that have less than 2 characters or more than 25 characters are removed from the dataset. Meanwhile, Filter Token by Content removes specific tokens based on the user input. In this study, three (3) min characters and forty (40) maximum characters are selected.

Filter Stopwords (English) is used to remove English stopwords in a document and replace the occurrences of a specified regular expression with a specified replacement using replace tokens operator. In stopword elimination, the common words that are unlikely to help text mining such as articles, prepositions and pro-nouns are considered as stopwords. Besides, the stopword elimination also reduces the text data and helps to improve the system performance such as “a”, “is”, “you”, “an” (Verma et al., 2014). Meanwhile, the popular operator for English words is porter stemming. Stemming is a technique for the reduction of words into their stems, base or root. For instance, in the English language, many words can be stemmed into their base word e.g., like, liking, likely and unlike, in which their root word is like (Verma et al., 2014). However, this removal of words will lead to an incorrect stem or root, but these stems do not have problems for the stemming process and the stem is still useful because all the other inflections of the root are transformed into the same root (Verma et al., 2014). Stemming also works further to refine text mining where it combines different tokens that have the same meanings; for example, American, America, Americans.

The next process in Process Document from data is Replace token. This process helps to combine several tokens into one category. For example, Car, Van and Truck are categorized into Vehicles. Meanwhile, the last two processes of Extract Length and Extract Token Number are the processes used to extract the document’s length and token number before adding them into the metadata in the analysis section.

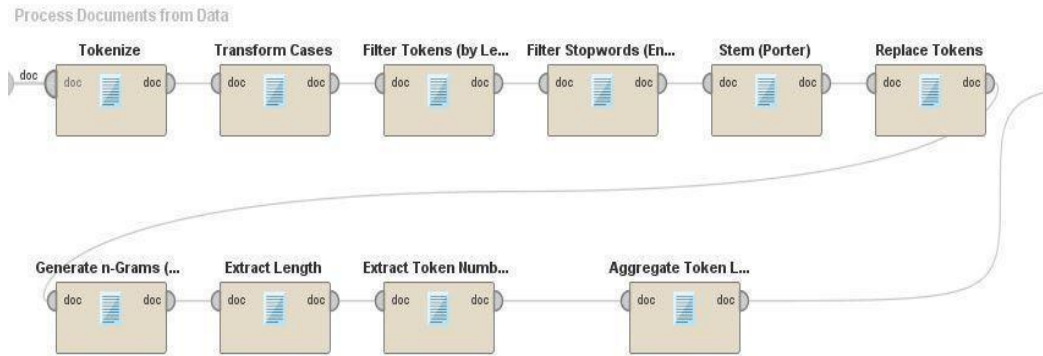


Figure 5.4 Operators used in Process Document from Data

Row No.	Company	Year	MD&A
1	HARN LEN C...	2022	?
2	G Neptune B...	2022	The Company was previously involved in the information technology industry specialising in software for the apparel/textile industry while its...
3	Multi Sports ...	2022	?
4	Caring Phar...	2022	?
5	Multi-code (M...	2022	OVERVIEW OF GROUP'S BUSINESS. MCE Holdings Berhad ("MCE") and its subsidiaries ("MCE Group" or "Group") is a leading Original E...
6	United U-Li C...	2022	Dear Shareholders,
7	Grand Hoove...	2022	PTT Synergy Group Berhad (formerly known as Grand Hoover Berhad) ("PTTS" or "the Company") is one of the Malaysia's I...
8	Pasdec Holdi...	2022	The year 2022 proved to be quite a challenging year given that the national economy has not fully recovered from the collapse of all economi...
9	Kian Joo Can...	2022	?
10	LFE Corporat...	2022	The following management discussion and analysis is a review of the business and operations, current financial year financial results and ...
11	ACE Holding...	2022	The on-going armed conflict in the Ukraine has triggered a global price fluctuation of commodities. Together with the on-going Covid-19 pa...
12	Khee San Be...	2022	Khee San Berhad ("KSB") and its three (3) subsidiaries Khee San Food Industries Sdn Bhd ("KSFI"), Khee San Marketing Sdn Bhd and Meg...
13	NetX Holding...	2022	NetX Holdings Berhad ("NetX" or "Company" or "Group") is a public listed technology company on ACE Market of Bursa Malaysia Securities ...
14	Rapid Syner...	2022	?
15	Transocean ...	2022	Overview of the Group's business and operations
16	Three-A Res...	2022	INDUSTRY OVERVIEW.
17	MBM Resour...	2022	The year 2022 has been an outstanding year for MBMR on many levels. In "Scaling New Heights", the Group recorded the highest revenue a...
18	Malaysia Paci...	2022	?
19	WCT Berhad	2022	In 2022, businesses around the world operated in the COVID-19 endemic transition phase amid market uncertainties and evolving macroe...
20	KNM Group ...	2022	The Board of Directors of KNM Group Berhad ("the Company") and its subsidiaries ("the Group") would like to express our gratitude for your ...
21	Perak Corpor...	2022	Perak Corporation Berhad ("Perak Corp" or "the Company"), is a diversified public listed company with interests in various sectors, in...
22	Asia Media G...	2022	Asia Media Group Berhad ("the Company", "the Group", "AMGB"), has turned around under the new management team for the past...
23	Prolexus Ber...	2022	The financial year ended 31 July 2022 ("FYE 2022") has proved to be a challenging year where operation performance continues to reflect th...
24	China Autom...	2022	Dear Valued Shareholders,
25	Lii Hen Indus...	2022	The furniture products of the Group cater mainly to the overseas market, especially North America, which constituted about 92% (2021: 95%...

ExampleSet (30 examples, 0 special attributes, 3 regular attributes)

(a)

Row No.	text	Company	Year	document_l...	token_num...
1	compani prev...	G Neptune B...	2022	1854	306
2	overview grou...	Multi-code (M...	2022	7149	1232
3	dear shareho...	United U-Li C...	2022	6209	1042
4	ptt synergi gr...	Grand Hoove...	2022	7253	1228
5	year prove ch...	Pasdec Holdi...	2022	5910	1012
6	manag discu...	LFE Corporat...	2022	2987	510
7	go arm confli...	ACE Holding...	2022	1812	312
8	khee san ber...	Khee San Be...	2022	5853	1011
9	netx hold ber...	NetX Holding...	2022	9864	1693
10	overview grou...	Transocean ...	2022	11037	1950
11	industri overi...	Three-A Res...	2022	7393	1247
12	year outstand...	MBM Resour...	2022	13782	2393
13	busi world op...	WCT Berhad	2022	12764	2213
14	board directo...	KNM Group ...	2022	8433	1442
15	perak corpor ...	Perak Corpor...	2022	6347	1059
16	asia media g...	Asia Media G...	2022	5025	857
17	financi year e...	Prolexus Ber...	2022	7777	1312
18	dear valu sha...	China Autom...	2022	2103	372
19	furnitur produ...	Lii Hen Indus...	2022	12601	2196
20	overview grou...	TRIVE Proper...	2022	5854	1012
21	dear stakehol...	Iris Corporati...	2022	8284	1424
22	happen chall...	Serba Dinamik	2022	4336	743

(b)

Figure 5.5: Examples of Input (a) and Output (b) of the Data Cleaning Process

The next operator used in Text Pre-processing is “WordList to Data” operator. The initial pre-processing is usually in the form of “wordlist” of token with the associated frequencies. In this process, the object is converted into a dataset for further analysis or stored as wordlist for use in later modelling pre-processing.

(ii) Text Processing

In this process, all the processes in the Text Pre-processing are repeated. However, in this process, the parameters for the operators are added on the right-hand side of the process, listed under the Parameters tab. The parameter text dictionaries specify where to read the text from data. Vector creation is an important parameter used in this study where the Term Frequency Inverted Document Frequency (TF-IDF) is a term-weighting method approach. TF-IDF is a powerful function to enhance the information contained within the document frequency matrix (Sabbagh & Ameri, 2020). There are three important objectives:

- Compared to the shorter documents, the longer documents would have higher individual term counts. Since the term frequencies are important in

classification and clustering process, the TF function is used to eliminate the effect of the document's length on data analysis process:

$$TF(t) = \frac{\text{Number of timesterm } t \text{ appear in a document}}{\text{Total number of terms in the document}}$$

- ii. The term that appears in most documents has little power to predict the class of the document. The IDF function weighs down the frequent terms in the corpus while scaling up the rare ones:

$$IDF(t) = \log\left(\frac{\text{Total number of documents}}{\text{Number of documents with term } t \text{ in it}}\right)$$

- iii. The TF function multiplies with IDF function which then results into both frequencies of the document's length as well as the frequencies of the terms in all documents in the corpus.

Nonetheless, this method gives higher weight to terms that appear frequently in the document, but not many times in other documents. In any case, this might yield such a large number of words, even up to a huge number of them. An excessive number of words would make it restrictive to complete the progressive data mining steps because of lengthy running times for the data mining algorithms, (Matej & Miroslav, 2014). Therefore, the prune method is selected. The text pruning options allow the words automatically eliminated either above or below certain user-defined thresholds. The threshold can be by percentage (e.g., keep the top 90% terms), by rank (e.g., keep the top 100 terms), or by absolute number (e.g., keep terms that occur > 10 times; refer to Figure 5.6). In this study, the absolute number is selected.

The N-grams operator is also added in the process document of data in which the phrases in this operator that contain a token may be useful and important for the context. For example, the token 'happy' might be a part of the phrase 'i_am_not_happy'. An n-gram is also a phrase or combination of words that take the different meaning or greater than the meaning of each word individually. The 'n' is the maximum number of terms that are used to group together. For instance, 'room' and 'service' as separate terms vs. an n-gram of two, 'room_service'. This study uses n-gram of 'two (2)'.

The next process in Text Processing is Set Role. The Set Role operator is used to change the role of attributes which has several roles. The default role is regular and usually the user has to set the attributes and the other roles which are classified as special. The main objective of selecting attribute operator is to mainly select the attributes of the data-set which need to be displayed (Devipriya & Kalpana, 2019). In addition, this operator has default parameter which is used to define the filter condition using Add filters options in dialog window. The Filter Examples are added to customize the filters with the help of custom filter option. This filter is customized by “token_length” and “is not missing”. This filter also has condition class to be selected to alter the attributes and variables with different options such as correct prediction, wrong prediction, no missing attributes, missing attributes, no missing label, attribute value filter, expression and custom filter. The custom filter is selected in this study. The result of the processing is stored in the “data” option of the repository as “wordlist” and “word vector”. The data are used in the next process. Figure 5.6 shows the processing steps in Rapidminer.

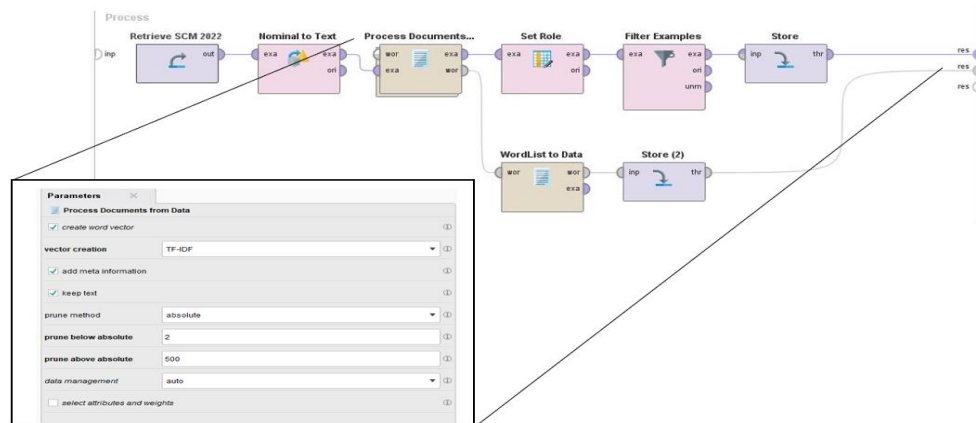


Figure 5.6 Text Processing in RapidMiner

(iii) Text Visualization

Text visualization is the process in which the wordlists or text data are filtered or reduced in number to only consist of the top items. The text visualization is the text mining process that helps the user to understand and explore data visually. In other words, this process shows the pattern or frequency of the datasets. In this process, the operator sorting the dataset is used to get the nominal values to appear in correct order in visualization. In addition, the operator weights are also used in this process to

determine the tokens that are mostly related to the label. Figure 5.7 shows the text visualization process of this study.

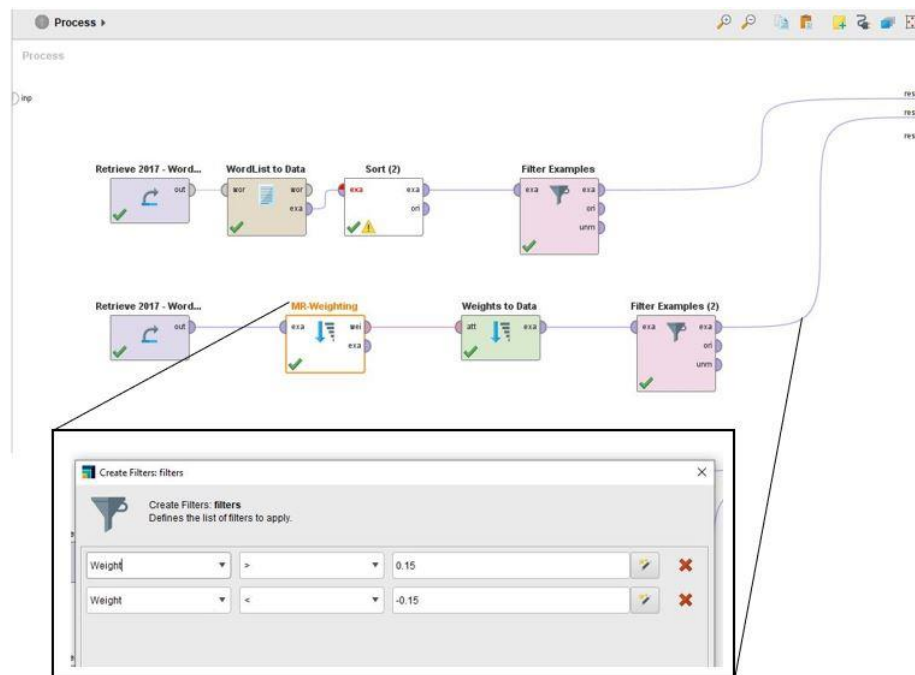


Figure 5.7 Text visualization in RapidMiner

In this process, the clean data named as Word List and Word Vector are used to sort the frequency of the words in the word lists. The operator “sort” is used to sort the ExampleSet provided in the WordList according to a single attribute. The sorting process is done in increasing or decreasing direction depending on the setting of the sorting direction parameter. In this process, the study uses the decreasing order. On the other hand, for the Word Vector, the operator “weighting” is used to sort the weight. This operator calculates the weights of each of the attributes. In this process, the weight is sorted in descending order which is the same with the sorting operator. In addition, the weight uses the value of -0.15 and 0.15 to sort the attributes.

5.4.1.2 Text Analysis

The second step in RapidMiner is Text Analysis. The aim of text analysis is to identify the narrative pattern among likelihood of fraud and non-likelihood of fraud firm. In this process, the study aims to achieve two outputs which are topic modelling and sentiment analysis. For the Topic Modelling, two unsupervised text mining techniques are adopted which are document clustering based on K-means algorithm and Latent Dirichlet Allocation (LDA) algorithm. The document clustering and topic

modelling are the complementary techniques where the unlabelled clusters (as the output of clustering process) can be characterized and described by their core theme using topic modelling (Shotorbani et al., 2016). Meanwhile, for the sentiment analysis, these unsupervised text mining techniques are not used, instead the polarity of the MD&As is defined according to the SentiWordNet dictionary (Esuli & Sebastiani, 2006). The following processes discuss the initial process after text-processing in order to obtain the Topic Modelling.

(i) Document Clustering

The document clustering is a process of organizing data into similar group called clusters (Sabbagh & Ameri, 2020). The process of clustering begins with the Word Vector database. In this process, the attributes document length, token length, and token number are selected as the attributes to be used to form a cluster. The database is then normalized using operator “Normalize”. The purpose of normalization is to improve the effectiveness of clustering process in order to decrease the variable magnitude (Madah Marzuki et al., 2024). In other words, the normalization process improves the efficiency and accuracy of the cluster analysis.

Next is the process of clustering. In this process, K-Means clustering algorithm is applied in which the clusters automatically documented k clusters into similar cluster to each other than the documents in other clusters (Zainal et al., 2015; Shotorbani et al., 2016). Accordingly, the k-means algorithm defines one centroid per group and each of the document is then assigned to the nearest centroid (Sabbagh & Ameri, 2020). In addition, the k-means algorithm is used to minimize the sum of square of distances from the data point which is documents to the clusters. In addition to that, the cosine similarity measure is adopted to assign each document to the most similar cluster. The cosine similarity measure quantifies the document similarity based on the distance between documents (Madah Marzuki et al., 2024). The cosine similarity is calculated based on the angle between two vectors which reflect their direction.

Meanwhile, for the centroids of the clusters, which is determined by the position of the centre, are then recalculated by averaging the total documents in the cluster until the centroids have reached maximum optimisation or no longer move. On the other hand, due to high-dimensional nature, analysing the textual data becomes more

challenging since it is difficult to determine the number of clusters. Therefore, this study adopted “elbow method” for the cluster selection that enables to access the clustering performance for different K values (Madah Marzuki et al., 2024). Figure 5.8 shows the process of document clustering using RapidMiner studio.

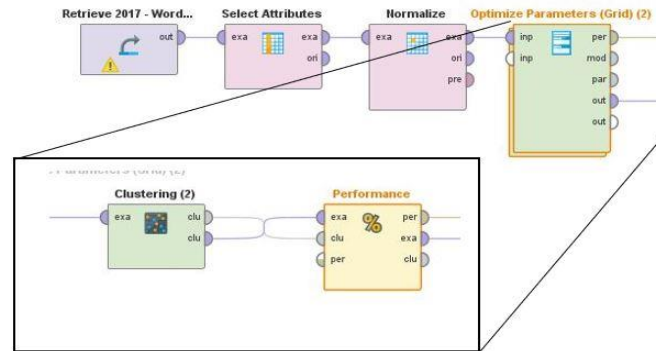


Figure 5.8 Document clustering process in RapidMiner

(ii) Latent Dirichlet Allocation (LDA)

LDA technique can be used to automatically discover abstract topics in a group of unlabelled documents. LDA is one of the different methods in text mining that holds widespread popularity due to its exceptional adaptability and generalization capabilities (Gurcan & Cagiltay, 2019; Madah Marzuki et al., 2024). The LDA is defined as “a process of assigning the words in a document to random variables, and semantically clustering them using repetitive probabilistic process based on a Dirichlet distribution (Blei et al., 2003; Gurcan & Cagiltay, 2019). The LDA does not require any labelling training set so that it can effectively be applied in huge collection of documents in the text corpus (Gurcan & Cagiltay, 2019).

LDA technique assumes that each document in the dataset is randomly composed of a combination of all available topics with different probabilities for each (Shotorbani et al., 2016). According to Huang et al. (2018), LDA assumes that each word is generated in two steps. Firstly, it assumes each document has its own topic distribution in which the topic is randomly based on the document’s topic distribution. Secondly, LDA assumes each topic has its own word distribution in which the word is randomly drawn from the word distribution of the selected topic in the previous step. This study employs LDA with Gibbs Sampling due to its suitability when the joint

distribution is unknown or difficult to sample directly (He et al., 2020; Madah Marzuki et al., 2024). Figure 5.9 shows the LDA process for topic modelling.

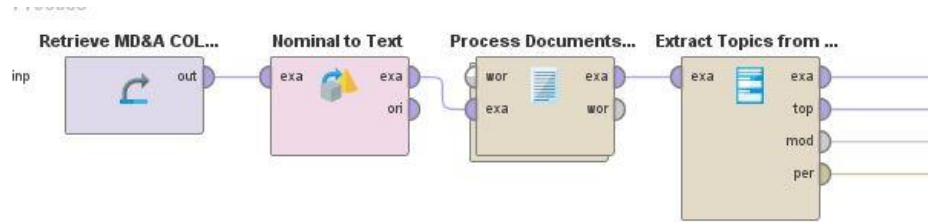


Figure 5.9 LDA process for topic modelling

1. Text Analysis – Topic Modeling

Topic modelling is a text mining technique for analysing large volume of unlabelled text. The finding from the document clustering is used in this method for analysing purposes. The topic modelling is used to identify core topics or themes of the identified clusters. This method is used for discovering hidden structure that is present with the similar documents and annotating the documents using the discovered topic in order to facilitate the document search, organization and summarization. The LDA is often used as the underlying algorithm of topic modelling and it is also the most successful techniques in topic detection (Huang et al., 2018; Sabbagh & Ameri, 2020). A topic is a recurring pattern of words that frequently appear together. For example, in a collection of documents that are related to banking, the terms such as interest, credit, saving, checking, statement, and APR are defined as topic as they co-occur frequently in the documents.

The first outcome of this phase is to determine the Topic Modelling of the sample of the study. In this process, all the MD&As text from the year 2017 to 2022 is run together as a single database in RapidMiner Studio. Nevertheless, the likelihood of fraud firm and non-likelihood of fraud firm are run separately to see the difference between the two types of firm's characteristics. The datasets go through all the processes from Text-pre-processing and Processing, Text Visualization, Text Clustering, and LDA. At the end of this process, this study obtains the *topic*, which is the most frequent words addressed from the MD&As text of the year 2017 to 2022. The most common words in each topic are then derived and manually given names for each of the topic. This process requires tacit knowledge or domain expert in identifying the topic's names. In this study, the top ten (30) frequent words for each topic are addressed

which offer insights into the associated concepts of each “topic” (Madah Marzuki et al., 2024). The words in each of the topic are then compared with Loughran and McDonald’s (2011) (hereafter referred as LM) dictionary to define the financial characteristics of the MD&As throughout the year 2017 to 2022. Table 5.2 shows an example of the topic identified in clustering process and LDA.

Table 5.2

Examples of topic modelling approach that successfully clusters a set of topics from the selected text documents (*Source: Madah Marzuki et al., 2024*)

Topic 0 Performing an activity	Topic 1 Loss and impairment	Topic 2 Cost and acquisition	Topic 3 Non-performing activity	Topic 4 Business acquisition	Topic 5 Income and profit activity	Topic 6 Litigation activity
million compared current fyc activities increase cash increased sales revenue	group year loss impairment assets compared previous financial share decrease	group recorded million December business review taxation insurance acquisition performance	revenue due financial mainly period tax lower operations sesb cost	company lho proposed bursa shares securities exercise berhad main malaysia	million net total profit equity mainly operating value investment higher	financial company capital period subsidiaries management plan group basis court

In order to match the words with the LM dictionary, an additional process is adopted. However, in this process, all the wordlist datasets from 2017 to 2022 are compared to the dictionary. The process of the comparison between MD&As Text and Loughran and McDonald's (2011) dictionary is shown in Figure 5.10 below.

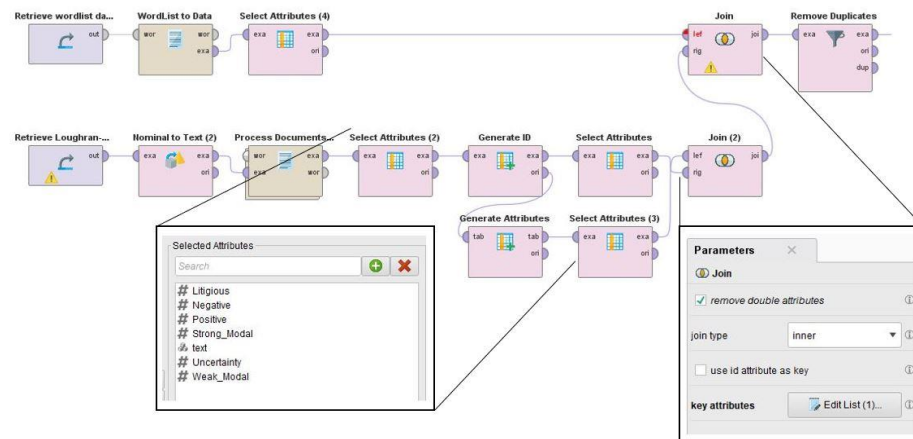


Figure 5.10 Comparison process between wordlist datasets and Loughran & McDonald's (2011) dictionary

In this process, the MD&As Wordlist datasets from 2017 to 2022 is used. As for the LM dictionary, the dataset of the dictionary is imported into RapidMiner Studio. This dictionary goes through a cleaning process such as tokenize, transforms cases, filter tokens, filter stopwords, stem, and replace token. The attributes are

selected based on the LM dictionary which are litigious, negative, positive, strong modal, weak modal, and uncertainty words. These attributes are then coded as sentiment positive or sentiment negative. The attributes of positive and strong modal words are categorized as sentiment positive, while negative, litigious, weak modal, and uncertainty words are categorized as sentiment negative. In the operator “generate attribute”, this coding is applied to differentiate between the categories “*if((Positive == 0 && Strong_Modal == 0 && Negative == 0 && Weak_Modal == 0 && Uncertainty == 0 && Litigious == 0), "Neutral" if((([Positive] > 0 || [Strong_Modal] > 0) && ([Negative] == 0 && [Weak_Modal] == 0 && [Uncertainty] == 0 && [Litigious] == 0), "Positive", "Negative"))*”. The attribute of “neutral” is added in the coding in order to determine the words that do not belong to any categories in the LM dictionary. The selection of the category is because these categories are associated with the fraud (Loughran & McDonald, 2011; Purda & Skillicorn, 2015).

The data from MD&As Wordlist 2017-2022 are joined together with LM dictionary to find the words in MD&As that match the dictionary. The “inner” join type in the operator “join” indicates the only words from MD&As match with the LM dictionary. Figure 5.11 shows a simple explanation regarding the “inner” process. After obtaining the words that match with the LM dictionary, each frequent words addressed in topic modelling is manually matched with the list of this data.

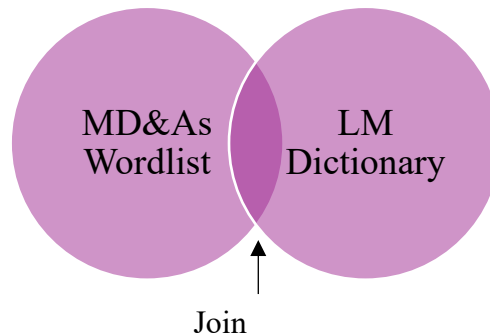


Figure 5.11 Join process in Rapid Miner

In conclusion, this process posits two outcomes which are firstly, the frequent words that appear in MD&As from 2017 to 2022. However, this process covers all the MD&As as a single outcome. This study then addresses the frequent positive or negative words for likelihood of fraud and non- likelihood of fraud firms as a whole. Secondly, this process addresses the financial characteristics of likelihood of fraud and non- likelihood of fraud firms whether the MD&As are more positive or more negative.

2. Text Analysis – Polarity sentiment

The second outcome for this study is polarity sentiment. This process namely is sentiment analysis. In topic modeling, the study examines the overall MD&As from 2017 to 2022 as a single outcome to obtain the financial characteristic or higher frequency of words that contribute to fraud. In polarity sentiment, each of the MD&As is examined to obtain the polarity of each MD&As text. Unlike LM dictionary that scientifically adapts words into the financial context, this process employs the other popular lexicon which is SentiWordNet (Esuli & Sebastiani, 2006). Nevertheless, this lexicon has lots of words used in the original General Inquirer positive and negative wordlists that have different connotations in the financial domain (Goel & Uzuner, 2016). Even though this lexicon is more general, this study aims to examine whether each of the MD&As has positive, negative, or neutral sentiment. In addition, this lexicon is able to provide the frequency or sentiment weight of each MD&As samples. In obtaining the sentiment of each MD&As, Figure 5.12 shows the process being adapted.

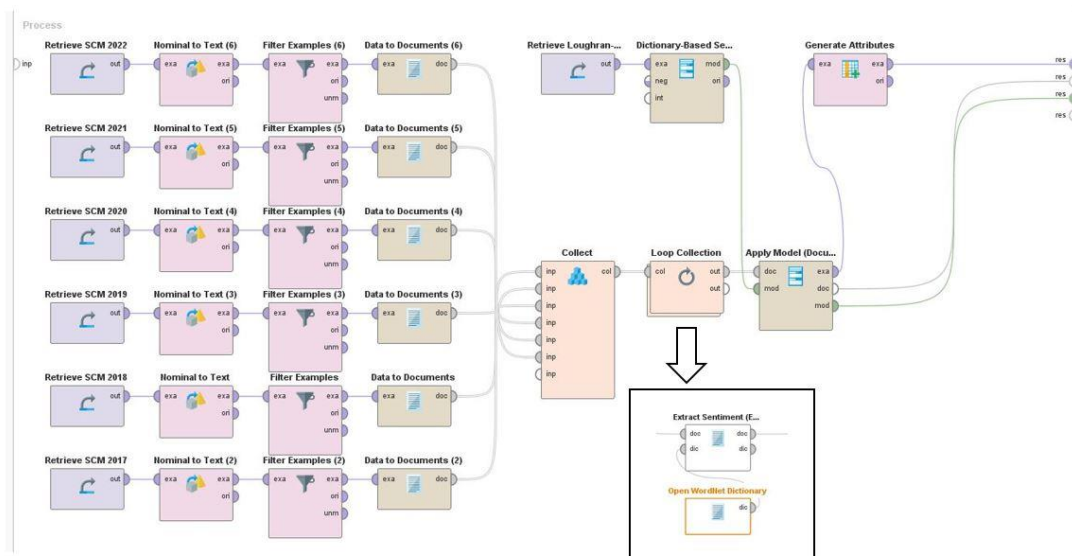


Figure 5.12 Sentiment analysis process

Figure 5.12 shows the processes in obtaining polarity sentiment for each of the MD&As corpus. In this process, all the MD&As from 2017 to 2022 are run separately. The data from MD&As from likelihood of fraud firms are also run separately from non-likelihood of fraud firms due to large volume of the corpus. The cleaning process is done for each of the MD&As corpus. All the information gathered from the year 2017

to 2022 is collected into the operator “collect”. The information gathered is then processed using SentiWordNet dictionary in the “loop collection” operator. In the operator “generate attribute”, the polarity is coded as “*if(sentiment<0,"Negative", if(sentiment>0 && sentiment !=0, "Positive", "Neutral"))*” in order to determine the sentiment of each of MD&As text. At the end of this process, this study obtains the frequency of polarity sentiment for each MD&As text (in other words, the result expresses the polarity of the writing skills). The polarity sentiment of each of MD&As is used as the dependent variables (DV) of this study.

On the other hand, the polarity of each MD&As is tabulated to form a trend from the year 2017 to 2022 for each of the samples. The trend of the polarity is presented in the form of graphical using Tableau software. This software helps the users connect to data, analyse it, and create interactive visualizations to easily understand it. For the purpose of this study, the trend of MD&As is classified into three categories which are increasing, decreasing, and stable trends. This trend is based on the slope of a linear regression line fitted to each company’s sentiment scores from 2017 to 2022. The following processes are the breakdown of how slopes are calculated and what each trend category signifies.

1. Slope Calculation

The slope (m) measures the direction and strength of a trend. It is derived from the formula for simple linear regression:

$$m = \frac{n \sum (XY) - \sum X \sum Y}{n \sum X^2 - (\sum X)^2}$$

Where:

- X = Year (converted to numeric values, e.g., 2017 → 1, 2018 → 2, etc.)
- Y = Sentiment Score
- n = Number of years with data

Interpretation of Slope Values:

Slope Range	Trend Strength	Example
$m > +0.005$	Strong Increasing	$m = +0.012$ (MPAC)
$0 < m \leq +0.005$	Weak Increasing	$m = +0.003$ (WCT Berhad)
$-0.005 \leq m \leq +0.005$	Stable (No Trend)	$m = +0.0005$ (Iris Corp)
$-0.005 < m < 0$	Weak Decreasing	$m = -0.003$ (KNM Group)
$m \leq -0.005$	Strong Decreasing	$m = -0.010$ (G Neptune)

Figure 5.13 Interpretation of Slope values

2. Trend Categories Explained

For the increasing trend ($m > +0.005$), the sentiment scores are characterized when the scores rise consistently year-over-year, while the decreasing trend ($m < -0.005$) **involves the sentiment declining steeply over time, and for the stable trend** ($-0.005 \leq m \leq +0.005$), it involves the scores to fluctuate ****minimally**** around a mean.

In conclusion, this process generates two outcomes which are the dependent variable for this study and the trend of the writing skill from the year 2017 to 2022. The DV obtained in this process is used to regress with the IV (corporate governance variables) and moderating variables to see the effects of narrative pattern and the likelihood of fraud.

5.4.2 Independent Variables

There are six corporate governance variables used in this study which focus on the strengthening of board directors, audit committee characteristics and risk management committee characteristics. These variables are chosen based on the amendment of MCCG 2017. The reason for taking MCCG 2017 is because MCCG 2017 supersedes the earlier edition by introducing new approaches to promote greater internalisation of corporate governance culture. The new MCG 2021 updates the MCG to improve board policies and processes, strengthen board oversight and sustainability and encourage the best practices in organizations. Besides, the MCG 2021 is not taken into account as this MCG focuses on sustainability and no amendments made on strengthening of board directors, audit committee characteristics

and risk management committee characteristics as per MCGG 2017. Therefore, the use of MCGG 2017 is more relevant.

Table 5.3 summarizes the description of the independent variables. The MCGG 2017 emphasizes on strengthening the independence in which the majority of the board of directors must be independent which is (2/3) of the board. The MCGG 2017 amended the code because the independence can avert “groupthink” or “blind spots” in the decision-making process and better respond to challenges that may arise and deliver value. The board independent is literated as “BOD_IND” and the independent is measured by the percentage of board directors to define the board independent (Beasley, 1996; Uzun et al., 2004; Girau et al., 2022). To emphasize the strengthening of the independence of the directors, the MCGG 2017 exercised that the tenure of an independent director does not exceed the cumulative term limit of nine years. This is because the requirement is issued in MCGG 2017 as the stakeholders are concerned with the potential negative impact that director’s long tenure may impair their independence. Besides, the long tenure of independent directors and familiarity may erode the board’s objectivity as they have long relationship with board management and the director may be too sympathetic to their interest. The board tenure is literated as “BOD_TEN” and the board tenure is measured by the percentage of board directors serving the board for more than nine years (Beasley, 1996; Kim et al., 2013; Yaacob & Wan Mohd Yusof, 2020).

For board gender, MCGG 2017 requires that the public listed firms in Malaysia have at least 30% women directors on board. This study uses the percentage of women on board that is literated as BOD_GEN (Madah Marzuki et al., 2019). MCGG 2017 also requires that the details are disclosed on the name basis for the remuneration of individual directors which is divided into fees, salary, bonus, benefits-in-kind and other emoluments. The detailed disclosure allows shareholders to make an informed decision when voting on the approval of directors’ remuneration and to consider the appropriate remuneration package by taking into account the responsibilities of the directors. The disclosure of remuneration is literated as “BOD_REM” and measured by disclosure of total remunerations (Yaacob & Wan Mohd Yusof, 2020). The MCGG 2017 also emphasises on the integrity of corporate reporting and meaningful relationship with stakeholders. All the directors in the firm must participate in the general meeting. This study literates board meeting as BOD_MEET and the measurement of the board

participation in general meeting by terms of percentage attendance of the board of directors to total number of meeting (Mohd Salleh & Othman, 2016; Girau et al., 2022).

The independent Audit Committee plays a significant role to probe questions on the firm's financial reporting process, internal controls, risk management and governance. MCGG 2017 requires the Audit Committee to comprise solely of Independent Directors. This is consistent with the study of Sadique et al. (2019) and Madah Marzuki et al. (2019). This study uses percentage of independent directors on audit committee to measure the independence of audit committee. This study literates the independent of Audit Committee as AUD_IND. The MCGG 2017 also requires the large firms to establish Risk Management Committee which comprises a majority of independent directors to oversee the firm's risk management framework and policies. The establishment of this committee is because a proper risk management and internal control assist firms in making the decision about the risk level and action to be taken by implementing necessary control to ensure the objectives of the firm are achieved. Consistent with Abdullah and Said (2019), the study used dummy variable of RMC to determine the existence of risk management committee. The variable "1" is allocated when the firms have risk management committee and the variable "0" for otherwise. In order to fulfil the requirement of MCGG 2017 where the majority of risk management committee is independent, this study uses the percentage of independence of Risk Management director to determine the independence composition (RMC_IND). These independent variables are tested with the narrative pattern to determine the relationship between narrative pattern and MCGG 2017. This step aims to achieve objective 3.

5.4.3 Moderating Variables

The moderating variable of this study is ownership structure. The ownership structure in Malaysia has become an important factor that mitigates or leads to the fraud in Malaysia. There are two ownership structure variables used in this study namely family ownership and institutional ownership. Family ownership is divided into to categories which are direct and indirect family ownership. Direct family ownerships is coded as "FAMOWN_DIRECT" where the direct family ownership is measured by ratio of family owners to the total shares outstanding. On the other hand, indirect family ownership is literated as "FAMOWN_INDIRECT" where the direct family ownership is measured by ratio of family owners to the total shares outstanding (Hasnan et al.,

2022; Wan Mohammad & Wasiuzzaman, 2020). Meanwhile, institutional ownership is coded as “INSOWN_INDIRECT” where indirect institutional ownership is measured by ratio of institutional owners to the total shares outstanding. The ownership by institution is measured by the percentage of the top five largest Institutional investors which are Lembaga Tabung Haji (LTH), Permodalan Nasional Berhad (PNB), Pertubuhan Keselamatan Sosial (PERKESO), Lembaga Tabung Angkatan Tentera (LTAT), and Employee Provident Fund (EPF) (Malik et al., 2023). Table 5.3 summarises the moderating variables used in this study.

5.4.4 Control Variables

The study also includes certain control variables to isolate the effect of the explanatory variables. There are five control variables added which are liquidity, leverage, board size, firm size, and age. The liquidity is reflected by the ability of the firms to fulfil immediate and short-term obligations, or assets that can be quickly converted into this (Kazemian et al., 2017). Meanwhile, leverage is defined as the amount of debt used to fund the operation of the firms and the ratio of long-term debt to capital structure (Yendrawati et al., 2023). The firms with higher leverage will face the risk of bankruptcy (Kazemian et al., 2017). The firms with lower liquidity and higher leverage tend to mask their financial figures to show better performance of the firms and to gain the investor’s trust. Therefore, these firms might be involved in fraudulent activities to ensure that financial statements show better financial performance. Consistent with Kazemian et al. (2017), the liquidity is coded as “LIQUIDITY” where total assets are divided by total liability (TA/TL), and leverage is coded as “LEVERAGE” where the total debts are divided by total assets (TD/TA) (Kazemian et al., 2017).

The board size is the number of directors who sit on the board (Khoufi & Khoufi, 2018). Accordingly, the number of directors reflects the effectiveness of the board in reducing the likelihood of fraud. Lipton and Lorsch (1992) and Vafeas (2005) recommended that the board of directors should be around 8 or 9 members. The large number of the board leads to the difficulties in expressing ideas and opinions due to the limited time available (Lipton & Lorsch, 1992). Previous studies documented that the size of the board is able to reduce the likelihood of fraud (Khoufi & Khoufi, 2018; Sadique et al., 2019). The board size is measured by the number of the board directors

in the firm (Sadique et al., 2019). The board size is coded as “BOD_SIZE”. On the other hand, firm size represents the size of the firms illustrated by the total assets owned by the firms (Rianti, 2018). The bigger size of the firms gives opportunities to them to access to capital market and easier to increase the funds with lower costs and fewer constraints than the smaller firms. Nevertheless, previous studies presented mixed results where Madah Marzuki et al. (2024) found that bigger size of the firms has higher potential fraudulent financial reporting. Teguh and Kristanto (2020) found contradict result where bigger size of the firm has negative influence towards the likelihood of fraud. The firm size is measured by the total assets, which literated as “FIRM_SIZE” (Madah Marzuki et al., 2024).

The age of the firm has been identified in prior studies to affect the likelihood of fraud. According to Teguh and Kristanto (2020), the age of the firm is connected to the internal control of the firms where the firms gain experience as the time passes, thus it may help to improve corporate governance. Therefore, the likelihood of fraud is lower. Accordingly, the study found that firm age has a negative relationship with the likelihood of fraud. Nevertheless, Hasnan et al. (2021) found insignificant relationship between firm age and financial restatement. The variable age of the firm is measured by the number of years of the firm since their establishment and coded as “AGE” (Teguh & Kristanto, 2020). Table 5.3 shows the summary of the control variables used for the purpose of this study

Table 5.3

Summary of Dependent Variable, Independent Variables, Moderating Variables and Control Variables

Variables	Definition	Measurement	Acronyms	Sources
Dependent Variables				
Likelihood of Fraud	Polarity sentiment	Polarity Scores	PS	Esuli & Sebastiani (2006); Loughran & McDonald (2011)
	Dummy variable	Where "1" is coded as likelihood of fraud, while "0" is coded as non-likelihood of fraud	FFR	Hasnan et al. (2014); Ismail Khan & Muhammad Hapiz, (2022)
Independent Variables				
Board Independent	The independence of director	The percentage of independent board	BOD_IND	Beasley (1996); Uzun et al. (2004); Girau et al. (2022)
Board Tenure	The tenure of board director	The percentage of directors served the board more than nine years	BOD_TEN	Beasley (1996); Kim et al. (2013); Yaacob & Wan Mohd Yusof (2020)
Board Gender	The women director on board	The percentage of women directors on board	BOD_GEN	Madah Marzuki et al. (2019)
Disclosure of Board Remuneration	The board remuneration	Disclosure of total remuneration	BOD_REM	Yaacob & Wan Mohd Yusof (2020)

Variables	Definition	Measurement	Acronyms	Sources
Board Meeting	Frequency of board meeting	Number of board meetings	BOD_MEET	Mohd Salleh & Othman (2016); Girau et al. (2022)
Audit Committee	The Independent audit committee	Percentage of independent Audit Committee	AUD_IND	Sadique et al. (2019); Madah Marzuki et al. (2019)
Risk Management Committee (RMC)	The existence of Risk Management Committee	Dummy variable of "1" if the firm has RMC while "0" for otherwise	RMC	Abdullah & Said (2019)
	Percentage of independent RMC	Percentage of independent RMC	RMC_IND	Abdullah & Said (2019)
Moderating Variables				
Family Ownership	The shares owned by family members	Ratio of direct/indirect family owners to the total shares outstanding (Shares owned by direct/indirect family members/shares outstanding)	FAMOWN_DIRECT FAMOWN_INDIRECT	Hasnan et al. (2022); Wan Mohammad & Wasiuzzaman, (2020)
Institutional ownership	The shares owned by Institutional organization	Ratio of indirect institutional owners to the total shares Outstanding (Shares owned by institutions/shares outstanding).	INSOWN_INDIRECT	Hasnan et al. (2022)
<u>Control Variables</u>				

Variables	Definition	Measurement	Acronyms	Sources
Liquidity	The liquidity ratio of the company	Total Assets are divided by Total Liability (TA/TL)	LIQUIDITY	Kazemian et al. (2017)
Leverage	The leverage ratio of the company	Total Debts are divided by Total Assets (TD/TA)	LEVERAGE	Kazemian et al. (2017)
Board Size	The size of board of director	Number of board of directors in the company	BOD_SIZE	Sadique et al. (2019)
Firm Size	The size of the firm	Total Assets	FIRM_SIZE	Madah Marzuki et al. (2024)
Age	The age of the firm	Number of years of the firms since their establishment	AGE	Teguh & Kristanto (2020)

5.5 Empirical Model to Test the Relationship between Corporate Governance Mechanism with Narrative Pattern on the Likelihood of Fraud Firms and Non-Likelihood Fraud Firms

To achieve research objective 3, all of the input of narrative pattern obtained in phase 2 is coded as MCCG likelihood of fraud to be regressed with each of MCCG variables. The purpose of this step is to determine which MCCG variables contribute to the narrative pattern. This step employs the regression below:

Equation 1:

$$PS_{it} = \beta_0 \text{INTERCEPT}_{it} + \beta_1 \text{BOD_IND}_{it} + \beta_2 \text{BOD_TEN}_{it} + \beta_3 \text{BOD_GEN}_{it} + \beta_4 \text{DIR_REM}_{it} + \beta_5 \text{BOD_MEET}_{it} + \beta_6 \text{AUD_IND}_{it} + \beta_7 \text{RMC}_{it} + \beta_8 \text{RMC_IND}_{it} + \text{Control Variables}_{it} + \epsilon$$

Where, PS = Polarity Scores

This equation is used to prove H1 to H3.

Then, the ownership structure is included to see the effect of independent variable. The equation is as follows:

Equation 1(a):

$$PS_{it} = \beta_0 \text{INTERCEPT}_{it} + \beta_1 \text{BOD_IND}_{it} + \beta_2 \text{BOD_TEN}_{it} + \beta_3 \text{BOD_GEN}_{it} + \beta_4 \text{DIR_REM}_{it} + \beta_5 \text{BOD_MEET}_{it} + \beta_6 \text{AUD_IND}_{it} + \beta_7 \text{RMC}_{it} + \beta_8 \text{RMC_IND}_{it} + \beta_9 \text{OwnershipStructure}_{it} + \text{Control Variables}_{it} + \epsilon$$

Equation 1(a) extends Equation 1 by including ownership structure variables as direct independent variables to test their individual impact on the likelihood of fraud, prior to examining their moderating effects. It is important to note that Equation 1(a) is formulated to test the direct effect of ownership structure variables (FAM_OWN and INS_OWN) on the polarity scores (PS). This analysis serves as a preliminary step to understand their individual impact before examining their more complex role as moderating variables in the subsequent equations.

5.5.1 Empirical Model to Test the Effect of Ownership Structure on the Relationship of Corporate Governance Mechanisms and the Likelihood of Fraud

To achieve research objective 4, the likelihood of fraud is interacted with Ownership structure variable to determine whether the likelihood of fraud moderates the relationship between MCGG variable and Ownership structure. Thus, the regression below is employed:

Equation 2:

$$PS_{it} = \beta_0 INTERCEPT_{it} + \beta_1 BOD_IND_{it} + \beta_2 BOD_TEN_{it} + \beta_3 BOD_GEN_{it} + \beta_4 DIR_REM_{it} + \beta_5 BOD_MEET_{it} + \beta_6 AUD_IND_{it} + \beta_7 RMC_{it} + \beta_8 RMC_IND_{it} + \beta_9 BOD_IND_{it} * FAM_OWN_{it} + \beta_{10} BOD_TEN_{it} * FAM_OWN_{it} + \beta_{11} BOD_GEN_{it} * FAM_OWN_{it} + \beta_{12} DIR_REM_{it} * FAM_OWN_{it} + \beta_{13} BOD_MEET_{it} * FAM_OWN_{it} + \beta_{14} AUD_IND_{it} * FAM_OWN_{it} + \beta_{15} RMC_{it} * FAM_OWN_{it} + \beta_{16} RMC_IND_{it} * FAM_OWN_{it} + \text{Control variables}_{it} + \epsilon$$

The equation above is used to prove hypothesis H4(a). The interaction is then repeated to include the interaction of all corporate governance variables with another moderator variable which is INS_OWN_{it} as to prove hypothesis H4(b). The empirical model is as follows:

Equation 3:

$$PS_{it} = \beta_0 INTERCEPT_{it} + \beta_1 BOD_IND_{it} + \beta_2 BOD_TEN_{it} + \beta_3 BOD_GEN_{it} + \beta_4 DIR_REM_{it} + \beta_5 BOD_MEET_{it} + \beta_6 AUD_IND_{it} + \beta_7 RMC_{it} + \beta_8 RMC_IND_{it} + \beta_9 BOD_IND_{it} * INS_OWN_{it} + \beta_{10} BOD_TEN_{it} * INS_OWN_{it} + \beta_{11} BOD_GEN_{it} * INS_OWN_{it} + \beta_{12} DIR_REM_{it} * INS_OWN_{it} + \beta_{13} BOD_MEET_{it} * INS_OWN_{it} + \beta_{14} AUD_IND_{it} * INS_OWN_{it} + \beta_{15} RMC_{it} * INS_OWN_{it} + \beta_{16} RMC_IND_{it} * INS_OWN_{it} + \text{Control variables}_{it} + \epsilon$$

5.6 Data Analysis Method

5.6.1 Descriptive Analysis

Descriptive analysis of the sample is conducted to obtain the general description about the dependent and independent variables of this study. The descriptive analysis

includes mean, median and standard deviation that are used in this study. The mean represents the average score of the data set which calculates the mean by adding up all the scores and dividing by the total number of the scores. It is estimated as per equation below:

$$X = \frac{\sum_{i=1}^n xi}{N}$$

Where N is the number of observations and xi is the values of the scores.

The standard deviation is a measure of how spread the number of the data series. It is estimated as per equation below:

$$\sigma = \sqrt{\sum_{i=1}^n (xi - x)^2 / N - 1}$$

Where:

σ = Population of standard deviation

N = The size of the population

x_i = Each value from the population

x = The population mean

5.6.2 Correlation Analysis

Correlation is the analysis to describe the strength of the relationship or the relationship or association between two variables. In Pearson correlation matrix, the values of the correlation coefficient lie between -1 and +1. The positive correlation (+1) indicates that the two variables have perfect positive correlation while the negative correlation (-1) indicates that the two variables have perfect negative correlation. On the other hand, if the correlation shows 0, it means that there is no linear relationship between the two of the variables. In addition, in performing the correlation analysis, the dependent variable PS is multiplied with -1 to enhance the interpretation with the independent variables.

On the other hand, this study uses correlation analysis and Variance Inflation Factor (VIF) to check for multicollinearity. As an initial diagnostic, the Pearson correlation matrix is examined. A correlation coefficient between any two independent variables exceeding 0.8 is flagged for further investigation, as this indicates a potential multicollinearity concern (Field, 2009). Perfect collinearity exists when two variables are perfectly correlated, which means the variables have correlation coefficient of 1. Multicollinearity can be a problem in a regression model because it would not be able to distinguish between the individual effects of the independent variables on the dependent variable. The purpose of multicollinearity test is to ascertain how much multicollinearity is present in the equation. Since multicollinearity issues are developed in every equation, it is impossible to have no uncorrelated explanatory variables in the equation. The correlation matrix that falls above 0.8 or 0.9 is classified as the explanatory variables that have serious multicollinearity problem (Field, 2009). Since multicollinearity can exist between more than two variables, the VIF provides a more comprehensive check. A VIF value of less than 10 is considered evidence that no severe multicollinearity exists in the model (Madah Marzuki et al., 2024).

5.6.3 Univariate Analysis

Univariate analysis is conducted to understand the result of each variable in this study. This analysis aims to compare the significant mean between likelihood of fraud and non-likelihood of fraud firms. Since the DVs for this study are continuous and dichotomous variables, the t-statistics and Anova are adopted to identify the significant mean for the variables (Hasnan et al., 2013). On the other hand, to identify the significant median, the study adopts Chi-square and Mann-Whitney tests.

5.6.4 Multivariate Analysis

There are two multivariate analyses conducted in this study which are Ordinary least-squares (OLS) and Binary Logistic regression analyses. Firstly, the OLS is used for the dependent variable PS. This regression is a generalized linear modelling technique that may be used to model a single response variable which has been recorded on at least an interval scale (Hutcheson & Mountinho, 2011). The OLS is used in single or multiple explanatory variables and also categorical explanatory variables that have been

appropriately coded. The OLS determines the relationship between a continuous response variable (Y) and continuous explanatory variable (X). If the relationship is linear, the equation is presented as $Y = \alpha + \beta x$. The OLS is also used to determine how well the model fits the data. The model fit can be determined by comparing the observed scores of Y (the values of Y from the sample of data) with the expected values of Y (the values of Y predicted by the regression equation). In order to measure the closeness of fit of the regression model, the Pseudo R^2 is employed. The R^2 provides a measure that indicates the percentage variation in the response variable is ‘explained’ by the model.

Secondly, this study employs Binary Logistic regression analysis for the dependent variable FFR. This regression is used when the Y (DV) is categorical with two categories (Fritz & Berger, 2015). For this regression, the DV has “1” or “0” annotation in which “1” stands for one category and “0” stands for another category.

5.7 Further Analyses

5.7.1 PN17 vs. Non-PN17

Further analysis is carried out to determine the sensitivity of the result. In this section, all the steps as stated in Figure 5.1 are repeated, allowing for a different proxy to measure fraud, and further re-examining it by using different sample to measure the likelihood of fraud. Finally, to test the robustness of the regression analysis performed earlier, the sample of likelihood of fraud firms are replaced with the sample of PN17 firms as another proxy of likelihood of fraud (Wan Fauzi et al., 2022; Madah Marzuki et al., 2024).

The sample used for further analysis consists of public Listed firms in Main Market of Bursa Malaysia and ACE markets that are listed as PN17 from the year 2020 to 2022 (3 years). As the list of PN17 firms is updated perennially, this study chooses the PN17 firms listed from 2020 to 2022 to avoid any bias as some of the firms have been delisted and PN17 status is lifted throughout the year. The purpose of choosing the sample of PN17 with the restriction of 3 years is because all the sample firms are in PN17 status consecutively from 2020 to 2022.

A total of 19 PN17 firms are selected into consideration with a total 57 firm-year observations. However, 7 observations are excluded from the sample due to the unavailability of data. Therefore, the final total of PN17 firms consists of 50 firm-year observations. The sample is then matched with 19 non-PN17 firms which is defined according to their industry specific and total assets. Based on the selected firms, this study selects three years of data to determine the narrative pattern expressed in the financial report. The total sample of this study is 100 firm-year observations. Table 5.3 describes the profile of PN17 firms. Panel B in Table 5.4 describes the industry sectors among the likelihood of fraud firms. From the total samples, the consumer product and services and energy sectors show the highest number of fraud cases with a total of 26% firms, followed by industrial product and services with 21% of the total firms. Construction, technology and property sector has the lowest case among the total firms with a total of 5% only.

The PN17 firms are taken into consideration because according to Beasley (1996), the firms that fall under financial distress situation is more likely to manipulate their financial statement to position themselves better; thus, leading to fraudulent financial reporting. The study is supported by Hasnan et al. (2014), Utami and Pusparini (2019), and Ismail et al. (2020) where firms in financial distress situation tend to manipulate their financial statements in order to continue providing good signal by displaying an increment of short-term profit performance despite the fact that the condition of the firms is in trouble.

Table 5.4
Profile of PN17 Firms Vs. Non-PN17 Firms

Panel A: Sample of the PN17 observations		<u>Number</u>
Initial sample of observations (19 firms x 3 years)		57
(-) Unavailability of data		-7
Total sample of fraud observations		50
Total observations (50 PN17 firms vs 50 non-PN17 firms)		100
Panel B: Distribution of PN17 firms among Industry Sectors		
<u>Industry</u>	<u>Percentage</u>	<u>Number of PN17 firms</u>
Construction	5%	1
Consumer product and services	26%	5
Energy	26%	5
Industrial product and services	21%	4
Technology	5%	1
Property	5%	1
Transportation and Logistics	11%	2
	100%	Total: 19 firms

5.8 Conclusion

In conclusion, this chapter elaborates on the multi-phase research framework, commencing with the manual collection of corporate governance data and progressing to multivariate regression analysis. It provides a thorough explanation of the measurement of the key variables: the primary dependent variable of the likelihood of fraud (PS) is constructed through sentiment analysis by utilizing the SentiWordNet lexicon, whereas the independent and moderating variables are systematically coded from annual reports in accordance with the Malaysian Code on Corporate Governance (MCCG) 2017 and ownership information.

Furthermore, the chapter delineated the empirical models comprising Ordinary Least Squares (OLS) and Binary Logistic regressions to be utilized for testing the hypotheses, in addition to the necessary diagnostic and robustness tests. Lastly, strategies for additional analysis employing a PN17 firm sample were described to substantiate the principal findings. In aggregate, the methodologies detailed in this chapter are formulated

to uphold the validity, reliability, and generalizability of the study's results, establishing a robust groundwork for the empirical analysis that is presented in the subsequent chapter.

CHAPTER SIX

DATA ANALYSES AND DISCUSSION

6.1 Introduction

This chapter discusses the result and analysis of the samples for this study. It provides detailed analysis and discussion on the four objectives of this study. Section 6.2 discusses the descriptive analysis of this study, aiming to achieve objective 1. Section 6.3 provides a discussion on textual analysis of this study, aiming to achieve objective 2. Meanwhile, section 6.4 discusses on the result of regression analyses with the aim to achieve objective 3 and 4 of this study. Section 6.5 presents further analyses of this study which consists of different samples of PN17 vs. non-PN17 firms. Subsequently, section 6.6 concludes the findings of this chapter, while section 6.7 tabulates the summary of regression analyses for both likelihood of fraud vs. non-likelihood of fraud firms and PN17 vs. non-PN17.

6.2 Descriptive Statistics

Table 6.1 provides the descriptive statistics for the samples of likelihood of fraud and non-likelihood of fraud firms. This section discusses on the result of descriptive analysis with the aim to achieve objective 1 that is to analyse the compliance of MCCG 2017 among the firms regarding likelihood and non-likelihood of fraud. A total of 300 likelihood of fraud and non-likelihood of fraud firms were tested in this study. Panel A, B, C, D in Table 6.1 provides the statistical data of the dependent variables, independent variables, moderating variables and control variables respectively. The tabulation of data shows the minimum, maximum, mean and standard deviations with a total of 300 observations.

Table 6.1

Descriptive Statistics for Likelihood of Fraud vs. Non-likelihood of Fraud Firms

	Mean	Median	Maximum	Minimum	Std. Dev.
Panel A: Dependent Variables					
PS	0.057	0.059	0.155	-0.066	0.028
FFR	0.500	0.500	1.000	0.000	0.501
Panel B: Independent Variables					
BOD_IND	0.530	0.500	1.000	0.250	0.132
BOD_TEN	0.370	0.330	1.000	0.000	0.334
BOD_GEN	0.127	0.125	0.500	0.000	0.136
BOD_REM(Million)	3.100	1.617	27.704	0.000	4.032
BOD_MEET	5.573	5.000	24.000	0.000	2.426
AUD_IND	0.907	1.000	1.000	0.400	0.150
RMC	0.693	1.000	1.000	0.000	0.462
RMC_IND	0.494	0.667	1.000	0.000	0.425
Panel C: Moderating Variables					
FAMOWN_DIRECT	0.055	0.000	0.638	0.000	0.124
FAMOWN_INDIRECT	0.156	0.000	0.762	0.000	0.221
INSOWN_INDIRECT	0.009	0.000	0.168	0.000	0.033
Panel D: Control Variables					
LIQUIDITY	3.895	2.005	51.000	0.000	6.098
LEVERAGE	8.306	0.330	986.540	-132.500	76.300
BOD_SIZE	6.609	6.000	12.000	4.000	1.766
FIRM_SIZE(Million)	909.375	297.722	8,847.055	0.007	1,809.078
AGE	30.223	26.000	136.000	9.000	15.810

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Panel A describes the descriptive statistics for the dependent variables PS and FFR. As stated in Table 6.1, the mean of polarity scores for Panel A is 5.7% which shows positive sentiment, while the maximum value of sentiment is 15.5% and the minimum value of sentiment is -6.6%. This study reveals that in average, the samples have positive sentiments.

From the statistics, the sentiment scores from MD&A section can be used in detecting the likelihood of fraud since the sentiment scores are different according to their MD&A. The minimum score of -6.6% of sentiment scores indicates that some of the firms have negative sentiments which can be associated with higher likelihood of fraud. On the other hand, the result of FFR reveals that 50% of the samples reflects the likelihood of fraud firms.

The MCCG 2017 highlighted a few amendments to be implemented in the Public Listed Firms in Malaysia. The MCCG 2017 stipulates that half of the board should comprise a majority of independent directors. As presented in Table 6.1, the mean of BOD_IND in Panel B is 53.0%, which indicates that overall, the sample of likelihood of fraud and non-likelihood of fraud firms comply with the recommendation made by MCCG 2017 to have at least half of independent directors on board. The existence of a majority of independent directors on board can give advantage to the big firms in avoiding top executives who have the intention to pursue their personal interests which might lead to fraud occurrence (Zam et al., 2014; Devarajar et al., 2022; Girau et al., 2024). The maximum result of BOD_IND shows there are firms that hold 100% of the independent directors on board. However, there are still firms that only have 25% of the independent directors on board.

The MCCG 2017 also recommended that the tenure of independent directors does not exceed the limit of nine years. Panel B in Table 6.1 shows a mean of 37.3% for BOD_TEN of more than nine years of services. This indicates that in average 37% of the independent board of directors has a tenure of more than nine years. The result of maximum BOD_TEN as 100% indicates that having all independent directors serving more than 9 years raises the possibility that the firm has maintained the same individuals without rotation, potentially undermining board independence and renewal. Yaacob and Wan Mohd Yusof (2020) argued that the longer tenure directors create familiarity of the board and give opportunities to commit fraud. Therefore, limiting the directors tenure can reduce the likelihood of entrenchment board (Kim et al., 2013).

In strengthening the board composition in Malaysian Public Listed Firms, the MCCG 2017 has announced board diversity which involves women on board. MCCG recommended that the publicly listed firms should have at least 30% of women on board by 2016. Based on the result of BOD_GEN in Panel B, in average the involvement of

women on board is only 12.7% which indicates non-compliance with the minimum threshold recommended by the MCCG 2017 to have at least 30% women on board. The result indicates that in average the sample does not comply with MCCG recommendation to have at least 30% women on board. The maximum value of women involvement in the board directors is 50%, indicating that there are firms which have already implemented the recommendation proposed by MCCG 2017. Nevertheless, there are still firms which do not include women on board since the minimum value for this variable is 0%. The statistics indicate that the involvement of women is still far from reaching the recommendation made by MCCG.

The result is supported by a previous study who concluded that Malaysia does not meet the objective of MCCG 2017 to have 30% women on board (Khaw & Liao, 2018; Haron et al., 2021). The result of this study is similar to the other developing countries such as China (10.7%) and India (12.4%). Nevertheless, the percentage of women involvement on board is far higher for developed countries such as the UK (20.3%), Australia (20.4%) and France (40%). Norway, which is the first country to introduce the gender quota, has the highest percentage of board seats held by women with a total of 42% (Deloitte, 2017). Previous study also highlighted that the reason for not complying with the requirement is because the firms are in the opinion that board gender diversity is not necessary to be implemented in the firm as they are committed to provide fair and equal opportunities and nurturing within the groups of firms (Zin et al., 2020). Furthermore, the selection of the directors is based on their competencies, skill, extensive experience and knowledge in specific areas, rather than gender.

In terms of disclosure of remuneration, MCCG 2017 encourages the firm to disclose the detailed remuneration of each of their directors. Based on the sample selected, all the firms disclosed all the detailed remunerations in the annual report. The components of remuneration are salaries and allowance, director's fee and meeting fees, bonus, statutory contribution, options and benefit in kind. In Table 6.1, Panel B has the mean of RM3.1 million paid to the directors annually, indicating that a large amount of money is spent every year to pay the directors in motoring the business welfare. The maximum payment to the directors was RM27.704 million, while the minimum was RM1.617 million. According to Ghasemi et al. (2020), the average remuneration paid to the executive

directors during 2006 to 2014 was RM2.56 million. Jaafar et al. (2014) reported that an average of RM2.120 million were paid to the directors during the period of 2007 to 2009.

The frequency of board meetings is the one of the practices recommended in MCCG. The MCCG 2017 requires the firms to disclose the number of their board meetings to the public while Firm Act requires the firms to have a minimum of four meetings conducted in a year (Ishak et al., 2017). On average, 5.6 meetings were held by the samples of the firms every year, with a minimum of 5 meetings and a maximum of 24 meetings were held during the year. According to Lipton and Lorsch (1992), the typical board meet is less than 8 times annually, however, boards should meet at least twice per month including committee sessions and strategy sessions. This indicates that the firms have complied with the MCCG 2017 recommendations. Besides that, MCCG 2017 also encourages the firms to establish an audit committee that solely consists of independent directors. As presented in Table 6.1 of Panel B, the mean of Audit Committee independence (AUD_IND) is 90.7%, indicating that most of the samples consist of solely independent Audit Committee. The result indicates that most of the sample firms are compliant with the amendment of MCCG.

Apart from that, MCCG 2017 also encourages the firms to establish Risk Management Committee (RMC) and majority of the RMC committee comprises of independent directors (RMC_IND). The statistical result shows a mean of 69.3%, indicating the firm has established RMC in their organizations. Although the RMC is a new recommendation by MCCG, the level of compliance is quite high where more than 50% of the firms have already implemented the RMC in their organizations. The compliance among Malaysian PLCs shows an increase in trend since 2011 as Abdullah et al. (2017) reported only 34.6% of establishment of RMC in 2011. Madah Marzuki et al. (2024) in their study for the period of 2012-2017 revealed that the establishment of RMC is 40.9%. This indicates that most of the firms take into consideration the MCCG 2017's recommendation to oversee the firm's risk management and policies through the establishment of RMC. The result of minimum RMC indicates there are still a number of firms that have not established RMC which requires the regulator's attention in enforcing the best practices of MCCG 2017.

On the other hand, the result for RMC_IND highlighted the average mean of 49.4%, indicating that the firms have not yet achieved the majority requirement by MCGG 2017. Despite being a new recommendation under MCGG 2017, the involvement of an independent RMC has already been considered by Malaysian PLCs in accordance with the MCGG 2017 requirement. Previous study by Ng et al. (2013) reported 51.2% of RMC_IND during the period of 2003-2011 which is a higher level compared to this study. The difference is because the study focused on the direct insurance firms which are subjected to BNM mandatory requirements. Interestingly, another study by Malik et al. (2021) exhibited 78.9% of RMC_IND for the period of 2015-2017 which also has a higher level compared to the result of this study. The difference is because they examined all the PLCs rather than this study which only focused on likelihood of fraud and non-likelihood of fraud firms.

Meanwhile, Panel C describes the descriptive moderating variable for this study. In terms of Malaysia's family ownership, the findings indicate that the sample firms have an average of 5.5% direct family ownership and 15.6% indirect family ownership. Nevertheless, the maximum family involvement for direct and indirect ownership are 63.8% and 76.2%, respectively. The result is supported by Madah Marzuki et al. (2019) whereby Malaysia is among the countries in Asia that have a high percentage of family ownership among the PLCs. The indirect ownership of family firms is higher than direct ownerships, indicating the complexity of family ownership in Malaysian family firms (Wan Mohammad et al., 2014). For institutional ownerships, the sample only considers indirect ownership due to the limitation of institutional involvement in the selected samples. There is only 16.8% of institutional participation in the selected samples.

On the other hand, Panel D exhibits the descriptive statistics for control variables of this study. On average, the LIQUIDITY for the sample firms is 3.895 which indicates that in average most of the firms have strong liquidity position. The strong liquidity can be an incentive for the firms to not engage in FFR. Meanwhile, the firms with very low current assets to current liability indicate they are unable to meet their obligations. The maximum value of liquidity is 51 and the minimum value is 2.005. Meanwhile, LEVERAGE is typically associated with a higher potential of loan agreement and less ability in obtaining additional capital through loans. Higher LEVERAGE means higher potential for violations

and higher likelihood of fraud. On average, the leverage level of Malaysian firms is 8.306, indicating a very high reliance on debt financing. The manager may be motivated to understate liabilities or assets (Dalnial et al. 2014; Zainudin & Hashim, 2016).

The average of BOD_SIZE is 6.6 directors, while the maximum board of directors is 12 directors, and the minimum is 4. Lipton and Lorsch (1992) suggested that the board size should be limited to a maximum of ten directors while Sadique et al. (2019) suggested having at least 8 directors on board to reduce the likelihood of fraud. From the statistical result, the BOD_SIZE of the selected samples is consistent with the previous literature. This indicates that the firms in Malaysia are aware of the size of the directors to be in place. The statistics are also consistent with the recommendation made by MCCG 2011 blueprints to have at least 8 directors on board. On the other hand, in average, the FIRM_SIZE is RM909.375 of total assets. The maximum FIRM_SIZE is RM8,847.055 million and the minimum is RM0.007 million. According to Orazalin (2020), the larger firms are more likely to engage in unethical behaviour because they are less conservative in accounting policies. Lastly, the average AGE of the selected sample is 30 years, with the maximum of 136 years and minimum of 26 years. The statistics show that the sample selected consists of firms that have long existed in this country for more than 20 years. According to Hasnan et al. (2021), the older firms become more conservative to manage the firms so as to enhance the quality of their financial statements.

In conclusion, in this section, the study aims to achieve research objective 1 which is to analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms. This section focuses on the likelihood of fraud and non-likelihood of fraud firms in Malaysia. As discussed, from the descriptive analysis, the firms have complied the 4 requirements of MCCG 2017. The requirements are (i) to comprise at least half of the independent directors, (ii) to disclose the detailed remuneration of each of their directors, (iii) to disclose the number of board meetings to the public, and (iv) to comprise solely independent directors in Audit Committee. Meanwhile, 4 requirements of MCCG 2017 are not complied by the firms. The requirements are (i) the tenure of the board of directors should not exceed nine years of service, (ii) the firm should have at least 30% women on board, (iii) the firm has to establish RMC, and (iv) the firm has majority of independent directors in RMC. Based on the result of non-compliance of the requirement by MCCG

2017, more efforts need to be done to promote the importance of having board independent rotation, having more women on board, and having RMC to oversee the risks of the firm so that the likelihood of fraud can be prevented.

6.3 Likelihood of Narrative Pattern of Financial Reporting using Textual Analysis

This section discusses on the result of the likelihood of narrative pattern using textual analysis. The aim of this section is to achieve research objective 2 (RO2) which is to identify the likelihood of narrative pattern using textual analysis among likelihood and non-likelihood fraud firms in Malaysia. The result of this objective provides the insight to the regulator on the likelihood of fraud in Malaysia. As stated in phase 2 of Figure 4.1, this process describes the two outputs which are topic modelling and sentiment analysis.

6.3.1 Likelihood of Narrative Pattern of Financial Reporting of Likelihood of Fraud vs. Non-likelihood of Fraud Firms

(i) Topic Modelling

The first outcome of this study is topic modelling. In this study, all the MD&As texts from the year 2017 to 2022 are run together as a single database in RapidMiner Studio. The following section describes in detail the result of likelihood of fraud and non-likelihood of fraud firms within the stipulated period.

6.3.1.1 Text Pre-processing and Text Processing

No.	Company	Year	MD&A
1	HARN LEN CORPORATION BERHAD	2017	We endeavour to balance our business risks and opportunities with the interests of our many stakeholders to ensure sustainable
2	G Neptune Berhad (Southern score)	2017	BUSINESS OVERVIEW The principal activities of the group consist of investment holding, research and development on inform
3	Multi Sports Holdings Berhad ("Multi S	2017	The Company currently has no executive directors (Lin Liying and Lin Houzhi remain uncontactable) and in the absence a CFO, CO
4	Caring Pharmacy Berhad ("Caring")	2017	The Company currently has no executive directors (Lin Liying and Lin Houzhi remain uncontactable) and in the absence a CFO, CO
5	Multi-code (MCE)	2017	The MCE Holdings Berhad Group ("MCE Group") is a leading Original Equipment Manufacturer ("OEM") specialising in the full spe
6	United U-Li Corporation Berhad ("U-Li'	2017	Disclaimer This section provides the management's overview of the Group's operations and financial performance for the final
7	Grand Hoover Berhad ("GHB") - PTT SY	2017	OVERVIEW OF THE GROUP'S BUSINESS AND OPERATIONS Grand Hoover Berhad is principally involved in property development ai
8	Pasdec Holdings Berhad ("Pasdec")	2017	TURNOVER The Group's revenue decreased slightly by RM1.93 million from RM117.38 million recorded in the financial year ende
9	Kian Joo Can Factory Berhad (KJCF)	2017	INTRODUCTION The following Management Discussion and Analysis ("MD&A") provides an analysis of the financial performance
10	LFE Corporation Berhad (LFE)	2017	MARKET OVERVIEW Global growth in 2016 moderated to 3.1% as compared to 3.2% the year before mainly due to subdued invest
11	ACE Holdings Berhad (AHB)	2017	Our new product introduction, including our System T1 premium desk system is now making traction in the architects and de
12	Khee San Berhad	2017	INTRODUCTION Khee San Berhad and its wholly-owned subsidiaries, Khee San Food Industries Sdn Bhd ("KSFI") and Khee San I

Figure 6.1 Raw Data from MD&As Text

Company	text	Year	document_l...	token_num...	token_length
HARN LEN C...	endeavour en...	2017	6986	733	9.531
G Neptune B...	busi busi_ov...	2017	5135	555	9.252
Multi Sports ...	compani com...	2017	12282	1275	9.633
Caring Phar...	compani com...	2017	12282	1275	9.633
Multi-code (M...	mce mce_hol...	2017	16623	1779	9.344
United U-Li C...	disclaim disc...	2017	23472	2505	9.370
Grand Hoove...	overview over...	2017	9367	979	9.568
Pasdec Holdi...	turnov turnov...	2017	20996	2285	9.189
Kian Joo Can...	introduc intro...	2017	45413	4987	9.106
LFE Corporat...	market mark...	2017	13841	1511	9.160
ACE Holding...	product prod...	2017	9551	1023	9.336
Khee San Be...	introduc intro...	2017	22436	2433	9.222
NetX Holding...	netx netx_hol...	2017	21159	2225	9.510

Figure 6.2 Data after Cleaning Process

Figure 6.1 and 6.2 show the examples of data before and after the cleaning process of text processing. Figure 6.1 shows the raw data imported from excel sheet into RapidMiner Studio, while Figure 6.2 depicts the result of text processing in RapidMiner Studio. The result of text processing consists of three important roles in the subsequent text clustering analysis which are document length, token number and token length. Document length represents the size of a full document for each firm/number of words in each document, token number is the total token in each of the document, and token length is the average of token length. For example, the total number of words after the cleaning process

for Harn Len Corporation Berhad 2017 report is 733 words. The final result of document length is obtained after utilizing it with other operators such as extract length, extract token number, filter stopwords, and aggregate token length.

6.3.1.2 Text Visualisation

Row No.	word	in documents	total
1	group	151	4507
2	million	136	2930
3	year	149	2064
4	revenue	144	1409
5	financial	151	1329
6	business	149	1240
7	market	142	812
8	malaysia	125	793
9	division	77	751
10	products	110	710

Figure 6.3 Frequent Words in Likelihood of Fraud Firms

Row No.	word	in documents	total
1	group	164	4309
2	million	151	2971
3	year	164	2216
4	financial	165	1728
5	business	166	1481
6	revenue	160	1182
7	market	151	1097
8	due	161	1025
9	products	139	1005
10	financial_year	149	941

Figure 6.4 Frequent Words in Non-likelihood of Fraud Firms

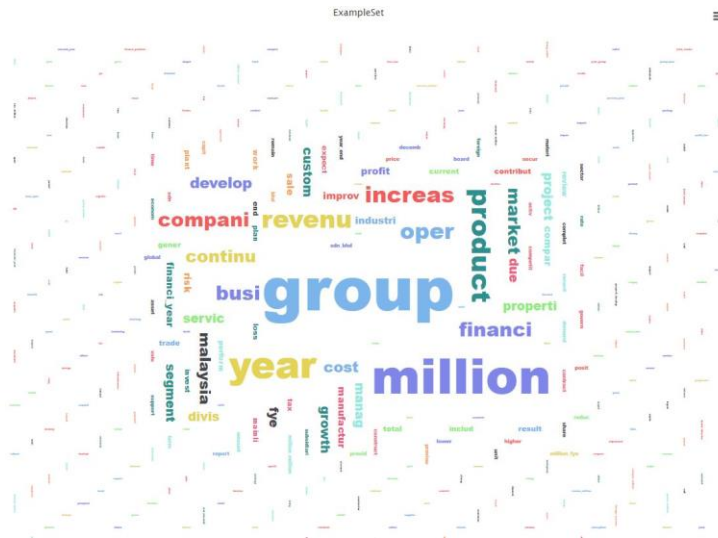


Figure 6.5 Example of Text Visualization

Figures 6.3 and 6.4 show the result of text visualization in RapidMiner Studio. Figure 6.3 shows the frequent words that appear in the MD&As text in the form of listing for the likelihood of fraud firms, while Figure 6.4 presents the frequent words that appear in the text in the form of listing for the non-likelihood of fraud firms. This listing is obtained from the sorting and weighting operators of Text Visualization (Refer to section 5.4.1.1 (iii)). Based on these two figures, the result shows that the word “group”, “million”, “year” are the three most frequent words that appear in both likelihood of fraud and non-likelihood of fraud firms. The word “group” appears 4,507 times in likelihood of fraud firms, while 4,309 times in non-likelihood of fraud firms. On the other hand, Figure 6.5 shows the Word Cloud for the frequent words that appear in MD&As in the form of visualisation. Based on the Word Cloud, the large words present the most frequent words, while the small words present the less frequent words in the MD&As text.

6.3.1.3 Text Clustering

Row No.	id	Company	cluster	text	document_l...	token_num...	token_length
1	1	HARN LEN C...	cluster_0	endeavour en...	-1.133	-1.130	1.305
2	2	G Neptune B...	cluster_15	busi busi_ov...	-1.295	-1.271	-0.263
3	3	Multi Sports ...	cluster_8	compani com...	-0.670	-0.700	1.881
4	4	Caring Phar...	cluster_8	compani com...	-0.670	-0.700	1.881
5	5	Multi-code (M...	cluster_16	mce mce_hol...	-0.291	-0.300	0.254
6	6	United U-Li C...	cluster_18	disclaim disc...	0.307	0.276	0.400
7	7	Grand Hoove...	cluster_13	overview over...	-0.925	-0.935	1.515
8	8	Pasdec Holdi...	cluster_12	turnov turnov...	0.091	0.101	-0.622
9	9	Kian Joo Can...	cluster_9	introduct intro...	2.224	2.244	-1.086
10	10	LFE Corporat...	cluster_3	market mark...	-0.534	-0.513	-0.782
11	11	ACE Holding...	cluster_14	product prod...	-0.909	-0.900	0.210
12	12	Khee San Be...	cluster_10	introduct intro...	0.217	0.218	-0.436

Figure 6.6 Example for Text Clustering in Likelihood of Fraud Firms

Figure 6.6 shows an example for text clustering of the likelihood of fraud firms. It also shows the result of the data after the normalization process. After the normalization process, the results for document length, token number, and token length are converted into the percentage values. In this process, a collection of 10,000-word vectors of likelihood of fraud and non-likelihood of fraud firms were created to cluster using the K-means algorithm. As mentioned in chapter 4, the elbow method is adopted to determine the number of clusters for each likelihood of fraud and non-likelihood of fraud firms. Figures 6.7 and 6.8 show the graphs of elbow for each sample of likelihood of fraud and non-likelihood of fraud firms.

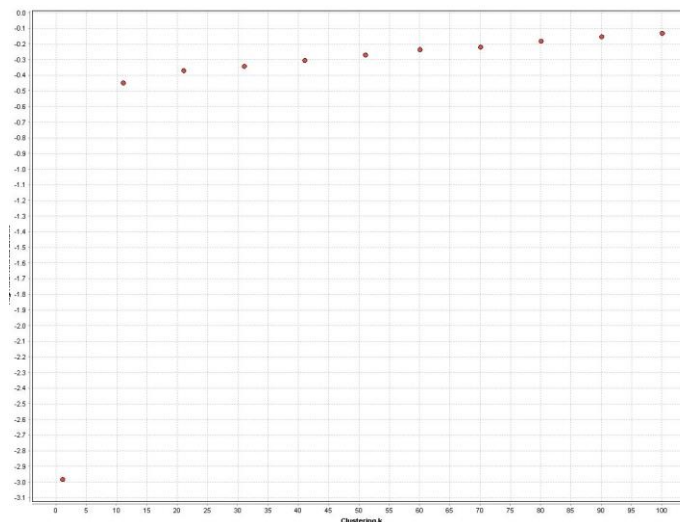


Figure 6.7 Clustering for likelihood of Fraud Firms

Figure 6.7 shows the graph for the elbow method in determining the K-clusters for the likelihood of fraud firms. Based on the graph, the result indicates that the value K of 11 is the most favourable choice.

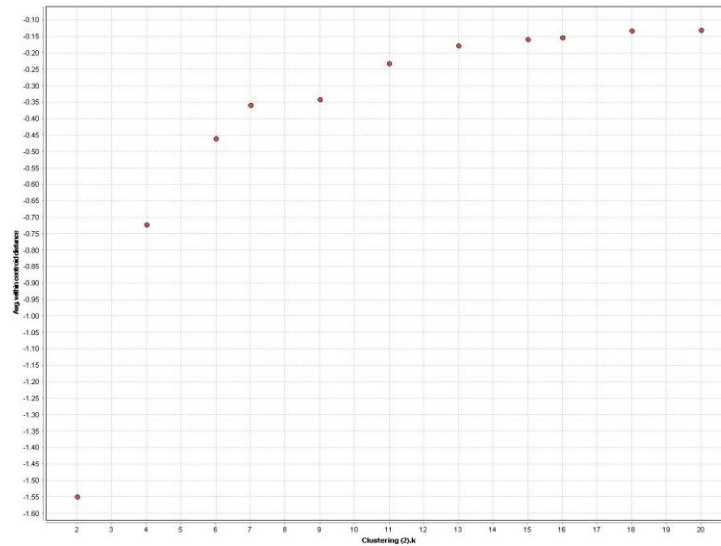


Figure 6.8 Clustering for Non-likelihood of Fraud Firms

Figure 6.8 shows the graph for the elbow method in determining the K-clusters of the non-likelihood of fraud firms. Based on the graph, the result indicates that the value K of 6 is the most favourable choice.

6.3.1.4 Topic Modeling based on the LDA Approach for Likelihood of Fraud and Non-likelihood of Fraud Firms

As mentioned in chapter 5, LDA method is adopted to discover the topic in which the words that frequently appear together from MD&As section. Each topic is generated using LDA method to represent a group of co-occurring words that explain a particular financial characteristics. In this study, based on the K-mean clustering results, 11 topics were established for likelihood of fraud firms, while 6 topics were established for non-likelihood of fraud firms. The frequent words in each topic are organised in descending order according to their frequencies (Madah Marzuki et al., 2024). The top 30 frequent words for each topic and the categories of each firms are presented in Table 6.2 to Table 6.5. The result of LDA offers a valuable insight particularly concerning the financial attributes of likelihood of fraud and non-likelihood of fraud firms. On the other hand, the

label of each topic is important for the structure interpretation of themes related to the likelihood of fraud.

Table 6.2 shows the result of the top 30 frequent words for the likelihood of fraud firms from 2017 to 2022 which offer an insight into the concept or financial characteristics of each topic. In this sample, the likelihood of fraud firms are expected to exhibit more negative themes or negative sentiment. In order to obtain the positive or negative themes for each of the topic, these frequent words are matched with LM dictionary to define the similarity between the words and the LM dictionary word lists. The red italic words represent negative words while the blue italic words represent the positive words as per LM dictionary wordlists. Based on the analyses, only several words match with the LM dictionary that can be used as a base in renaming each of the topic. Topic “1, 2, 3 and 9” are classified as financial positive characteristics, while topic “0, 4, 5, 8, and 10” are classified as financial negative characteristics. On the other hand, topic “6 and 7” are classified as non-related to financial characteristics. In summary, 11 topics were identified for likelihood of fraud firms which consist of 5 negative topics indicators, 4 positive topic indicators, and 2 topics which are not related to LM dictionary.

Topic “0” is related to risk management activities, which frequently mentioned the words like “risk”, “financial”, and “market”. Topic “1” is connected to business and acquisition where the words like “business”, “acquisition”, and “increase” indicate the merger or acquisition. Meanwhile, Topic “2” is related to business and opportunities, which frequently mentioned the words “opportunities”, “management”, “customers”, and “services”. This topic focuses on the growth prospect of the firm. Topic “3” addresses the corporate activity which frequently mentioned words like “corporate”, “activities”, and “financial” that reflected the general operations. Additionally, topic “4” is labeled as non-performing activity which encompasses the underperformance or losses. The frequent words mentioned in this topic include “non-performing” and “loss”.

Topic “5” is tied to the income and profit activity where it focuses on the financial performance of the firms. In this topic, the words “income”, “profit” and “sales” are frequently mentioned in MD&As. On the other hand, Topic “6” frequently mentioned words like “investment”, “property” and “development”, which is labeled as investment activity and related to capital investments. Topic “7” refers to future activity that indicates

the forward-looking strategies of the firms. The word “future”, “digital” and “global” are frequently mentioned in this group. Topic “8” has frequently mentioned words like “regularization” and “loss”, which is labeled as loss and regularization activity that indicates financial distress. The last two topics are topic “9” and topic “10” which address performing an activity that reflects operational outcomes and contract and services activity that reflects service-based activity. As for Topic 9, it is concerned with operational outcomes of the firms with words like “performing”, “activity”, and “market” frequently mentioned. Lastly, Topic 10 is related to service-based activities of the firms with words frequently mentioned like “services”, “revenue”, and “growth”.

Based on the results of LDA, this study provides an insight on the financial characteristics of likelihood of fraud firms that are identified and categorized according to their dominant disclosure themes as shown in Table 6.1 and Table 6.2. Based on the sample likelihood of fraud firms, 20 firms fall under only one category of financial characteristics in which they are only dominant to one disclosure theme. For example, Transocean Berhad fell under Topic 2 of Business Opportunities, suggesting that the firm shows business opportunities to mask the underperformance of the firm. This evidence is shown when the firm suffered losses since the year 2019 and managed to improve their revenue in 2022 to RM28.88 million. This is further explained when the firm was involved in the selling of new tyres and the manufacturing as well as marketing of retreaded tyres. In addition, in 2021, the firm acquired 40% stakes of Enfrasys Sdn Bhd which provides cloud solutions to private sectors and government agencies. Thus, due to this opportunity, Transocean becomes the largest shareholder with a stake of 30.72% (The Edge Market, 2023a).

Multi-code Electronics Industries (MCE) dominantly fall under Topic 3, which is corporate activities that stress on the general corporate operation of the firm. The firm that generally discusses on corporate operation might be hiding the underperformance of the firm. The firm consecutively reported financial losses from 2018 to 2021. The general corporate operation of this firm is further explained when MCE successfully secured contracts with Perodua to supply various electronic components and parts for the new car models which amounted to RM44 million over a six-year period. Two new car models are involved, which include electric vehicle (EV) and internal Combustion engine (ICE) that will commence in the second quarter of 2026 and the first quarter of 2027, respectively.

The event shows that the firm takes business opportunities that help the firm to grow and experience higher economic growth.

Another example is Trive Property Group Berhad when the firm fell under Topic 4 of non-performing activities, suggesting that the firm is involved in non-performing activities resulted in non-profitable income to the firm. This evidence is shown when the firm proposed a share capital reduction to wipe out their accumulated losses of RM85 millions for the seven of its eight past financial years in 18 November 2024. Based on the sample of this firm, they incurred losses from 2018 to 2021. The capital issued includes 1.26 billion ordinary shares and 505.45 million of outstanding warrants (The Edge Market, 2024b). Meanwhile, Multi Sport Holdings Berhad (Multisport) falls under Topic 8 of loss and regularization, suggesting that the firm is in financially distressed situations. The result is further confirmed when the firm triggered to PN17 status in 2017 as the auditor issued disclaimer opinion due to the concerned matter that the opening balances for the subsidiaries are not fairly stated and the matter was not solved in the preceding year which resulted into the auditor being unable to determine whether the adjustments to the result of operations and opening retained earnings/accumulated losses are necessary. On the other hand, the investigation relating to material irregularities involving their subsidiaries in China is still ongoing and the subsidiaries failed to disclose or report significant loans and financing facilities in their accounts and reporting.

Meanwhile, MBM resources Berhad (MBM) dominantly falls under Topic 9 which is related to operational performance, focusing on operational outcomes. This topic is related to positive financial characteristics in which the firms are more focused on the operational outcomes, specifically on how efficiently the firm manages the business to achieve higher operational outcomes. For example, the firm incurred losses of RM145.1 million in 2017; however, the firm started reporting profits from RM188.9 million in 2018 to RM310.1 million in 2022. The firm specifically focused on the sustainable investments including entering “green” programs such as solar energy that can increase energy efficiency in 2021. In 2022, the firm implemented the initiative through installation of rainwater harvesting system that was instilled at OMI Plant in Shah Alam. This initiative aims to help with the preservation of water ecosystem as well as reduce operational costs.

Lastly, Topic 10 refers to contract and services activity, which is concerned with the service-based activities. This topic is related to the negative financial characteristics that involve the contract of the firms. The only firm that falls under this category is Serba Dinamik Berhad. In 2021, KPMG took issue with Serba Dinamik on the RM3.54 billion contracts, trade receivables, and material on-site balances that were not independently verified. The issues included companies' names with customers making payments directly to the subcontractors in which Serba Dinamik would receive the net amount (The Edge Market, 2021). In addition, the former auditor of KPMG also raised concerns on numerous suppliers with paid-up capital of below RM100 thousand and owed RM60-90 million with mismatched addresses that have common office spaces. Apart from that, the new appointed auditor of Eanst & Young Consulting Sdn Bhd (EY) also issued disclaimer audit opinion regarding the various contracts and obligations with respect to these contract issues.

Interestingly, 10 firms fall to more than one category of financial characteristics. Nevertheless, these firms are identified and categorized according to their dominant disclosure themes. For example, Stone Master Corporation Berhad falls under Topic 0 and Topic 8. This firm dominantly falls under Topic 0, in which the firm focuses on risk-related activities. This further confirmed that in 2019, the former deputy managing director of Stone Master was found guilty for causing a RM11.54 million wrongful loss to the firm as the firm entered into agency agreements with 23 foreign companies for exclusive rights to market and promote product belonging to these foreign companies (The Edge Market, 2019). Meanwhile, Harn Lern Corporation Berhad (HLCB) falls under Topics 0, 1, 4, and 6. However, this firm dominantly falls under Topic 1, suggesting the merger or acquisition. In relation to business acquisition, on 29 May 2017, HLCB entered a Share Sale Agreement (SSA) for the acquisition of the entire equity of Midwest Equity Sdn Bhd (MESB), a property investment firm with the amount of RM28 million. This acquisition led to the MESB becoming one of the subsidiaries of HLCB. In addition, HLCB signed an agreement to acquire a plantation outfit that owns 4,052.6 acres of plantation in Rompin, Pahang, from textile giant Jakel group that amounted to RM54.7 million with cas-lus-shares deal in the early 2023 (The Edge Market, 2023b).

Another example is Perak Corporation Berhad where the firm falls under Topic 6 and Topic 8. This firm dominantly falls under Topic 6, which is related to investment

activities focusing on capital investments. This topic is not related to financial positive or financial negative characteristics. The firm falls under this category aligned with the firm management in improving their business performance from the year 2017 to 2022. Based on the MD&As report, the firm suffered loss before tax of RM328.8 million due to the provision for impairment of their investment assets. This loss was reported for the first time in the financial year end 2013. The firm continuously reported losses in 2018 to 2020, but the loss was reduced to RM92.1 million. Nevertheless, the firm was classified under PN17 on 11 February 2020 due to failure to pay scheduled repayment of credit facilities of RM75.9 million. In 2021, the firm achieved milestones progress towards their regularization plan by arranging the private settlement agreement with the creditors. In 2022, the firm reported decrease in loan and borrowings by 30% from RM183.2 million in 2021 to RM127.9 million in 2022. From this firm, we can see that the firm improves its financial performance by focusing on the income and profit activities.

Table 6.2
The Top Frequent Words for Likelihood of Fraud Firms

TOPIC 0	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5	TOPIC 6	TOPIC 7	TOPIC 8	TOPIC 9	TOPIC 10
Risk Management Activities	Business Acquisition	Business Opportunities	Corporate Activities	Non-Performing Activities	Income and Profit Activities	Investment Activities	Future Activity	Loss and Regularization	Operational Performance	Contract and Services Activity
group	group	iris	group	group	million	million	group	company	year	revenue
products	division	management	year	million	year	property	business	financial	group	fye
million	malaysia	business	growth	business	sales	group	sales	sdn	million	million
customers	increase	logistics	financial	year	group	development	digital	bhd	division	group
production	rate	malaysia	business	financial	furniture	year	future	june	market	growth
materials	cash	market	malaysia	previous	pandemic	construction	various	plan	increase	services
financial	management	services	continue	payment	covid	projects	apparel	ended	sales	total
<i>risks</i>	capital	solutions	government	mainly	higher	segment	fpe	trading	manufacturing	segment
foreign	sales	continue	economy	revenue	due	revenue	global	subsidiary	revenue	year
cost	million	digital	total	current	profit	properties	exchange	berhad	customers	operations
compared	recorded	customers	economic	services	current	hotel	addition	malaysia	increased	oil
market	higher	world	environment	<i>loss</i>	social	project	due	year	volume	cost
revenue	demand	team	covid	tax	value	mall	advertising	proposed	dividend	expenses
prices	expected	division	expected	management	global	december	media	<i>loss</i>	demand	east
labour	equity	safety	industry	<i>risk</i>	movement	retail	industry	services	share	<i>contracts</i>
raw	source	health	support	due	office	completed	assets	bursa	profit	contributed
manufacturing	malaysian	trusted	half	investment	increased	compared	production	period	operating	generated
costs	fye	board	registered	segment	cost	billion	performance	board	business	increase
review	vietnam	cards	global	non	supply	building	energy	due	products	profit
local	amounting	properties	measures	lower	line	market	market	subsidiaries	performance	region
business	borrowings	trucks	malaysian	results	activities	residential	existing	management	higher	power
workers	increased	people	compared	receivables	order	net	quality	shareholders	vehicles	epcc
quality	domestic	ensure	pandemic	technology	especially	mainly	continue	operations	compared	asia
increase	operations	focus	good	marketing	policy	due	position	main	<i>efficiency</i>	billion
major	cans	working	sector	credit	<i>risk</i>	activities	impact	regularisation	plans	maintenance
cash	cost	employees	corporate	gross	based	review	process	agreement	production	gross
year	level	core	<i>positive</i>	infrastructure	plantation	investment	currently	business	trading	<i>approximately</i>
operations	<i>strong</i>	<i>opportunities</i>	policy	projects	land	wct	focus	tax	motor	mainly
performance	additional	transocean	automotive	merchants	mco	units	reduce	months	sen	include
total	dividend	time	mce	higher	economic	operating	product	shares	lower	training

Table 6.3
Categories of Financial Characteristics by Each Firms for Likelihood of Fraud Firms

Fraud firms	Financial Characteristics										
	Topic 0	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7	Topic 8	Topic 9	Topic 10
	Risk management activities	Business acquisition	Business opportunities	Corporate activities	Non-performing activities	Income and profit activities	Investment activities	Future activities	Loss and regularization	Operational performance	Contract and services activity
ACE Holdings Berhad				X				X			
APFT	X										
Asia Media Group		X						X	X		
Caring Pharmacy Berhad									X	X	
China Automobile Parts Holdings Ltd	X										X
G Neptune Berhad									X		
Grand Hoover Berhad							X				
Harn Lem Corporation Berhad	X	X			X		X				
Iris Corporation Berhad			X								
Khee San Berhad								X			
Kian Joo Can Factory Berhad		X									
KNM Group Berhad								X			X
LFE Corporation Berhad					X						
Lii Hen Industries Berhad						X					
Malaysia Pacific Corporation Berhad									X		
MBM Resources Berhad										X	
Multi Sports Holdings Berhad									X		
Multi-code				X							
NetX Holdings Berhad					X						
Pasdec Holdings Berhad							X				
Perak Corporation Berhad							X		X		
Prolexus Berhad	X							X			
Rapid Synergy Berhad			X								
Serba Dinamik Berhad											X
Stone Master Corporation Berhad	X								X		
Three-A Resources Berhad	X									X	
Transocean Holdings Berhad			X								
TRIVE Property Group Berhad					X						
United U-Li Corporation Berhad				X							
WCT Berhad							X				

Table 6.4
Top Frequent Words for Non-likelihood of Fraud Firms

TOPIC 0	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5
Business opportunities	Non-performing activity	Investment activity	Income and profit activity	Future activity	Market and product activity
group	group	group	million	cash	products
business	million	million	year	business	market
services	fye	property	group	services	malaysia
million	financial	development	financial	malaysia	
operations	revenue	year	profit	growth	manufacturing
year	<i>loss</i>	financial	due	industry	year
management	<i>risk</i>	construction	segment	digital	group
engineering	business	project	increase	payment	sales
june	mainly	market	decrease	customers	global
bhd	products	division	plant	technology	economic
project	due	projects	<i>approximately</i>	coke	growth
sdn	customers	management	revenue	china	product
energy	management	continue	mainly	billion	division
financial	company	revenue	tax	years	cost
activities	year	due	current	solutions	brand
oil	segment	units	oil	bank	demand
quality	operations	current	price	banks	company
plant	dividend	december	power	service	domestic
projects	manufacturing	tax	operating	companies	performance
fabrication	production	expected	business	end	markets
gas	cost	land	higher	number	business
development	compared	sales	result	businesses	industry
capacity	increase	business	compared	crms	trading
solar	performance	properties	prices	percent	pandemic
facilities	retail	total	net	software	local
dialog	share	capital	malaysia	machines	continue
capital	customer	investment	assets	use	automotive
production	industry	years	advertising	level	compared
<i>opportunities</i>	quality	compared	increased	economic	consumer
ensure	higher	lower	economy	provide	increase

Table 6.4 presents the top 30 frequent words using LDA for non-likelihood of fraud firms, while Table 6.5 presents the particular financial characteristics or Topics for each of the non-likelihood of fraud firms. For this non-likelihood of fraud firm's category, it is expected that the themes are neutral or positive that reflect the stable operations of the firm. Based on the clustering analysis, 6 topics are identified for non-fraud firms which consist of 2 negative topics indicators, 1 positive topic indicators, and 3 topics which are not related to LM dictionary. This result reflects the expectation the themes have emphasized on the neutral and positive characteristics. In Topic "0", the word "opportunities", "services" and "operations" are frequently mentioned. This topic is named as "Business opportunities" that focuses on the opportunities of the business that shows the firms growth. Topic 1 is named as a non-performing activity which reflects the financial struggles of the firm. The words "non-performing, "loss", and "risk" are frequently mentioned in MD&As. Meanwhile, Topic 2 is an investment

activity that is connected to the investments in the firms. The words frequently mentioned in this topic are “investment”, “property”, “project”, and “development. Topic 3 is named as an income and profit activity which focuses on the profitability of the firm. The words “income”, “profit”, and “million” are frequently mentioned in the MD&As. As for Topic 4, the frequently words mentioned are “future”, “cash”, and “business”. This topic is named as a future activity that reflects the strategic planning or future strategies of the firm. Lastly, Topic 5 is a market and product activity tied on the market operations of the firms. The words “product”, “market”, and “manufacturing” are frequent words mentioned in the MD&As.

Based on the results of LDA, this sample of study also provides an insight on the financial characteristics of non-likelihood of fraud firms that are identified and categorized according to their dominant disclosure themes as shown in Table 6.4. Based on the sample non-likelihood of fraud firms, 24 firms fall under only one category of financial characteristics in which they are only dominant to one financial characteristics theme. Meanwhile, only 6 firms fall under more than one category of financial characteristics. The result reveals that non-likelihood of fraud firms show more consistent in presenting their MD&As. They are dominant in reporting their financial health and operations of their firms in MD&As. For example, Seremban Engineering Berhad (SEB) falls under Topic 0 of business opportunities, reflecting the opportunities taken by the firm to expand their business growth. This is further confirmed where SEB and MIE Industrial Sdn Bhd (MIE) emerged as controlling shareholders in SEB with the acquisition of 69.72% shares for the total consideration of RM27.8 million. With the acquisition of shares by MIE, SEB aims to expand its fabrication capability and integrates its engineering scope of services to include other engineering services as well as higher up the value chain. This shows that SEB took the business opportunities to increase their firm’s growth by expanding the business operation wider.

Another example is Elsoft Research Berhad that falls under Topic 1 of non-performing activity. This topic is reflected on the underperformance of the firm, where the firm reported non-performing activity in 2020 due to the significant decrease of their revenue by 46%. This significant decrease in revenue was due to weak demand for the product as resulted from the Covid-19 pandemic and movement control order (MCO) by the government. However, the firm reported an increase of revenue in 2021 but decreased by 3.7% in 2022 due to the slow demand of the product caused by the global semiconductor market. From this situation, we can see that the firm reported

non-performing activity throughout the financial year and the firm faced financial struggles in maintaining their profits as the revenue for the year declined.

Other than that, Opensys (M) Berhad is also one of the firms that dominantly falls under one category, which is Topic 4. This topic reflects the strategic planning of the firm. This firm became the first Malaysian ICT firm that created “buySolar” in 2020 which promotes environmental sustainability by enhancing the residential, commercial and industrial customers to purchase solar panels. This project is also based on cooperation which includes Tenaga Nasional Berhad (TNB), Sustainability Energy Development Authority (SEDA) and insurers. This project aims to increase 30% profit for the next 3 to 5 years. Besides that, Opensys also announced to propose the transfer of their entire issued share capital from the ACE market to the Main Market of Bursa Malaysia Securities Berhad on 4th March 2022. This transfer aims to enhance the firm’s reputation and increase recognition and acceptance among the investors (The Edge Market, 2022a). From the report, the firm is involved in strategic planning to grow their future business growth.

On the other hand, six (6) firms fall into more than one category of financial characteristics. For example, Formosa Prosonic Industrial Berhad (PSI) falls under Topic 0 and 1 but dominantly falls under Topic 1 of non-performing activity. This topic is connected to the financial struggles of the firm. Based on the annual report in 2018, the firm faced heavy client concentration risk with 65.3% of the revenue derived from only two major customers. This may create an operational risk of losing the major customer or slower demand of the products resulting in a significant reduction in revenue as they only concentrate on the small number of major customers. In addition, the industry typically grants credit terms of between thirty (30) to ninety (90) days subjected to credit limit. The dependency on the major customers increases the vulnerability of the firm if there is any reduction or delay in orders so that it will impact on the revenue as well as profits to the firm. In addition, the firm is also exposed to the foreign currency exchange risks as they directly import materials from abroad. The purchase of plants and machinery is also denominated in foreign currencies. This will result in risks of foreign currency losses.

Another example is Vsolar Group Berhad, which falls under Topic 0 and 3. Nevertheless, this firm dominantly falls under Topic 3 of income and profit activity. This topic focuses on the profitability of the firm in generating higher profits. However, the firm consistently reported losses from the year 2017 to 2022. The consistent losses

reported by the firm indicate the firm's underperformance is to improve its business. In spite of having consistent losses, the firm has also taken further action to counter the losses. For example, in July 2020, the firm completed issuing rights with warrants amounted to RM37 million to raise their capital. Furthermore, during the financial year 2021, the firm again boosted their capital by issuing ordinary shares pursuant to employee share option scheme (ESOS), private placement, right issues and warrant amounting to RM96.75 million. In the effort to increase revenue of the firm in the financial year 2022, variation of the proceeds from the equity injection is used to fund the projects. For instance, a wholly subsidiary firm of Vsolar Engineering Sdn Bhd (VESB) has accepted Letter of Award (LOA) from RA Integration Links Sdn Bhd (RAIL) to be a trading partner for the purchase of spare parts of railway vehicles. From the sample case, we can see that in this financial characteristic, the firm focuses on improving their revenue as well as profits through various indicators that can contribute to the firm's performance.

Table 6.5
Categories of Financial Characteristics by each Firm for Non-likelihood of Fraud Firms

Non-fraud firms	Financial Characteristics					
	Topic 0	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
	Business opportunities	Non-performing activity	Investment activity	Income and profit activity	Future activity	Market and product activity
AT Systematization		X				
CCK Consolidated	X					
CepatWawasan				X		
Crest Builder Holding			X			
Dialog Group	X					
Elsoff Research		X				
Emico Holding Berhad						X
Esthetic						X
Formosa Industries	X	X				
Fraser & Neave						X
Harbour-Link Group						X
Hong Leong Industries Berhad						X
Hwa Tai		X				
Joe Holding Berhad						
Kia Lim		X		X		
LBH Capital Berhad			X			
Opensys					X	
Paragon Group Berhad			X	X		
Parkwood Holding Berhad			X			
PDZ Holding Berhad						X
PRG Holding Berhad		X	X	X		
SCC Holding Berhad						X
Senjaya				X		
Seremban Engineering	X					
Smis		X				
Techna-X Berhad					X	
Thrive Global Berhad			X			
Tomei Consolidated			X			
Vsolar	X			X		
Wee Holding Berhad		X				

6.3.1.5 Comparative Analysis of Disclosure Patterns

A comparative analysis of LDA topic models reveals a disclosure strategy unique to fraudulent firms, which can be termed as 'Deceptive Obfuscation.' The critical distinction lies in the strategic architecture of the narrative itself. Likelihood of fraud firms exhibit substantially greater thematic complexity, generating 11 distinct topics versus the 6 identified in non-likelihood of fraud firms. This proliferation suggests a deliberate strategy of distraction, where management spreads the reader's attention thinly across many subjects to divert focus from core financial weaknesses. Consequently, this narrative complexity serves as a measurable red flag, indicating that the depth and clarity of a transparent disclosure have been sacrificed to create a veil of irrelevant information.

Furthermore, a quantitative assessment of topic prevalence underscores this strategy. Likelihood of Fraud firms allocate a substantially higher proportion of their discourse to negative financial characteristics (5 out of 11 topics, or 45%) compared to their non-fraud counterparts (2 out of 6 topics, or 33%). This narrative is compounded by a heavier emphasis on forward-looking themes such as "Business opportunities" (Topic 2) and "Future activity" (Topic 7). The concurrent prominence of these optimistic themes alongside discussions of "Non-performing activities" (Topic 4) and "Loss and regularization" (Topic 8) creates a strategic dissonance, attempting to overshadow financial struggles with promises of future growth.

In contrast, the disclosure pattern of non-likelihood of fraud firms is characterized by greater thematic consistency and a focus on core operational activities, resulting in a straightforward and transparent narrative that aligns with actual performance.

(ii) Sentiment Analysis Result for Likelihood of Fraud and Non-likelihood of Fraud Firms

The second outcome for this study is Sentiment Analysis. In this study, all the MD&As texts from the year 2017 to 2022 are run separately in RapidMiner Studio to obtain the sentiment for each of the MD&As text. The following section describes in detail the result of likelihood of fraud and non-likelihood of fraud firms within the stipulated period.

6.3.1.6 Sentiment Analysis using LM Dictionary

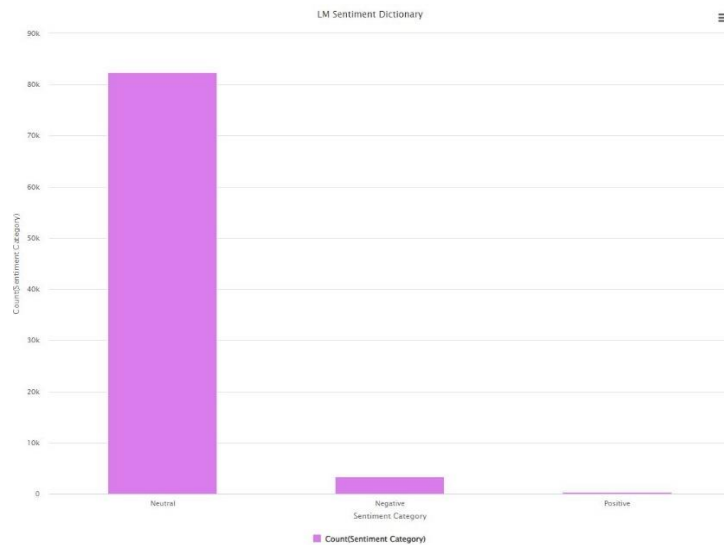


Figure 6.9 LM Dictionary Sentiment Category

Figure 6.9 above shows the word count of the LM dictionary from the year 1994 to 2021. The earlier LM dictionary 2011 only covers from the year 1994 to 2008 only. The earlier dictionary of LM consists of 354 positive words and 2,329 negative words (Loughran & Mcdonald, 2016). The dictionary was frequently upgraded until 2021. From the analysis of this study, the recent LM dictionary consists of 355 positive words, 3,350 negative words, and 82,433 neutral words. These results are obtained from choosing the “right” attributes parameters of “join” operator in RapidMiner Studio.

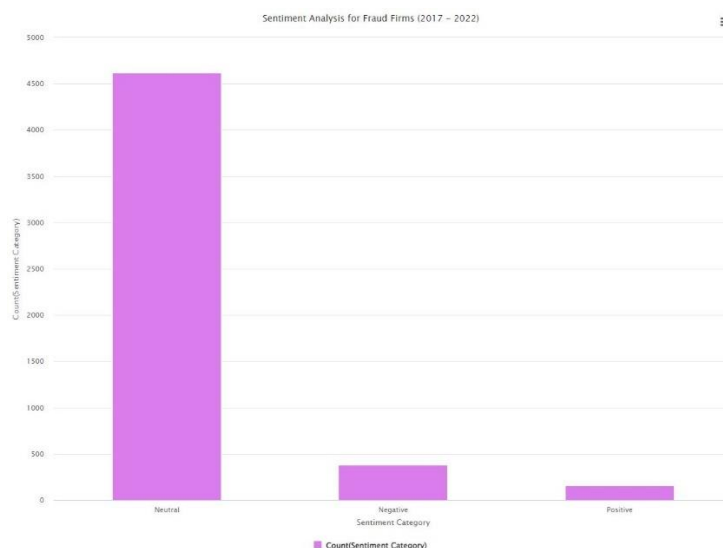


Figure 6.10 Sentiment Category for Likelihood of Fraud Firms

Figure 6.10 above shows the sentiment categories for likelihood of fraud firms from the year 2017 to 2022. As mentioned in chapter 4, the sentiments are categorized into three categories which are positive, negative, and neutral sentiments. Under positive

sentiment category, the attributes of positive and strong modal words are categorized as positive sentiment, while in negative sentiment, the attributes of negative, litigious, weak modal, and uncertainty are categorized as negative sentiment (Loughran & McDonald, 2011). On the other hand, the neutral sentiment exhibits the word lists that do not belong to any category either positive or negative in LM dictionary. As the wordlists of MD&As text are matched with LM dictionary, only the matching words are addressed in this process. In this process, the “inner” attributes parameter of “join” operator is selected to obtain the wordlists that are matched with the LM dictionary.

Based on Figure 6.10, a total of 4,618 words are found under neutral category, 381 words under negative category, and only 160 words under positive sentiment category. The result shows that based on the matching words of fraud MD&As and LM dictionary, 89.5% of the words are neutral words (i.e. words that do not have meaning in financial context), 7.4% words are negative words, and 3.1% are positive words. The result further explained that negative sentiment has 2.4 times more as compared to positive sentiment. Based on the result, the higher negative sentiment category indicates that MD&As texts have more pessimistic or negative tone (Loughran & McDonald, 2011). This result is similar to Goel and Uzuner (2016) where the fraudulent MD&As contain both positive and negative sentiments but have four times of negative tone as compared to truthful MD&As. In addition, according to Li et al. (2023), the less positive intonation of language expression resulted in higher probability of fraud. The argument is supported by the result of this analysis where the MD&As of likelihood of fraud firms are less positive and more negative which also supported the argument by Loughran and McDonald (2011) and Goel and Uzuner (2016). Nevertheless, this result also exhibits 89.5% of neutral words which could suggest that the likelihood of fraud firms employ more neutral language to manipulate the perceptions or distract the readers from inconsistencies.

In addition, the analysis also revealed the frequent of word occurrences in the MD&As from the period of the sample. Among the frequent words for negative sentiments are “loss”, “losses”, “risk”, “risks”, “contract”, “challenges”, “impairment”, “uncertainties” and “decline”. These words frequently appeared in MD&As for more than 100 times. This gives a signal to the financial statement readers to be alert of the likelihood of fraud when the MD&As frequently use these words. This result is consistent to the argument by Loughran and McDonald (2011) where the negative word lists are also linked to accounting fraud and material weaknesses in accounting control.

Meanwhile, among the frequent words for positive sentiments are “strong”, “improve”, “opportunities”, “profitability”, and “efficiency”. The frequent positive words indicates that the likelihood of fraud firms are trying to show a good report of MD&As with the positive words to reassure the financial statement readers.

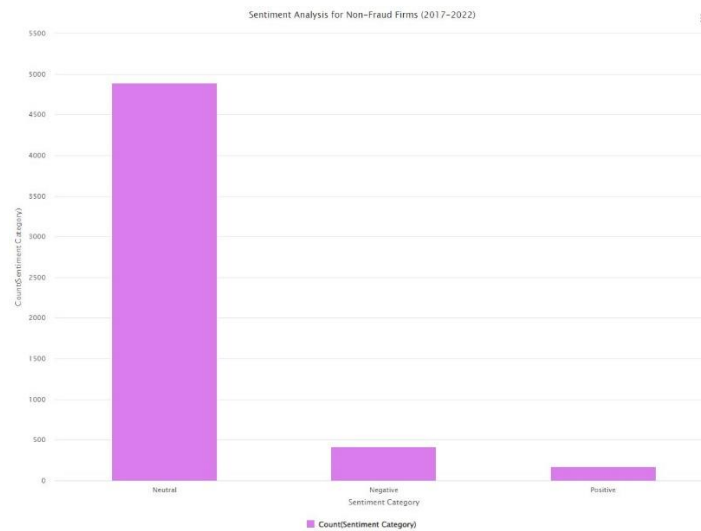


Figure 6.11 Sentiment Category for Non-likelihood of fraud Firms

Figure 6.11 above shows the result of sentiment category for non-likelihood of fraud firms from the year 2017 to 2022. Based on Figure 6.11, a total of 4,887 words are found under neutral category, 421 words under negative category, and only 179 words under positive sentiment category. The result shows that based on the matching words of non-likelihood of fraud MD&As and LM dictionary, 89.1% of the words are neutral words, 7.7% words are negative words, and 3.3% are positive words. The result further explained that the negative sentiment has 2.4 times more as compared to positive sentiment which is similar to likelihood of fraud firms. The result of non-likelihood of fraud firm is similar to likelihood of fraud firms. The higher negative sentiment compared to positive sentiment could give a signal to the users the possibility of threat in the MD&As (Li et al., 2023). The result is further explained that the less positive and more negative sentiments are associated with higher likelihood of fraud (Li et al., 2023).

In comparing the number of negative words in MD&As, the non-likelihood of fraud firms have 421 words of negative sentiment (381 words in likelihood of fraud firms) which indicate that the non-likelihood of fraud firms have more negative words as compared to likelihood of fraud firms. It can be explained that the non-likelihood of fraud firms presented more explanation in the MD&As report rather than only presented the form of tables or figures. However, the positive sentiment is higher in non-

likelihood of fraud firms which is 179 words as compared to likelihood of fraud firms which only consists of 160 words only. In addition, the finding of this analysis also addresses the frequent word occurrences for each of the sentiments. Similar to frequent words in likelihood of fraud firms, the words “risk”, “risks”, “loss”, “losses”, “challenges”, “impairment” are words that frequently appeared for more than 100 times in MD&As of non-likelihood of fraud firm. However, for example, the word “uncertainties” appeared less than 100 times in this analysis. It can be explained that the non-likelihood of fraud firms might have less involvement in uncertainty issues or they are less likely to be involved in unconfirmed business relationship that might get them into fraudulent behaviours. On the other hand, the top frequent word occurrences of non-likelihood of fraud firms are also similar to likelihood of fraud firms which are “improve”, “opportunities”, “improvement”, “progress”, and “profitability”. However, for example, the word “improvement” appeared 143 times in non-fraud firms but only 49 times in likelihood of fraud firms. This indicates that the non-likelihood of fraud firms are focusing on the improvement of the firm performance and they are less likely to be involved in the fraudulent behaviours.

According to Li et al. (2023), the managers of the non-state owned enterprise have more experience in fraudulent behaviour to prevent their firms from delisted, thus they prepare the report to become more complex so that it is more difficult to identify fraud. Therefore, positive sentiment indicator can be used as textual language expression to detect fraud. The situation is similar to this analysis. Even if the firms are categorized under non-likelihood of fraud firm, the result of sentiments shows otherwise. On the other hand, the analysis also reveals that non-likelihood of fraud firms used 89.1% of neutral words which could suggest that they use neutral intonation to obscure the financial statement readers by writing in “safe” ways from being detected in fraudulent behaviours. This leads to the principal-agent conflict resulted from the information asymmetries. The two common problems resulted from information asymmetries, which are adverse selection and moral hazard, can utilize the information to participate in self-profit conduct (Jensen & Meckling, 1976).

The action of the financial statement preparer (agent) is unobservable and their post-contract increases the likelihood of fraud. This results in information asymmetry between the financial statement preparer and stakeholders (principal). The problem of moral hazard occurs when the principals are difficult to observe the actions of the agents, and the complexity of the firm links the agent’s action to the outcomes as the

cause-effect relation problematic. Therefore, the agents undertake the fraudulent actions with a low probability of being caught (Ali, 2020). This theory is implied in this context of study where the MD&A preparers might modify the wording by using more neutral words to conceal the fraud.

6.3.1.7 Sentiment Analysis using SentiWordNet

The sentiment for each of the MD&As for likelihood of fraud and non-likelihood of fraud firms are obtained using SentiWordNet (Esuli & Sebastiani, 2006). Different from the previous analysis which uses LM dictionary, this analysis uses SentiWordNet to measure the polarity sentiment for each of the MD&As text from the year 2017 to 2018. Using LM dictionary, it helps the financial statement readers to understand the hidden cues in the MD&As report in terms of the number of positive, negative, or neutral words. Instead, this analysis reveals the sentiment expressed for each of the text as a whole whether it is positive, negative, or neutral.

Company	Year ↑	Text	sentiment	Polarity
HARN LEN C...	2017	endeavour ba...	0.082	Positive
G Neptune B...	2017	busi overview...	0.095	Positive
Multi Sports ...	2017	compani curr...	-0.010	Negative
Caring Phar...	2017	compani curr...	-0.010	Negative
Multi-code (M...	2017	mce hold ber...	0.072	Positive
United U-Li C...	2017	disclaim sect...	0.073	Positive
Grand Hoove...	2017	overview grou...	0.076	Positive
Pasdec Holdi...	2017	turnov group r...	0.081	Positive
Kian Joo Can...	2017	introduc man...	0.036	Positive
LFE Corporat...	2017	market overvi...	0.041	Positive
ACE Holding...	2017	product introd...	0.118	Positive
Khee San Be...	2017	introduc khe...	0.077	Positive

Figure 6.12 Example of Polarity Sentiment Scores of Likelihood of Fraud Firms

Figure 6.12 above shows the example for the polarity sentiment of likelihood of fraud firms for the year 2017. After the cleaning processes, all the MD&As texts are processed using SentiWordNet to obtain the sentiment for each of the MD&As text. The initial sample for this study includes observations of 180 likelihood of fraud firms

vs. 180 non-likelihood of fraud firms. All the samples are imported to RapidMiner Studio to obtain the sentiment for each of MD&As text. However, for the unavailable MD&As data, the text is labelled as “NA”. Based on the analyses, for likelihood of fraud firms, 144 (80%) of MD&As are classified as positive MD&As, 6 (3.3%) are classified as negative MD&As, and 30 (16.7%) are classified as neutral MD&As. Meanwhile, for non-likelihood of fraud firms, 147 (81.7%) are classified as positive MD&As, 3 (1.7%) are classified as negative MD&As, and 30 (16.6%) are classified as neutral MD&As. The neutral MD&As refer to the firms that do not have MD&A i.e., unavailability of MD&A. Therefore, the final samples of MD&As consists of 150 MD&As of likelihood of fraud and non-likelihood of fraud firms (positive or negative polarity).

Based on the analysis, both likelihood of fraud and non-likelihood of firms have more than 80% of positive sentiment compared to negative sentiment. This indicates that the tone of the MD&As is written in a positive way to show the performance report over the year. Even though the sentiment of text is positive, the sentiment weight for each of the text is different. For likelihood of fraud firms, the minimum sentiment score is -0.048 while the maximum score is 0.155. For non-likelihood of fraud firms, the minimum score is -0.066 while the maximum score is 0.120. from the result, the weight of positive and negative sentiment is higher for non-likelihood of fraud firms as compared to likelihood of fraud firms. This indicates that the likelihood of fraud firms tend to write in a more positive tone as compared to non-likelihood of fraud firms. It might be to the reason that the management tries to influence the stakeholders and maintain the investors for the firm by writing a good report which consists of more positive tone. The result of the sentiment for each of the MD&As text is used as the dependent variable for this study and analysis of sentiment trend in the following section.

6.3.1.8 Synthesis of Thematic and Sentiment Patterns

The integration of sentiment analysis results with the topic modeling outcomes provides a deeper, multi-layered understanding of the narrative pattern. A key insight is that while both groups primarily use a neutral tone, as confirmed by both the LM dictionary and SentiWordNet, their contextual use of sentiment within specific thematic categories reveals crucial differences. For likelihood of fraud firms, a dissonance is

observed between thematic labels and their associated sentiment. Topics that are conceptually positive, such as "Business opportunities" (Topic 2), frequently exhibit a lower positive sentiment weight compared to analogous, optimistic disclosures in non-fraud reports. This suggests a less authentic or more perfunctory positivity, potentially employed as a strategic narrative rather than a reflection of genuine performance. Concurrently, negative sentiment in likelihood of fraud firms is not merely present but is strategically concentrated within themes directly associated with operational failure and regulatory scrutiny, namely "Loss and regularization" (Topic 8) and "Contract and services activity" (Topic 10). This pattern directly links pessimistic language to core operational irregularities and legal challenges, as starkly evidenced in the case of Serba Dinamik Berhad.

Conversely, the narrative pattern for non-likelihood of fraud firms demonstrates greater alignment and transparency. Negative sentiment within this group is more commonly contextualized within discussions of external, acknowledged adversities. For instance, the attribution of performance issues to the COVID-19 pandemic and subsequent movement control orders, as seen in the case of Elsoft Research Berhad, reflects a more explanatory and transparent disclosure style. Here, negative sentiment serves to explain external shocks rather than to conceal internal control failures, resulting in a more credible and stable overall narrative.

6.3.1.9 MD&As Polarity Sentiment Trend for Likelihood of Fraud and Non-likelihood of Fraud Firms

(i) Sentiment Analysis Trend for Likelihood of Fraud Firms

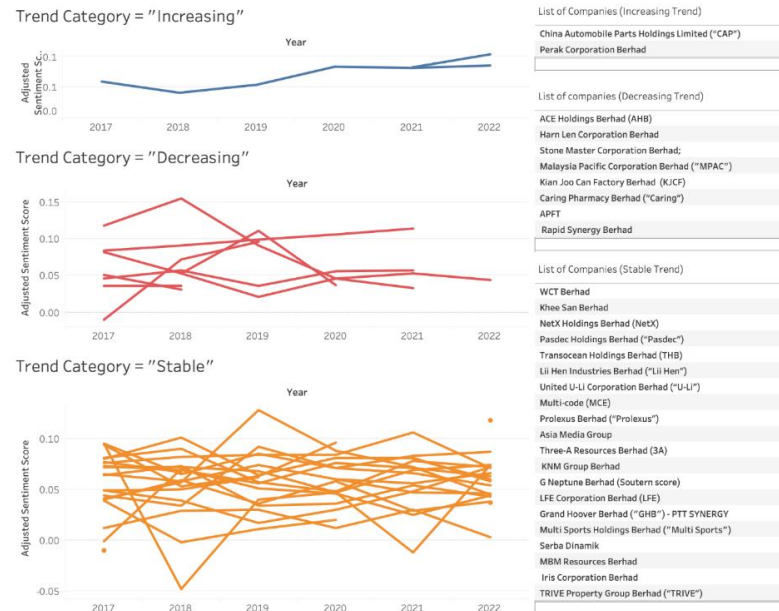


Figure 6.13 Polarity Sentiment Trend for Likelihood of Fraud Firms

Figure 6.13 shows the graph pattern trend of fraud for the period of 6 years from 2017 to 2022. The graph exhibits the trend for each of the firms. Based on the analysis, the MD&As of likelihood of fraud firms fall under three circumstances which are polarity sentiment is stable, weak positive to negative, and weak negative to weak positive. Based on the result, the trend for the sentiment of MD&As is categorised under three categories which are increasing trend of positive reports, decreasing trend of positive reports, and consistent trend of positive reports. The graph of likelihood of fraud firms sentiment trend reveals that 2 firms fall under category increasing trend of the sentiment, 8 firms show decreasing trend of the sentiment, and 20 consistent trend (stable) of the sentiment.

Firstly, only 2 firms show an increasing trend of positive report of likelihood of fraud firm which are China Automobile Berhad (CAP) and Perak Corporation Berhad (PCB). For CAP, the increasing trend shows the scores of 0.082 in 2021 to 0.103 in 2022. There is no sentiment score from the year 2017 to 2020 since the MD&As section is presented as one MD&A that covers the year 2017-2021. The slight increase of the sentiment

might be due to the firm that enters Memorandum of Understanding (MOU) of the sale agreement for the acquisition by CAP on the entire equity interest of the targeted firms to engage in construction work, civil engineering, road maintenance, construction of highways and bridges in Sabah in January 2022. Nevertheless, in October 2022, the MOU was terminated as the targeted firms discovered CAP has lost control over their subsidiaries since 2017.

Meanwhile, for the PCB, the sentiment scores increased from 0.059 in 2017 to 0.085 in 2022. The increase in sentiment scores could be due to the group net profit for the year that continuously grew from losses of RM328,846 million in 2017 to profit of RM29,660 million in 2022. Although the firms reported a continuingly improvement of their profits, it has gained a question as the firms auditor, PWC, highlighted several matters in their audit report of 2020, which include the liquidity position that gives implication of going concern where the subsidiary firms failed to make its principal loan payment in the previous financial year 2019. However, in 2021, the firm entered the debt settlement agreement with CIMB Bank Berhad and Affin Islamic Bank Berhad, amounting to RM34.7 million and RM53.8 million respectively.

Secondly, for the decreasing trend, 8 firms are identified under this category. For example, firms that fall under this category are Kian Joo Can Factory Berhad and Stone Master Sdn Bhd. Both firms fall under this category as the firms are already delisted in Bursa Malaysia. Based on the investigation, both firms only disclosed their audit report from 2017 to 2018 only. In 2019, the former Deputy Managing (MD) director of Stone Master was found guilty of causing a RM11.54 million wrongful loss to the firm for entering into agency agreement of 23 foreign firms, paying non-refundable deposit totalling of RM11.59 million to the respective representative. However, a sum of RM11.54 million of the fund were transferred to the MD personal bank accounts, causing of the wrongful loss to the firm. This resulted to the firm being delisted from the Bursa Malaysia in 2019 (The Edge Market, 2019).

Thirdly, for the consistent trend, 20 firms are identified fall under this category. The result shows that even when the firms are involved in fraudulent issues, the firms still try to improve their governance year by year. For example, Multi-Code Industries Berhad (MCE) was involved in the criminal breach of trust where two former directors were charged for fraud and criminal breach of trust. The managing director, Toh Chun Toh Gordon was charged for using RM17.5 million from the firm's funds to finance the purchase of over 11 million of MCE shares by Ace Prelude Sdn Bhd. Meanwhile,

Abu Hassan who was the former executive director of Multi-Code was charged abetting Toh in carrying out the offences (Securities Commission Malaysia, 2009). Toh was convicted by the Session Court on the alternative charge after a full trial and was sentenced to 12 years' imprisonment and a fine of RM1 million, in default two year's imprisonment, while Abul Hassan received six-year sentence. Although the event occurred in the late 2000s, this resulted that MCE suffered a major corporate scandal that highlighted the significant weaknesses in corporate governance and internal control of the firm. Due to the historical case of the firm, MCE implemented several actions to restore the stakeholder confidence and strengthening their corporate governance. For example, the firms adopted all the requirements of MCCG 2017 from the year 2017 to 2022 especially by including 30% women on board. The firm already achieved 30% women on board in 2022 and all the director's tenure was not longer than 9 years of services.

Another example of the firm that falls under this category is Khee San Berhad (KSB). Based on the polarity scores, the sentiment trend decreased from 0.077 in 2017 to 0.067 in 2018. The trend fell into 0 sentiment in 2019 as no audit report was issued in that year. Nevertheless, from 2020 to 2022, the sentiment scores started to increase and showed consistent trend from 0.06 to 0.046. This trend reflected the situation where nine of their directors imposed a total fine of RM885,000 for breaches, which includes making an immediate announcement of the default credit facilities by the firm and its major subsidiary. The firm also failed to ensure representation that it was solvent and would be able to pay all its debts as they fall within the period of 12 months between August 2019 and July 2020 (New Straits Times, 2022). Based on the data collected in this study, the firm financial leverage (Total debts to total Assets) increased continuously since 2017. The leverage increased from 5.4% in 2017 to 21.2% in 2022, reflecting the situation highlighted by Bursa Malaysia where the firms might have financial difficulty in paying their obligations. The Bursa Malaysia views this as "the contraventions seriously as the requirements to make an immediate announcement of material default in payment of credit facilities and provide accurate solvency declaration are fundamental to enable investors to make informed investment decisions concerning the listed issuer's financial condition" (New Straits Times, 2022, p.1). On the other hand, in the corporate governance context, the firm already complied with the MCCG 2017 recommendations except for the requirement to appoint women on board. Based on the data collected, the firm does not include women until 2022.

Another sample for this category is Prolexus Berhad. The polarity sentiment scores showed a consistent trend of 0.065 in 2017 to 0.066 in 2022. The sentiment scores decreased to 0.058 in 2018 but increased to 0.074 in 2019. Nevertheless, the trend slightly decreased in 2020, reflecting the situation where the Securities Commission Malaysia charged Prolexus under Breach of Section 354(1)(a) of the CMSA read together Paragraph 9.35A(1)(b) of the Main Market Listing Requirements, knowingly causing the furnishing of information contained in the announcement made to Bursa Malaysia on 6 October 2020 that is misleading to Bursa. On the other hand, Serba Dinamik Berhad also falls in this category where the sentiment scores showed a consistent trend from 0.049 in 2017 to 0.06 in 2022. Nevertheless, the sentiment trend falls to 0 sentiment in 2020 where no annual report was issued in the year. This resulted from the external auditor of KPMG that reported the firm has submitted a false statement involving revenue of RM6.01 billion for the financial period ended Dec 31, 2020. Four individuals in the firms which are CEO, executive director, CFO, and vice president of accounts and finance were given compound for falsifying the accounting records (The Edge Market, 2022b). The consistent trend of Serba Dinamik gives a signal that even if the firm shows a consistent positive sentiment trend, the likelihood of fraud might occur in the firm.

(ii) Sentiment Analysis Trend for Non-likelihood of Fraud Firms

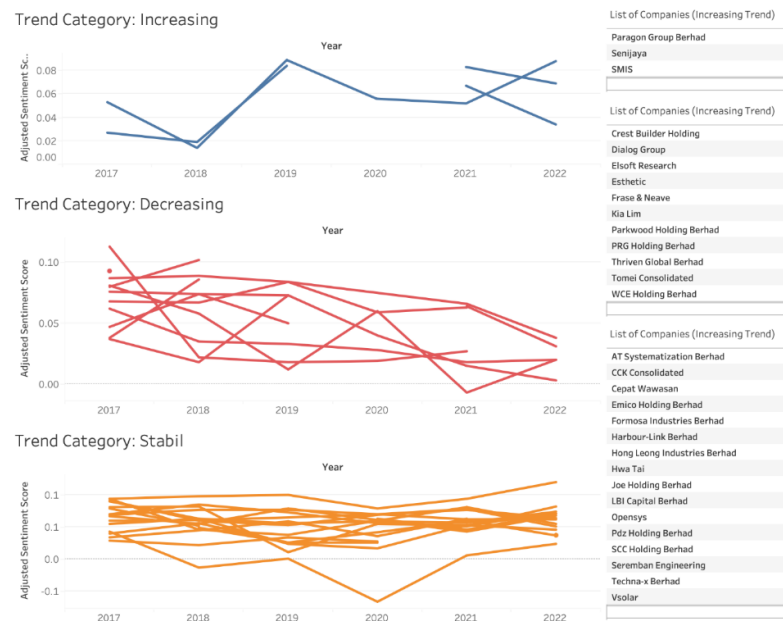


Figure 6.14 Polarity Sentiment Trend for Non-likelihood of Fraud Firms

Figure 6.14 shows the graph pattern trend of non-likelihood of fraud firms for the period of 6 years from 2017 to 2022. The graph exhibits the trend for each of the firms. Similar to likelihood of fraud firms, the non-likelihood of fraud firms are also categorized into three sentiments which are sentiment of stable, weak positive to negative, and weak negative to weak positive. Based on the result, the trend for the sentiment of MD&As is categorised under three categories which are increasing trend of positive reports, decreasing trend of positive reports, and consistent trend of positive reports. The graph of non-likelihood of fraud firms' sentiment trend reveals that 3 firms fall under the category increasing trend of the sentiment, 11 firms show decreasing trend of the sentiment, and 16 consistent trends (stable) of the sentiment.

Firstly, three firms were identified in increasing category which are Paragon Globe Berhad (Paragon), Senijaya Berhad, and SMIS. The polarity sentiment scores of Paragon showed an increasing trend of 0.053 in 2017 to 0.088 in 2022. In 2018, the sentiment scores slightly decreased to 0.014, reflecting the issue of one of the non-independent and non-executive chairmen, Datuk Tan Eng Boon, who faced graft charges for bribing the former federal territories Datuk Seri Tengku Adnan Tengku Mansor for the property project in Kuala Lumpur (KL) amounting to RM1 million by

raising the plot ratio for the development of Lot 228, Jalan Semarak, KL. Nevertheless, he was found not guilty for the charges (The Edge Market, 2018). Besides that, the slight decrease of sentiment in the year 2018 might be due to the revenue drop of 53.8% as compared to YE 2017 due the slow economic spending and cautious market sentiments. This resulted the firm to face losses during the year. Although the sentiment scores showed an increasing trend for this firm, it also gives a signal to the stakeholders to be aware of any significant issues that might arise and result in fraud. For SMIS, the sentiment showed an increasing trend in 2021-2022. However, MD&As from 2017-2020 were excluded from the sample due to the matching concept with fraud firm.

Secondly, for the decreasing trend, 11 firms fall under this category. An example firm for this category is Crest builder Holding Berhad (CBHB). Based on the sentiment analysis, the sentiment scores were stable from 2017 to 2019; however, the sentiment scores started to decrease from 2020 to 2022. The sentiment scores significantly dropped to 0.038 in 2022 from 0.087 in 2017. The decreasing in scores of the MD&As report could be due to the firm that continuously faced losses from the year 2020 to 2022. However, the losses incurred decreased from RM86 million in 2020 to RM12 million in 2022. Additionally, based on the data collection, the firm does not establish Risk Management Committee (RMC) throughout the sample year in which RMC can be used by the committee to oversee the risk of the firm. Meanwhile, the decreasing sentiment scores for Frase & Neave and Kia Lim Berhad are due to the MD&As data from the year 2019 to 2022. The scores were excluded from the sample due to the matching concept adopted in this study with likelihood of fraud firms. Since there is no MD&As available, the result shows that the firms fall under this category.

Thirdly, for the stable trend, 16 firms are identified in this category. For example, the sentiment scores for LBI Capital Berhad (LBI) showed a stable trend of 0.091 in the year 2017 to 0.064 in 2022. In relation to corporate governance mechanisms, the firm does not fully adopt the MCCG 2017 requirements such as the independent of the directors that must consist of at least half of independent directors (the firm only appoints 43% instead of 50% independent directors), and the firm still adopts longer tenure of the directors where 86% of the directors serve the board more than 9 years. Nevertheless, during the year 2017 to 2022, the firm did not face legal issues or corporate scandals that can be classified under fraud. The increasing trend of positive sentiments could be due to larger indirect family ownerships of the firms which is more than 55%. This is aligned with the alignment effect where higher family

ownerships leads to less engagement in fraudulent behaviours that could potentially damage the family reputation, wealth and long-term firm performance (Hasnan et al., 2014). Another example is PDZ Holding Berhad (PDZ). The sentiment score was 0.081 in 2017 but slightly decreased to 0.055 in 2020. However, the score increased to 0.071 in 2022. This firm falls under this category because in the corporate governance factors, the firm already implemented all the requirement by MCGG 2017 except for the appointment of women on board. The firm already appointed women on board but only 14% which does not meet the MCGG 2017 requirement to have at least 30% women on board. In relation to risk and internal control system of the firm, the firm already appointed solely independent Audit Committee and established RMC to manage risks. Therefore, since the corporate governance of the firm is strengthened, the firm is less likely to engage in fraudulent behaviours. Additionally, the firm has high liquidity and lower leverage, which shows that the firm is not in financial difficulties in paying their debts and other obligations. These factors have resulted on how the firm is translated in the MD&As section of the annual report. The MD&As consist of more positive words than negative words.

6.4 Analysis and Discussion for Likelihood of Fraud and Non-likelihood of Fraud Firms

This section discusses the results of the main sample of this study which are likelihood of fraud and non-likelihood of fraud firms. This section discusses on the factors that contribute to the likelihood of fraud in Malaysia. The final observation of this study consists of 300 observations. This section aims to achieve objective 3 and objective 4 for this study which are to determine the relationship between the likelihood of narrative pattern and the corporate governance among likelihood and non-likelihood fraud firms, and to determine the effect of ownership structure on the relationship between the likelihood of narrative pattern and corporate governance among likelihood and non-likelihood fraud firms, respectively.

6.4.1 Correlation Analysis

Table 6.6 provides the correlation analysis for likelihood of fraud and non-likelihood of fraud firms. Both Pearson and Spearman correlation analyses are conducted in this study. The Spearman correlation analysis is presented in bold and

italic forms in Table 6.2. The discussion of this section begins with the dependent variable PS.

Firstly, for the independent variables, variable BOD_IND exhibits significant positive correlation to the PS at 10% level (0.109) in Pearson correlation analysis. This indicates that the higher percentage of independent directors is associated with higher PS, resulted in a lower likelihood of fraud. The finding is similar to Kaituko et al. (2023) who found negative correlation of board independence and likelihood of FFR. The variable BOD_REM shows significant negative correlation to the PS at 1% level (-0.154) in Pearson correlation analysis. The result indicates that the higher payment of remuneration to the directors is associated with lower PS, thus resulted in the higher likelihood of fraud. The finding is similar to Radwan et al. (2022) who evidenced the positive correlation between cash compensation of the independent directors and fraud. The variable RMC exhibits significant negative correlation to the PS at 10% level (-0.102) in Spearman correlation analysis. Meanwhile, the variable RMC_IND exhibits negative correlation to the PS in both Pearson and Spearman correlation analyses at 5% level (-0.137) and 10% level (-0.101) respectively. The results of RMC and RMC_IND indicate that the establishment of RMC and higher percentage of RMC_IND are associated with lower PS, thus the likelihood of fraud is higher. According to Malik et al. (2023), the establishment of RMC is seen in different perspectives where it may hinder the ability of the board to monitor the risk effectively as it relates to strategies and operations. Nevertheless, the other independent variables of BOD_TEN, BOD_GEN, BOD_MEET, and AUD_IND exhibit insignificant correlation to PS in both Pearson and Spearman correlation analyses. The result suggests that these variables do not significantly affect the PS, therefore they are not associated with likelihood of fraud.

Secondly, for the moderating variables, the variable FAMOWN_INDIRECT shows significant positive correlation to the PS at 10% level (1.104) in Pearson correlation analysis. The finding indicates that the influence of indirect family ownership is associated with higher PS, thus will help the firms to hinder the likelihood of fraud. The result is supported by Wan Mohd Zin et al. (2023) who also found weak negative relationship between equity ownership of family firms and FFR. Meanwhile, the variables FAMOWN_DIRECT and INSOWN_INDIRECT are not statistically significant in both Pearson and Spearman correlation analyses. The presence of

FAMOWN_DIRECT and INSOWN_INDIRECT does not influence the PS, thus they are not associated with the likelihood of fraud.

Thirdly, for the control variables, the variable LEVERAGE shows significant positive correlation to the PS at 10% level (0.112) in Spearman correlation analysis. This indicates that, the higher LEVERAGE is associated with higher PS, resulted in lower likelihood of fraud. Yendrawati et al. (2023) evidenced similar finding where the higher leverage firms had higher likelihood in committing FFR. Lastly, the variable FIRM_SIZE exhibits significant negative correlation to the PS in both Pearson and Spearman correlation analyses at 1% (-0.162) level and 5% level (-0.114) respectively. The correlation result indicates that the larger size of the firm is associated with lower PS, reflecting the likelihood of fraud is higher. According to Teguh and Kristanto (2020), the large firms usually have big reputation that needs to be maintained. Therefore, they are most likely to engage in fraudulent activities to meet their goals so that they can maintain their reputations.

On the other hand, this discussion continued with the dependent variable FFR. Firstly, for the independent variables, variable BOD_TEN exhibits significant negative correlation to the FFR in both Pearson and Spearman correlation analyses at 1% level (-0.383) and 5% level (-0.388) respectively. The result indicates that the longer tenure director is associated with lower likelihood of fraud. According to Sadique et al. (2019), the longer director serves the board, the likelihood of fraud will be reduced as the directors will gain more knowledge and experience which could contribute to reduce the likelihood of fraud. The variable BOD_MEET exhibits significant positive correlation to the FFR at 1% level (0.219) in Pearson correlation analysis. This result shows that the higher number of board meeting does influence the likelihood of fraud. According to Zhou et al. (2018), the higher number of board meetings is related to the board efforts to deal with the emergency or irregular issues. Lastly, the variable RMC_IND exhibits significant positive relationship to the FFR in both Pearson and Spearman correlation analyses at 5% level (0.113, 0.127) respectively. Interestingly, this variable evidenced significant positive correlation in both dependent variables, PS and FFR. According to Malik et al. (2021), the RMC_IND might exert inadequate oversight due to lack of professional expertise and experience relating to the risks which exists in the firm. The other independent variables of BOS_IND, BOD_GEN, BOD_REM, AUD_IND, and RMC are not statistically correlated to the FFR.

Secondly, for the moderating variables, the variable FAMOWN_DIRECT is negatively significant to FFR in Pearson correlation analysis at 1% level (-0.150). Meanwhile, the FAMOWN_INDIRECT shows a significant correlation to the likelihood of fraud in both Pearson and Spearman correlation analyses at 10% level (-0.105, -0.100) respectively. These results indicate that the presence of family ownership of whether direct or indirect ownership could reduce the likelihood of fraud. According to Hasnan et al. (2014), the higher family ownership has incentive to report earnings in good faith, hence the financial reporting is of higher quality. Therefore, family firms are less likely to engage in fraudulent activities as it could possibly damage the family's reputation, wealth and long-term firm performance.

Thirdly, for the control variables, the variable LIQUIDITY exhibits significant negative correlation to the FFR in both Pearson and Spearman correlation analyses at 10% level (-0.111) and 1% level (-0.279). These indicate that the higher liquidity reflects the ability of the firms in paying their short-term debts, thus reducing the likelihood of fraud. The variable LEVERAGE shows significant negative correlation to the likelihood of fraud in Spearman correlation analysis at 5% level (0.142). Interestingly, the LEVERAGE presents significant result in both dependent variables PS and FFR. This further exacerbates that higher LEVERAGE of the firms contribute to the higher likelihood of fraud (Yendrawati et al., 2023). Lastly, the variable AGE exhibits negative correlation to the FFR at 5% level (-0.138), indicating that the older the firms, the likelihood of fraud will be lower. This is because, the older firms have to maintain their good reputation and to protect all their stakeholders especially investors. Therefore, they are less likely to engage in unethical behaviour that can damage their firm's reputation.

Table 6.6
Correlation Analysis for Likelihood of Fraud and Non-likelihood of Fraud Firms

VARIABLES	PS	FFR	BOD_ IND	BOD_ TEN	BOD_ GEN	BOD_ REM	BOD_ MEET	AUD_ IND	RMC	RMC_ IND	FAMOWN_ DIRECT	FAMOWN_ INDIRECT	INSOWN_ INDIRECT	LIQUI DITY	LEVE RAGE	BOD_ SIZE	FIRM_ SIZE	AGE
PANEL A: DEPENDENT VARIABLES																		
PS	1.000	0.073	0.036	-0.093	0.042	-0.071	0.074	-0.026	-0.102 *	-0.137 **	-0.030	0.071	0.026	-0.067	0.112 *	-0.007	-0.162 ***	0.049
FFR	0.083	1.000	0.085	-0.388 **	-0.065	-0.010	0.202	-0.068	0.070	0.113 **	-0.042	-0.100 *	0.039	-0.279 ***	0.142 **	0.010	-0.033	-0.065
PANEL B: INDEPENDENT VARIABLES																		
BOD_IND	0.109 *	0.066	1.000	-0.155 ***	-0.148 **	-0.307 *	-0.038	0.381 ***	0.057	0.226 ***	-0.081	-0.150 ***	-0.156 ***	-0.006	-0.039	-0.476 ***	-0.232 ***	0.039
BOD_TEN	-0.063	-0.383 ***	-0.174 ***	1.000	-0.002	0.274 ***	-0.092	0.146 **	-0.064	-0.170 ***	0.323 ***	0.381 ***	-0.065	0.088	-0.088	0.178 ***	0.197 ***	0.103 *
BOD_GEN	0.064	-0.073	-0.146 **	-0.016	1.000	0.153 ***	-0.060	0.048	-0.047	0.037	0.211 ***	0.150 ***	0.155 ***	-0.087	0.082	0.070	0.149 ***	0.092
BOD_REM	-0.154 ***	0.080	-0.180 ***	0.059	0.174 ***	1.000	0.096 *	0.063	0.096 *	0.065	0.242 ***	0.262 ***	0.243 ***	-0.033	0.118 **	0.571 ***	0.676 ***	0.163 ***
BOD_MEET	0.050	0.219 ***	-0.036	-0.157 ***	-0.103 *	0.198 ***	1.000	-0.107 *	0.078	0.105 *	0.048	-0.041	0.209 ***	-0.156 ***	0.210 ***	0.074	0.112 *	-0.021
AUD_IND	0.046	-0.067	0.361 ***	0.160 ***	0.083	0.119 **	-0.028	1.000	-0.002	0.219 ***	0.080	0.162 ***	-0.205 ***	0.013	-0.101 *	-0.145 **	-0.065	0.132 **
RMC	-0.081	0.070	0.020	-0.048	-0.047	-0.023	0.040	0.020	1.000	0.749 ***	0.074	0.012	0.139 **	0.102 *	-0.063	0.098 *	0.152 ***	0.187 ***
RMC_IND	-0.101 *	0.127 **	0.164 ***	-0.184 ***	0.058	0.042	0.073	0.193 ***	0.774 ***	1.000	0.076	0.073	0.002	0.018	-0.034	-0.062	0.121 **	0.214 ***
PANEL C: MODERATING VARIABLES																		
FAMOWN_DIRECT	-0.078	-0.150 ***	-0.053	0.244 ***	0.223 ***	-0.064	-0.107 *	0.041	-0.083	-0.102 *	1.000	0.542 ***	-0.221 ***	0.064	-0.091	0.226 ***	-0.020	-0.054
FAMOWN_INDIRECT	0.104 *	-0.105 *	-0.142 **	0.293 **	0.202 ***	0.016	-0.112 *	0.154 ***	0.012	0.050	-0.030	1.000	-0.257 ***	-0.037	0.000	0.240 ***	0.189 ***	0.200 ***
INSOWN_INDIRECT	-0.026	0.045	-0.173 ***	-0.077	0.140 **	0.222 ***	0.164 ***	-0.197 ***	0.135 **	0.011	-0.121 **	-0.192 ***	1.000	0.032	-0.033	0.184 ***	0.335 ***	0.150 ***
PANEL D: CONTROL VARIABLES																		
LIQUIDITY	0.016	-0.111 *	0.143 **	-0.051	-0.160 ***	-0.159 ***	-0.099 *	0.064	0.027	0.072	0.146 **	-0.098 *	-0.064	1.000	-0.795 ***	-0.012	-0.038	-0.009
LEVERAGE	-0.038	0.105	-0.018	-0.113 **	-0.064	-0.078	0.019	-0.145 **	0.041	0.022	-0.047	-0.072	-0.028	-0.068	1.000	0.124 **	0.125 **	-0.043
BOD_SIZE	0.006	0.028	-0.451 ***	0.207 ***	0.038	0.399 *	0.136 **	-0.109 *	0.066	-0.102 *	0.081	0.258 ***	0.155 ***	-0.176 ***	-0.141 **	1.000	0.495 ***	0.075
FIRM_SIZE	-0.114 **	0.040	-0.050	-0.032	0.135 **	0.559	0.234 ***	-0.014	0.050	0.036	-0.168 ***	-0.109 *	0.368 ***	-0.128 **	-0.051	0.303 ***	1.000	0.198 ***
AGE	0.116	-0.138 **	0.021	0.040	0.115 **	-0.009	-0.003	0.130 **	0.173 ***	0.171 ***	-0.066	0.236 ***	0.184 ***	0.105 *	-0.079	0.115 **	0.155 ***	1.000

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

6.4.2 Multicollinearity Test

Table 6.7

Multicollinearity Tests: Variance and VIF for Likelihood of Fraud vs. Non-likelihood of Fraud Firms

Variables	Tolerance	VIF	Tolerance	VIF
PS		FFR		
Panel A: Independent Variables				
BOD_IND	0.000	1.612	0.598	1.642
BOD_TEN	0.000	1.426	0.087	1.389
BOD_GEN	0.000	1.436	0.498	1.439
BOD_REM	0.000	1.844	0.000	1.894
BOD_MEET	0.000	1.161	0.003	1.170
AUD_IND	0.000	1.470	0.418	1.412
RMC	0.000	3.138	0.099	3.205
RMC_IND	0.000	3.372	0.122	3.465
Panel B: Moderating Variables				
FAMOWN_DIRECT	0.000	1.352	0.699	1.276
FAMOWN_INDIRECT	0.000	1.540	0.197	1.537
INSOWN_INDIRECT	0.003	1.421	9.561	1.593
Panel C: Control Variables				
LIQUIDITY	0.000	1.177	0.000	1.149
LEVERAGE	0.000	1.076	0.000	1.031
BOD_SIZE	0.000	1.885	0.004	1.930
FIRM_SIZE	0.000	1.818	0.000	1.976
AGE	0.000	1.266	0.000	1.264

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.7 exhibits the multicollinearity test between the explanatory variables. Based on the result above, all the VIFs for both dependent variables PS and FFR have a value less than 10 and all the tolerance values less than 0.25 (Amara et al., 2013). According to Madah Marzuki et al. (2024), the VIF values of less than 10 indicated that there is no serious multicollinearity in this study.

6.4.3 Univariate Analysis

Table 6.8

Univariate Analysis for Likelihood of Fraud vs. Non-likelihood of Fraud Firms for Dependent Variable PS

Variables	>0.057 (n=157)		<0.057 (n=143)		F-test	PS
	Mean	Median	Mean	Median		Chi Square
Panel A: Independent Variables						
BOD_IND	0.539	0.500	0.522	0.500	0.061 *	0.389
BOD_TEN	0.351	0.290	0.388	0.380	0.100 *	0.014 **
BOD_GEN	0.128	0.111	0.125	0.125	0.651	0.759
BOD_REM (Million)	2.71	1.71	3.60	1.57	0.150	0.077 *
BOD_MEET	5.611	5.000	5.504	5.000	0.534	0.700
AUD_IND	0.900	1.000	0.916	1.000	0.040 **	1.000
RMC	0.656	1.000	0.723	1.000	0.127	1.000
RMC_IND	0.443	0.600	0.544	0.667	0.228	0.285
Panel B: Moderating Variables						
FAMOWN_DIRECT	0.047	0.000	0.063	0.000	0.397	0.626
FAMOWN_INDIRECT	0.174	0.000	0.139	0.000	0.407	0.347
INSOWN_INDIRECT	0.009	0.000	0.009	0.000	0.328	0.569
Panel C: Control Variables						
LIQUIDITY	3.883	1.990	4.025	2.210	0.444	0.321
LEVERAGE	9.344	0.340	7.462	0.310	0.053 *	0.186
BOD_SIZE	6.611	6.000	6.599	7.000	0.106	0.250
FIRM_SIZE(Million)	746.93	181.40	1,104.88	363.27	0.334	0.027 **
AGE	30.357	27.000	30.073	26.000	0.044 **	0.182

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.8 presents the univariate analysis for likelihood of fraud and non-likelihood of fraud firms for the dependent variable PS. This analysis provides understanding of the characteristics of both types of firms. This test suggests several variables that support in detecting the likelihood of fraud and strong variation between the groups using F-test and Chi-Square. As the PS is the continuous variable, the threshold used for univariate analysis is based on the mean of the total firms as stated in Table 6.1. The reason for using the mean value as the threshold is because the number of negative PS observations in the sample is insufficient to form a reliable cutoff. Additionally, based on the result of PS for each of the MD&As, only 6 observations have negative PS, 144

observations have positive PS, and 30 observations have neutral PS for likelihood of fraud firms. Meanwhile, as for non-likelihood of fraud firms, 3 observations have negative PS, 147 observations have positive PS, and 30 observations have neutral PS. According to Li et al. (2023), the less positive the intonation of the language expression, the higher the likelihood of fraud. The mean threshold used in this study is 0.057 where the threshold is more than 0.057 or less than 0.057. This indicates that the PS of more than 0.057 is classified as having higher polarity and associated with lower likelihood of fraud, while the PS less than 0.057 is classified as lower polarity and correspond to the higher likelihood of fraud. The total observation for the mean of more than 0.057 is 157 observations while the mean less than 0.057 is 143 observations.

Firstly, for independent variables, BOD_IND exhibits significance mean 10% ($T = 0.061$). The mean value of firms >0.057 is 53.9% while firms <0.057 is 52.2%. This indicates that the higher PS firms have more independent directors on board as compared to lower PS firms. The result further explains that the lower likelihood of fraud firms has higher percentage of independent board of directors as compared to higher likelihood of fraud firms. The finding is supported by Rezaei and Rostami (2022) where the increasing number of board independent can help the firms to decrease fraud. This is because, with the independence of firms management, the control and supervision of the firms can be strengthened. Variable BOD_TEN shows significant mean at 10% level ($T = 0.100$) and significant median at 5% ($\text{Chi} = 0.014$). The mean value of firms >0.057 is 35.1%, while the mean value of firms <0.057 is 38.8%. This result evidenced that the percentage of board with longer tenure has lower PS (below threshold of 0.057). This indicates that the firms with higher likelihood of fraud tend to remain the long-tenure board of directors as compared to the lower likelihood of fraud. According to Yaacob and Wan Mohd Yusof (2020), the longer tenure directors give them opportunities to gain more knowledge and experience which also allow them to broaden their expertise. Therefore, longer tenure directors have higher opportunities to engage in fraudulent activities.

The variable BOD_REM has a statistical significant median at 10% level ($\text{Chi} = 0.077$). The median of BOD_REM shows that the lower PS firms paid higher remuneration as compared to higher PS firms which are RM1.57 million and RM1.71 million respectively. This indicates that higher likelihood fraud firms tend to pay large amount of remuneration to conceal the suspicious or fraudulent acts in the firms. This finding is similar to Chen et al. (2021a) where the CEOs with large number of stock

options are motivated to commit fraud and they may intentionally hire low-quality auditor to conceal the fraudulent behaviours. Meanwhile, the variable AUD_IND shows a statistical significant at 5% level ($T = 0.040$). The mean of firms >0.057 is 90% while the mean of firms <0.057 is 91.6%. The result shows that there are significant differences between lower and higher PS firms in terms of percentage of solely independent Audit Committee. However, the lower PS that is associated with higher likelihood of fraud found has higher percentage of solely independent Audit Committee as compared to higher PS. This indicates that the presence of higher independent of Audit Committee may not be sufficient in reducing the likelihood of fraud. This might be due to lack of knowledge and experience of the independent Audit Committee of the firms' affair. Besides, since the investors perceive good corporate governance firms, the higher likelihood of fraud firms may prefer to have more independent directors (Kamarudin & Wan Ismail, 2014). The finding contradicts with Mousavi et al. (2022) who evidenced that the independent of Audit Committee is able to reduce the FFR.

As for control variables, LEVERAGE exhibits significant mean at 10% level ($T = 0.053$). The mean for firms >0.057 is 9.3 while firms <0.057 is 7.4. The result indicates that the lower PS firms have lower LEVERAGE as compared higher PS firms. Accordingly, the finding suggests that the higher likelihood of fraud firms are inclined to avoid debt. This is because debt brings strict monitoring by banks in which resulted in fraud being easily detected. According to Huang et al. (2024), violations of debt covenant trigger tighter bank control and reduced earnings management. Thus, this implies that the highly leveraged firms may face greater scrutiny, therefore higher likelihood of fraud firms avoid debt to evade monitoring and minimize the risk of fraud being detected. Apart from that, the FIRM_SIZE also exhibits significant median at 5% level (0.027). The finding indicates that the FIRM_SIZE for higher PS is smaller than lower PS firms with the mean of total assets of RM181.40 million and RM363.27 million respectively. Accordingly, the higher likelihood fraud firms is larger than lower likelihood of fraud firms. Utomo and Mawardi (2024) argued that the large firms typically receive higher pressure from stakeholders particularly investors. Thus, it may push the managers to engage in unethical behaviours to meet the stakeholders expectation.

The other variables are not statistically significant which are BOD_GEN, BOD_REM, BOD_MEET, RMC, RMC_IND, FAMOWN_DIRECT, FAMOWN_INDIRECT, INSOWN_INDIRECT, LIQUIDITY, BOD_SIZE, and

FIRM_SIZE. The mean of BOD_GEN for both types of firms is similar which is 12.8% and 12.5% respectively. The BOD_MEET for both types of firms is also similar which is 5 times per year. On the other hand, for variable RMC, the mean of establishment of RMC for both types of firms is 65.6% and 72.3% respectively. This shows that the establishment of RMC among higher PS firms is lower as compared to higher PS firms. The appointment of RMC_IND is lower in higher PS firms as compared to higher lower than higher firms with the mean of 44.3% and 54.4% respectively. This result is aligned with the establishment of RMC. The lower RMC_IND has resulted from lower establishment of RMC in the firms.

For ownership structure FAMOWN_DIRECT, the mean for both types of firms is 4.7% and 6.3% respectively. The higher PS firms have higher FAMOWN_DIRECT as compared to lower PS firms. However, the ownership of FAMOWN_INDIRECT is higher in lower PS firms (17.4%) as compared to higher PS firms (13.9%). The ownership by INSOWN_INDIRECT is similar for both types of firms which is 0.9%. For the control variables, the LIQUIDITY for higher PS firms is lower as compared to higher PS firms which is 3.8 times and 4.02 times respectively. The BOD_SIZE is also similar which is 6 persons on board.

Table 6.9

Univariate Analysis for Likelihood of Fraud vs. Non-likelihood of Fraud Firms for Dependent Variable FFR

Variables	Fraud = 150		non-fraud=150		FFR	
	Mean	Median	Mean	Median	T-test	Mann-Whitney
Panel A: Dependent Variable						
PS	0.060	0.059	0.055	0.059	0.158	0.219
Panel B: Independent Variables						
BOD_IND	0.539	0.500	0.521	0.500	0.246	0.139
BOD_TEN	0.242	0.140	0.498	0.500	0.000 **	0.000 ***
BOD_GEN	0.117	0.111	0.136	0.143	0.210	0.288
BOD_REM (Million)	3.42	1.66	2.78	1.61	0.169	0.901
BOD_MEET	6.107	5.000	5.040	5.000	0.000 ***	0.001 ***
AUD_IND	0.896	1.000	0.917	1.000	0.211	0.309
RMC	0.727	1.000	0.660	1.000	0.212	0.318
RMC_IND	0.548	0.667	0.439	0.367	0.026 **	0.061 *
PANEL C: Moderating Variables						
FAMOWN_DIRECT	0.037	0.000	0.074	0.000	0.009 ***	0.502
FAMOWN_INDIRECT	0.133	0.000	0.180	0.005	0.063 *	0.100 *
INSOWN_INDIRECT	0.010	0.000	0.007	0.000	0.442	0.690
PANEL D: Control Variables						
LIQUIDITY	3.210	1.570	4.580	2.410	0.052 *	0.000 ***
LEVERAGE	16.264	0.370	0.348	0.292	0.071 *	0.013 **
BOD_SIZE	6.658	7.000	6.560	6.000	0.633	0.867
FIRM_SIZE(Million)	987.43	313.45	831.32	242.40	0.456	0.622
AGE	28.027	26.000	32.420	26.500	0.016 **	0.266

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.9 exhibits the result of univariate analysis for likelihood of fraud and non-likelihood of fraud firms using dependent variable FFR, in which “0” is categorised as likelihood of fraud firms and “1” is non-likelihood of fraud firms. First of all, this analysis also includes the difference PS of likelihood of fraud and non-likelihood of fraud firms. Nevertheless, the variable PS shows insignificant results for both t-test and Mann-Whitney. The mean of PS for likelihood of fraud firms is 0.060, while the mean of PS for non-likelihood of fraud firms is 0.055. This indicates that likelihood of fraud firms have higher PS as compared to non-likelihood of fraud firms. The finding contradicts to Li et al. (2023) where the less positive intonation of the language

expression, the higher the likelihood of fraud. The finding suggests that the management of likelihood of fraud firms may use positive language strategically to mask irregularities and influence stakeholder perceptions.

For the independent variable BOD_TEN, it shows significant mean at 5% level ($T = 0.000$) and median at 1% ($M = 0.000$). The mean value of fraud firm is 24.2% while non-fraud firm is 49.8%. This indicates that the percentage of board of directors with longer tenure is higher in non-likelihood of fraud firms as compared to likelihood of fraud firms. According to Sadique et al. (2019) and Usman et al. (2022), the longer tenure board of directors helps to reduce the likelihood of fraud because they have more knowledge and experience of the firms operation and practices as compared to shorter tenure board of directors. Meanwhile, the variable BOD_MEET also exhibits significant mean and median at 1% level ($T = 0.000$, $M = 0.001$). The mean of likelihood of fraud firms is 6 times while non-likelihood of fraud firms is 5 times. The finding indicates that the frequent meetings occurred in likelihood of fraud firms show an early signal that the firms have unusual or emergency situations to conceal. This finding contradicts to Kaituko et al. (2023) where the frequent board meetings help to mitigate corporate fraud. The RMC_IND exhibits significance mean at 5% ($t = 0.026$) and median at 10% ($M = 0.061$). The mean RMC_IND of likelihood of fraud firms vs. non-likelihood of fraud firms is 54.8% and 43.9% respectively. The result shows that the RMC_IND in likelihood of fraud firms is higher than non-likelihood of fraud firms. The result suggests that the likelihood of fraud firms merely comply with the MCCG requirements to create favourable influence on their stakeholders while concealing unethical behaviour in the firm (Kassem, 2022).

On the other hand, the moderating variable FAMOWN_DIRECT reveals significant mean at 1% level ($T = 0.009$). Meanwhile, FAMOWN_INDIRECT shows significant mean and median at 10% level ($T = 0.063$, $M = 0.100$). The average of FAMOWN_DIRECT in likelihood of fraud firms is 3.7% and 7.4% in non-likelihood of fraud firms while FAMOWN_INDIRECT in likelihood of fraud firms is 13.3% and 18% in non-likelihood of fraud firms. The findings indicate that family ownership in the firms is higher in non-likelihood of fraud firms than likelihood of fraud firms. Wan Mohammad and Wasiuzzaman (2020) noted that the ownership that ranges from 5% to 25% is prone the alignment effects, thus the likelihood of earning management is lower. This finding implies to the result of this study that the non-likelihood of fraud firms

consists of the percentage below the threshold, thus supporting the alignment effect that the likelihood of fraud is lower in the presence of family ownership.

The control variable LIQUIDITY exhibits significant mean and median at 10% and 1% level respectively ($T = 0.052$, $M = 0.000$). The mean of LIQUIDITY in likelihood of fraud firms is 3.2 times and 4.5 times in non-likelihood of fraud firms. Non-likelihood of fraud firms have higher LIQUIDITY than likelihood of fraud firms, reflecting that the ability of these firms to pay their short-term debts is higher as compared to likelihood of fraud firms (Mulyandini, 2022). Meanwhile, the variable LEVERAGE also shows significant mean and median at 10% level and 5% level respectively ($T = 0.071$, $M = 0.013$). The mean of fraud firm is 16.26 while non-fraud firm is 0.34, indicating that likelihood of fraud firms have very high LEVERAGE as compared to non-likelihood of fraud firms. Yendrawati et al. (2023) stated that higher LEVERAGE has strong tendency of financial statement manipulation. Moreover, higher LEVERAGE of the firms is associated with the violation of loan agreement and less ability in obtaining additional capital through borrowing. The high debt structure leads the firms to shift from risk equity owners and managers to owners of debt which increases the likelihood of fraud (Zainudin & Hashim, 2016). Lastly, the variable AGE exhibits significant mean at 5% level ($T = 0.016$). The mean of likelihood of fraud firms is 28 years while non-likelihood of fraud firms is 32 years. The finding shows that the older the firms, they are less likely to engage in fraudulent financial reporting. According to Teguh and Kristanto (2020), the older companies will have more expertise, therefore they subsequently have better internal control systems that can improve the corporate governance system; thus, leading to less likelihood of fraud.

The other variables that are not statistically significant are BOD_IND, BOD_GEN, BOD_REM, AUD_IND, RMC, INSOWN_INDIRECT, FIRM_SIZE, and BOD_SIZE. The mean of likelihood of fraud and non-likelihood of likelihood of fraud firms of BOD_IND is 53.9% and 52.1% respectively. This shows that both likelihood of fraud and non-likelihood of likelihood of fraud firms comply with the MCCG recommendation to have majority of independence on board. Meanwhile, the variable BOD_GEN is also not statistically significant to the likelihood of fraud. The mean of BOD_GEN in likelihood of fraud firms is 11.7% which is lower than non-likelihood of fraud firms (13.6%). Although the result is not statistically significant, the finding shows that the increase of women on board will help in mitigating the likelihood of fraud. The higher quality of the board means there should be a plurality not only of their

competencies but also gender. The increasing plurality in terms of board characteristics of board members has led to the presence of women as one of the factors associated with lower likelihood of fraud (Martins & Júnior, 2020). On the other hand, the mean of likelihood of fraud and non-likelihood of likelihood of fraud firms of BOD_REM is RM3,420 million and RM2,779 million respectively. The remuneration paid to the directors in likelihood of fraud firms is very high as compared to non-likelihood of fraud firms. According to Chen et al. (2021), the directors are motivated to commit fraud as they are offered a higher compensation package.

Apart from that, the mean of AUD_IND in likelihood of fraud firms is 89.6% while non-likelihood of fraud firms is 91.7%, indicating that both types of firms comply with the MCCG recommendation which includes the majority of the Audit Committee being independent. Nevertheless, the mean RMC of likelihood of fraud firms is 72.7% while only 66.6% for non-likelihood of fraud firms. This shows that the establishment of standalone RMC in likelihood of fraud firms is higher than non-likelihood of fraud firms. The possible explanation is some of the non-likelihood of fraud firms still combine the Audit Committee and MC. The result is aligned with the result of RMC_IND where the percentage of RMC_IND is higher in likelihood of fraud firms as compared to non-likelihood of fraud firms. The mean of INSOWN_INDIRECT for likelihood of fraud firms is 1% while non-likelihood of fraud firms is 0.7%, indicating that the involvement of Institutional ownership is very low in both types of firms. The mean for the variable BOD_SIZE of likelihood of fraud firms and non-likelihood of fraud firms is 6.6 and 6.5 respectively. The finding shows that the size of the board is similar in both types of firms. Lastly, the mean of FIRM_SIZE of likelihood of fraud firms is RM987.43 million while non-likelihood of fraud firms is RM831.32 million. The result shows that the size of likelihood of fraud firms is relatively high as compared to non-likelihood of fraud firms. The bigger the size of the firm, the more reputable the firm is. The bigger firms need to maintain their reputation so that they are less likely to engage in fraudulent activities since it may destroy their good reputation (Teguh & Kristanto, 2020).

6.4.4 Multivariate Analysis

This section discusses the result of regression analysis for the hypotheses tested. The ordinary least square regression analysis is conducted to determine which governance variables are significant to the polarity scores among the sample.

6.4.4.1 Relationship between Corporate Governance and Polarity Scores

Table 6.10

Regression analysis for the relationship between corporate governance and Polarity Scores

VARIABLES	PS	PS
	Model 1	Model 2
INTERCEPT	0.033 *** 2.732	0.012 0.809
Panel A: Independent Variables		
BOD_IND	0.020 1.416	0.034 ** 2.246
BOD_TEN	-0.005 -0.998	-0.007 -1.387
BOD_GEN	0.026 ** 2.103	0.026 ** 2.078
BOD_REM	-0.000 *** -2.873	-0.000 * -1.919
BOD_MEET	0.001 * 1.759	0.001 * 1.814
AUD_IND	0.014 1.124	0.008 0.620
RMC	0.004 0.672	0.002 0.269
RMC_IND	-0.013 ** -2.014	-0.012 * -1.811
Panel B: Control Variables		
LIQUIDITY		0.000 0.015
LEVERAGE		-0.000 -0.309
BOD_SIZE		0.002 * 1.934
FIRM_SIZE		-0.000 * -1.779
AGE		0.000 ** 2.071
R-squared	0.072	0.107
F-statistic	2.840 ***	2.602 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

This analysis is conducted to achieve research objective 3 (RO3) which is to determine the relationship between the likelihood of fraud and corporate governance mechanisms. Table 6.10 shows the result of the ordinary least squares (OLS) regression analysis for equation 1. The result of Table 6.10 presents the result for model 1 and model 2 between the dependent variable PS and independent variables. The result of the model demonstrates the statistical result for both with and without control variables. Model 1 shows the result without control variables whereas model 2 shows the result with control variables. The F-statistic for both models exhibit strong significance at 1% level ($p < 0.001$). This indicates that the models are statistically significant components of the variation in the dependent variable which is explained by the variation in the set of independent variables. According to Loughran and McDonald (2011), Goel and Uzuner (2016) and Li et al. (2023), the more positive intonation of language resulted in the lower likelihood of fraud.

Firstly, the variable BOD_IND exhibits that there is a significant positive relationship with the likelihood of fraud at 5% level (0.034, $t = 2.246$) in Model 2. The result reveals that the higher number of independent boards of directors is associated with higher PS, therefore the likelihood of fraud will be lower. The finding implies that a higher number of independent directors may help in combating the likelihood of fraud occurrence in the firm. As the number of independent directors increases, the monitoring, supervision and control over the member of board directors will be strengthened. On the other hand, the quality of financial management could be improved and at the same time can prevent the likelihood of fraud. In addition, the higher independent directors and the interest of minority shareholders can be protected as independent directors' role to ensure good corporate governance and compliance with Bursa Malaysia and transparent with all the shareholders. The result is consistent with Khoufi and Khoufi (2018), Rezaei and Rostami (2022), and Kaituko et al. (2023) who found the independence of directors has a positive impact on the likelihood of fraud. The evidence shows that the independent directors can increase the efficiency of the control and the management is more efficient to prevent the fraudulent practices. The regression analysis result is consistent with the theoretical hypothesis, therefore hypothesis 1_(a) is accepted.

Secondly, BOD_GEN exhibits a significant positive relationship to the likelihood of fraud at 5% significant level for both models 1 (0.026, $t = 2.103$) and 2 (0.026, $t = 2.078$). The result evidenced that the involvement of women is associated

with the higher PS and thus lowers the likelihood of fraud. Additionally, it is proven that the higher number of women on board can be one of the corporate governance tools that needs to take into consideration especially in weaker governance environments as its role to reduce the likelihood of fraud. As females are more risk averse, the women are more likely to mitigate the risk-taking behaviour especially during the decision-making process. The monitoring system in the firm is also tougher as women are more cautious in controlling the firm. The result of this study is supported by previous research of Khaw and Liao (2018) and Githaiga (2023) where the women are more risk averse in which they can mitigate the risk-taking behaviour. In addition, the women are more conservative where the involvement of women on board could enhance the functioning and efficiency of corporate boards and committees that may affect the managerial behaviour, thus reducing the likelihood of fraud (Wahyuningtyas & Aisyaturrahmi, 2022). The women are also more ethical in which they avoid being involved in unethical activities (Marzuki et al., 2019; Orazalin, 2020, Wang et al., 2022). Therefore, the result is consistent with the theoretical hypothesis, therefore, hypothesis 1_(c) is accepted.

Thirdly, DIR_REM exhibits a significant negative relationship to the likelihood of fraud at 1% level in model 1 (-0.000, $t = -2.873$) and 10% level in model 2 (-0.000, $t = -1.919$). The result documented that the higher compensation paid to the directors is associated with lower PS, thus resulted in higher likelihood of fraud. The result can be explained that when the firm offers higher compensation to the directors, the directors may lose their independence as they want to meet the shareholders expectations. Therefore, they may perform unethical behaviour like being involved in fraudulent activities so that they can prove they are able to monitor the firm properly and able to generate higher profits for the year. The finding is supported by Dah and Frye (2017), Chen et al. (2021) and Davidson (2022) who documented that higher directors remuneration is associated with the likelihood of fraud. Consistent with the theoretical hypothesis, therefore, H1_(d) is accepted.

Fourthly, BOD_MEET which represents the number of board meetings during the year exhibits a positive relationship with the likelihood of fraud at 10% level for both model 1 (0.001, $t = 1.759$) and model 2 (0.001, $t = 1.814$). The finding indicates that the higher frequency of BOD_MEET is associated with higher PS, thus resulted in lower likelihood of fraud. The higher frequency of board meetings reflects the effort of the directors in discussing significant issue that arises in the firm. Accordingly, the

likelihood of fraud can be mitigated as directors are aware of the risk occurring in the firm and they are able to find initiative to monitor the firm's operations. This result is supported by Mohd Salleh and Othman (2016) and Rezaei and Rostami (2022) where fraud occurrence can be prevented as frequent board meetings give the opportunities to the directors to have depth knowledge about the firms and able to monitor the firm's operation. Therefore, hypothesis 1_(c) is accepted.

Next, RMC_IND exhibits a significant negative relationship to the likelihood of fraud at a 5% level for model 1 (-0.013, $t = -2.014$) and significant at 10% level in model 2 (-0.012, $t = -1.811$). The result reveals that the higher RMC_IND is associated with lower PS, thus the likelihood of fraud is higher. The result suggests that the appointment of RMC_IND merely complies with the MCCG 2017 recommendation rather than to oversee the risk of the firms. Furthermore, Malik et al. (2023) argued that the establishment of RMC itself is related to the strategies and operations that hinder the board to monitor risk effectively. Inconsistent with the theoretical hypothesis, the result concluded that H3_(b) is not accepted.

Meanwhile, the other independent variables found insignificant result in this analysis. The BOD_TEN exhibits a negative insignificant relationship between both. The result suggested that the longer tenure of the directors does not play a role in affecting the likelihood of fraud. Although board tenure is often discussed in the previous literatures (Sadique et al., 2019; Livnat et al., 2020; Wang et al., 2024), the effect of long tenure directors alone on the likelihood of fraud remains inconsistent. This is because the longer tenure directors may either improve monitoring through firm specific knowledge (Y. Wang et al., 2024) or less independent due to the familiarity to the management (Yaacob & Wan Mohd Yusof, 2020). Therefore, hypothesis 1_(b) is not accepted.

The AUD_IND and RMC exhibit insignificant influence on the likelihood of fraud for both models. The AUD_IND shows a positive relationship with the likelihood of fraud but does not significantly influence the likelihood of fraud. This indicates that the existence of audit independence gives no influence in mitigating the likelihood of fraud. The descriptive analysis in Table 6.1 shows almost all of the firms comply with the requirement by MCCG which is to have a solely audit committee independent on board. The mean result shows that in average 90.7% firms have already placed an AUD_IND on board. This could suggest that although the sample already complied with the MCCG recommendation, it is not effective in predicting the likelihood of fraud. This result is supported by Sadique et al. (2019) and Abbas et al. (2021) who

found similar findings with this study. RMC also shows insignificant positive relationship with the likelihood of fraud. This indicates that the existence of the RMC does not influence the likelihood of fraud. The insignificant result is explained by first firms that did not establish RMC where the minimum percentage is 0. The result is supported by Madah Marzuki et al. (2024) where the insignificant result is due to the role of RMC being combined with Audit committee roles. The RMC is also less efficient where the roles are combined by some firms and thus leads to insignificant roles in managing risk. Therefore, both hypotheses H2 and H3_(a) are not accepted.

On the other hand, three of the control variables present statistically significant relationship to the likelihood of fraud which are BOD_SIZE, FIRM_SIZE and AGE, indicating the influence of control variables to robust the likelihood of fraud. BOD_SIZE has a significant positive relationship with the likelihood of fraud at 10% level (0.002, $t = 1.934$). The result indicates that the larger size of the board is associated with higher PS, thus decreases the likelihood of fraud. The large board gives the opportunities of the board to efficiently control the firm and promotes a more efficient management. This is because when there is a larger number of the board, they are able to reduce the burden and responsibilities among the members, therefore increasing their effectiveness. As the board increases their effectiveness, at the same time, they are able to mitigate the likelihood of fraud. This study is supported by Sadique et al. (2019) who evidenced similar findings. Accordingly, the study added that the different cultural and legal environments like Malaysia could have different transparency, indicating the higher member on board can increase the effectiveness of the governance of the firms and therefore reduce the likelihood of fraud.

The variable FIRM_SIZE exhibits a significant negative relationship with the likelihood of fraud at 10% level (-0.000, $t = -1.779$). This result indicates that the larger the size of the firm, the PS will be lower, thus resulted in higher likelihood of fraud. The finding is supported by Madah Marzuki et al. (2024) who found that larger firms are associated with FFR. Meanwhile, the variable AGE exhibits a significant positive relationship to the likelihood of fraud at 5% level (0.000, $t = 2.071$). This finding indicates that older firms are associated with higher PS, thus resulted in decreasing the likelihood of fraud. The evidence is supported by Teguh and Kristanto (2020) where the older firms usually have more experience in the industry they are involved in. Besides, since they are longer in the specific industry, they are gaining more expertise and experience as compared to the younger firms. As the older firms have more

experience and expertise in their specific industry, this gives them an advantage to mitigate unethical behaviour and fraudulent activity to maintain them in the industry. The other control variables are found to be insignificant to the likelihood of fraud. The variable LIQUIDITY exhibits positive insignificant relationships to the likelihood of fraud. Meanwhile, LEVERAGE exhibits negative insignificant relationship to the likelihood of fraud. This indicates that LIQUIDITY and LEVERAGE did not exert an influence in reducing the likelihood of fraud in this analysis. The insignificant finding of LIQUIDITY is similar to Hasnan et al. (2021) who found liquidity insignificant to financial restatement. Madah Marzuki et al. (2024) also reported that LEVERAGE is insignificant on potential FFR.

6.4.4.2 Relationship between Corporate Governance, Ownership Structure, and Polarity Scores

Table 6.11
Regression Analysis for Corporate Governance, Ownership Structures and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.032 *** 2.674	0.011 0.726
Panel A: Independent Variables		
BOD_IND	0.025 * 1.756	0.037 ** 2.433
BOD_TEN	-0.006 -1.121	-0.006 -0.999
BOD_GEN	0.026 ** 1.963	0.034 ** 2.433
BOD_REM	-0.000 *** -2.877	-0.000 ** -1.984
BOD_MEET	0.001 * 1.824	0.001 * 1.910
AUD_IND	0.011 0.885	0.007 0.512
RMC	0.004 0.750	0.002 0.358
RMC_IND	-0.015 ** -2.261	-0.014 ** -1.981
FAMOWN_DIRECT	-0.022 -1.550	-0.032 ** -2.150
FAMOWN_INDIRECT	0.017 ** 2.093	0.007 0.827
INSOWN_INDIRECT	0.009 0.165	0.001 0.017
Panel B: Control Variables		
LIQUIDITY		0.000 0.595
LEVERAGE		-0.000 -0.282
BOD_SIZE		0.002 * 1.944
FIRM_SIZE		-0.000 * -1.874
AGE		0.000 1.545
R-squared	0.099	0.127
F-statistic	2.870 ***	2.574 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.11 presents the result regression analysis for corporate governance, ownership structure and PS. This regression analysis represents family ownership and institutional ownership being treated as independent variables. The result of Model 1 exhibits the statistical result without control variables while Model 2 shows the result with control variables. The F-statistic for both models exhibit strong significance at 1% level (2.870, 2.574) respectively. This indicates that the models are statistically significant components of the variation in the dependent variable which is explained by the variation in the set of independent variables. Similar to the previous regression in Table 6.10, the regression result interprets that higher PS contributes to lower likelihood of fraud. As documented by Loughran and McDonald (2011), Goel and Uzuner (2016) and Li et al. (2023), the more positive intonation of language resulted in lower likelihood of fraud.

Based on the analysis, after including ownership structures in the model, the same variables which are BOD_IND, BOD_GEN, BOD_REM, and RMC_IND remain significant consistent with the result presented in Table 6.10. The BOD_IND exhibits significant positive relationship to the likelihood of fraud at 10% level (0.025, $t = 1.756$) in Model 1 and 5% level in Model 2 (0.037, $t = 2.433$). This outcome indicates that the larger number of independent directors is associated with higher PS, thus resulted in a lower likelihood of fraud. The existence of larger independent directors would improve the effectiveness of monitoring of the firm and at the same time reduce the agency problems. The result of this study is supported by Mousavi et al. (2022) where board independence has a positive impact on the disclosure quality and fraud prevention because the board independently has to motivate the manager and other board members to combat fraud which would elevate the quality of information disclosure. Therefore, aligned with the hypothesis of this study, H1_(a) is accepted.

The variable BOD_GEN exhibits a significant positive relationship to the likelihood of fraud at 5% level in both models (0.026, $t = 1.963$), (0.034, $t = 2.433$) respectively. The women on board can be seen as a good governance practice as women are more ethical, risk averse and more cautious in dealing with the corporate monitoring which helps to reduce the likelihood of fraud. In addition, women do not recklessly approve any decision to be done in the firm. The finding is supported by Madah Marzuki et al. (2019) where the presence of a higher women on board will increase the accountability of the firm and at the same time the communication between board and stakeholders also improves. Martins and Júnior (2020) also supported this finding

where the presence of women gives better quality of board and also improves its efficiency. From the result of BOD_GEN, this study concluded that H1(c) is accepted.

The BOD_REM shows a significant negative relationship in both models. Model 1 shows a significant negative relationship to the likelihood of fraud at 1% level (-0.000, $t = -2.877$) while Model 2 is at 5% level (-0.000, $t = -1.984$). The higher compensation offered to the directors leads them to be involved in fraudulent behaviour as they have to achieve certain goals in order to obtain the agreement. This result is consistent with Davidson (2022) where the executives who commit fraud have significantly stronger equity incentives than others who do not commit fraud. He added that the equity incentive is associated with fraud involving various executives' roles including CEOs and CFOs, but particularly significant for the named executives. Thus, this study concluded that the H1(d) is accepted. Meanwhile, BOD_MEET exhibits significant positive relationships to the likelihood of fraud at 10% level (0.001, $t = 1.824$; 0.001, $t = 1.910$) in both models respectively. This finding is supported by Ismail et al. (2020) who found a negative effect on the frequency of board meetings and earning management. They argued that active board is good for the shareholder's interest as the board would spend more time and energy on the firm affairs. Therefore, hypothesis H1(e) is accepted.

The RMC_IND exhibits a significant negative relationship to the likelihood of fraud at 5% level (-0.015, $t = -2.261$; -0.014, $t = -1.981$) for both models respectively. The result contradicts with the previous literature that highlighted the higher number of independents of RMC leads to lower likelihood of fraud (Musa & Ibrahim, 2024; Abdullah & Said, 2019). The study by Olayinka et al. (2019) also evidenced that the independence of RMC has a positive relationship to the discretionary accruals during the post ERM period, indicating that the directors are carrying out the oversight function of risk governance, risk implementation and risk disclosure. Therefore, similar to previous regression analysis, H3(b) is not accepted.

The variable FAMOWN_DIRECT shows a significant negative relationship to the likelihood of fraud in Model 2 (-0.032, $t = -2.150$), indicating that the higher percentage of direct family ownerships in the firms is associated with lower PS, thus resulted to increase the likelihood of fraud. The result is also aligned with the entrenchment effect (Wang, 2006), indicating that higher direct family ownership creates opportunities for the family owner to expropriate wealth from minority shareholders. They have both incentive and opportunities to engage in opportunistic

behaviours such as FFR to meet their expectations. The finding is supported by Wan Mohd Zin et al. (2023) who found negative influence of family ownership and FFR. They documented that ownership by family members will trigger conflict of interest within the firm so that they have power to be involved in unethical behaviour. In addition, the decision making may be jeopardised as the family members have veto power, so the decision made are not in line with other stakeholder.

Nevertheless, the variable FAMOWN_INDIRECT exhibits different result as compared to FAMOWN_DIRECT. The finding of FAMOWN_INDIRECT shows that indirect family ownership has a significant positive relationship to the likelihood of fraud in Model 1 (0.017, $t = 2.093$). This indicates that indirect family ownership is associated with higher PS, thus lowering the likelihood of fraud. This finding is consistent with the alignment effect where the family ownership is less likely to expropriate the wealth from the minority shareholders but rather implement the strong monitoring mechanism to effectively communicate with other shareholders to get higher quality of accounting information and thus leading to mitigating the likelihood of fraud. Additionally, since the family members in the firm are more concerned about the family reputation and incentive for the future generation, they are less likely to be involved in fraudulent activities that might destroy the family's reputation and their succession plan. This result is consistent with Madah Marzuki et al. (2024) who documented that family firms face lower potential of FFR due to the alignment effects of the firm in reducing Type I agency conflict between owners and managers. Since the family has indirect ownerships in the firm, the managers gain incentive to report accounting information that shows the actual firm's economic performance.

The other independent variables found to be insignificant in this analysis are consistent with the previous analysis in Table 6.10. The BOD_TEN in this analysis also exhibits insignificant relationship to the likelihood of fraud in both models, indicating that the long tenure of the directors does not influence the likelihood of fraud. AUD_IND also exhibits insignificant relationship to the likelihood of fraud in both models. This finding is similar to Abbas et al. (2021) who also evidenced that AUD_IND is less likely to reduce likelihood of fraud. Therefore, this study concludes that H1_(b) and H3 are not accepted. The variable RMC shows insignificant relationship with the likelihood of fraud, indicating that the establishment of RMC in Malaysia does not influence the likelihood of fraud. The insignificant finding might be due to some of the firms that did not establish RMC with the minimum percentage of 0. In addition,

Madah Marzuki et al. (2024) argued that the insignificant RMC can be associated with the combination of RMC and Audit Committee roles, thus resulted in insignificant roles in managing risks. The finding is not aligned with the hypothesis for this study, therefore, H3_(a) is not accepted. Lastly, the variable INSOWN_INDIRECT exhibits insignificant relationship to the likelihood of fraud in both models. This result shows that the institutional ownership in Malaysia does not play a role in determining the likelihood of fraud. The insignificant result can be explained due to the insufficient indirect ownership data of the selected samples. About 87% of the selected samples do not have institutional ownership in their firms. Only 13% of the selected firms have institutional ownership. Therefore, this study concludes that INSOWN_INDIRECT does not influence the likelihood of fraud in Malaysia.

Apart from that, with the inclusion of ownership structure in this model, the result of control variables show that only BOD_SIZE and FIRM_SIZE are consistently significant, which is in line with the previous analysis in Table 6.10. However, the variable AGE exhibits insignificant result, suggesting that its influence is not consistent with the previous analysis. BOD_SIZE exhibits a significant positive relationship with the likelihood of fraud at 10% level (0.002, $t = 1.944$). This indicates that large BOD_SIZE is associated with higher PS, thus the likelihood of fraud is lower. The finding is supported by Girau et al. (2022) where large board provides better monitoring performance as they have different expertise, skill and ideas and vast experience in their specific areas, thus lowering the likelihood of fraud. The FIRM_SIZE exhibits a significant negative relationship to the likelihood of fraud at 10% significance level (-0.000, $t = -1.874$). This finding stipulates that the large firms are associated with lower PS, therefore resulted in a higher the likelihood of fraud. The larger firms usually need to maintain their reputation; thus, they always disclose more information to the public (Teguh & Kristanto, 2020). However, due to these circumstances, the larger firms are intended to be involved in fraudulent behaviour by manipulating their information to show the firms are doing well and maintain their reputation. This finding is supported by the recent study of Madah Marzuki et al. (2024) who evidenced that the larger firms have higher potential for FFR.

Meanwhile, the other control variables which are LIQUIDITY, LEVERAGE, and AGE are not statistically significant to the likelihood of fraud. The insignificant result of LIQUIDITY is similar to Hasnan et al. (2021) who documented liquidity is insignificant to financial restatement. LEVERAGE also exhibits insignificant negative

relationship to the likelihood of fraud. This result shows that LEVERAGE exhibits no influence on the likelihood of fraud of this study. This result is consistent with Ismail Khan and Muhammad Hapiz (2022) who found external pressure measured by leverage is not statistically influenced by fraud prediction. Lastly, the variable AGE also exhibits insignificant positive relationships to the likelihood of fraud. The AGE of the firm does not influence the firm in reducing the likelihood of fraud. The finding is similar to Hasnan et al. (2021) who found insignificant relationship with financial restatement.

6.4.4.3 Relationship between Corporate Governance Moderated by Family Ownership and Polarity Scores

Table 6.12
Regression Analysis for Corporate Governance Moderated by Direct Family Ownerships and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.039 *** 3.070	0.018 1.118
Panel A: Independent Variables		
BOD_IND	0.018 1.205	0.029 * 1.768
BOD_TEN	0.003 0.550	-0.005 -0.891
BOD_GEN	0.044 *** 3.148	0.046 *** 3.208
BOD_REM	-0.000 *** -3.396	-0.000 ** -2.212
BOD_MEET	0.001 ** 2.029	0.001 ** 2.066
AUD_IND	0.009 0.648	0.004 0.310
RMC	-0.002 -0.321	-0.002 -0.338
RMC_IND	-0.010 -1.319	-0.013 -1.595
FAMOWN_DIRECT	-0.073 -0.470	-0.139 -0.883
Panel B: Moderating Variables		
BOD_IND*FAMOWN_DIRECT	0.316 1.617	0.321 1.637
BOD_TEN*FAMOWN_DIRECT	0.033 0.523	0.040 0.634
BOD_GEN*FAMOWN_DIRECT	-0.233 ** -1.995	-0.196 * -1.673
BOD_REM*FAMOWN_DIRECT	0.000 0.741	0.000 0.518
BOD_MEET*FAMOWN_DIRECT	-0.012 -0.684	-0.004 -0.243
AUD_IND*FAMOWN_DIRECT	-0.057 -0.391	-0.046 -0.310
RMC*FAMOWN_DIRECT	0.067 1.245	0.052 0.956
RMC_IND*FAMOWN_DIRECT	-0.062 -0.838	-0.029 -0.394
Panel C: Control Variables		
LIQUIDITY		0.000 1.066
LEVERAGE		0.000 -0.209
BOD_SIZE		0.002 * 1.921
FIRM_SIZE		-0.000 * -1.749
AGE		0.000 * 1.903
R-squared	0.118	0.153
F-statistic	2.215 ***	2.272 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.12 presents the regression analysis result for the corporate governance variables moderated by direct family ownership variables. This analysis aims to achieve research objective 4 (RO4) which is to determine the moderating effect of ownership structure on the relationship between the PS and corporate governance among likelihood and non-likelihood fraud firms. The result of model 1 represents the relationship between dependent variable (PS), independent variable (corporate governance), and direct moderating variable (family ownership) without control variables. Meanwhile, Model 2 exhibits regression results with control variables. The F-statistics also shows significant at 1% level (2.215, 2.272) for both models respectively. As highlighted in earlier studies, a more positive tone in language reduces the likelihood of fraud (Loughran & McDonald, 2011; Li et al., 2023). Based on the analysis, after including FAMOWN_DIRECT as moderating variable in this model, the independent variables BOD_IND, BOD_GEN, BOD_REM, and BOD_MEET remain significant, consistent with the result reported in Table 6.10 and Table 6.11. However, the variables RMC_IND and FAMOWN_DIRECT show inconsistent significance as compared with the result in Table 6.11.

Variable BOD_IND exhibits a significant positive relationship at 10% significant level in Model 2 (0.029, $t = 1.768$). This result indicates that the higher percentage independence of directors on board is associated with higher PS, thus resulted in lower likelihood of fraud. This result proves that the higher existence of independence directors would help in mitigating the likelihood of fraud. The higher proportion of independence boards would help in reducing agency problems in the firms (Jensen & Meckling, 1976). This result is consistent with recent studies of Kaituko et al. (2023) and Rezaei and Rostami (2022) which imply that when there is external supervision in the firms, the monitoring control and supervision will be more efficient and strengthened. Therefore, the conflict of interest between shareholders and management can be minimised and the likelihood of fraud occurrences will also be minimised. Therefore, H1_(a) is accepted. BOD_GEN exhibits significant positive relationships to the likelihood of fraud at 1% level for both models (0.044, $t = 3.148$) and (0.046, $t = 3.208$) respectively. This result implies that the higher percentage of women on board is associated with higher PS, thus the likelihood of fraud is lower. The result is similar with other developing countries such as Orazalin (2020) in Kazakhstan and Wang et al. (2022) in China who found significant negative relationships between

women and fraud. Madah Marzuki et al. (2019) also highlighted the important role of women in reducing the likelihood of fraud. Therefore, H1_(c) is accepted.

Besides that, BOD_REM also exhibits a significant negative relationship with the likelihood of fraud in both models. Model 1 shows negative significant relationships at 1% level (-0.000, $t = -3.396$) whereas model 2 shows negative significant relationships at 5% level (-0.000, $t = -2.212$). The evidence indicates that higher director's remuneration is associated with lower PS, thus the likelihood of fraud is higher. The result is consistent with Davidson (2022) where the directors who offered higher equity incentives have a higher likelihood to commit fraud. Therefore, H1_(d) is accepted. Meanwhile, the variable BOD_MEET presents significant positive relationship to the likelihood of fraud at 5% level for both models (0.001, $t = 2.070$, 0.001, $t = 2.127$) respectively. The finding reveals that frequent board meeting is associated with higher PS, thus the likelihood of fraud is lower. According to Sudarman et al. (2019), the board meeting does not only fulfil the routines and formalities of the regulations, but also optimizes the performance and good coordination between the members. Therefore, frequent meetings can prevent the likelihood of fraud and thus, H1_(e) is accepted.

Nevertheless, the other independent variables of BOD_TEN, AUD_IND and RMC present insignificant relationships to the likelihood of fraud in this analysis, consistent with the previous analysis in Table 6.10 and Table 6.11. This indicates that these variables do not play significant influence in reducing the likelihood of fraud. Therefore, H1_(b), H2, and H3_(a) are not accepted. Meanwhile, RMC_IND exhibits negative insignificant relationship to the likelihood of fraud. The result indicates that RMC_IND does not play a role in reducing the likelihood of fraud. The insignificant result can be justified by the low compliance of RMC_IND. As presented in descriptive statistics in Table 6.1, in average only 49.4% of RMC_IND is on board, which is below the requirement of MCCG 2017 to have a majority of independent directors in RMC. Therefore, H3_(b) is not accepted. On the other hand, FAMOWN_DIRECT exhibits negative insignificant relationship to the likelihood of fraud in both models. This indicates that FAMOWN_DIRECT does not influence to reduce the likelihood of fraud. The insignificant relationship could be due to the lack of variation in the percentage of direct family ownership in this study, consistent with Wan Mohammad and Wasiuzzaman (2020). This is evidenced by the mean of FAMOWN_DIRECT which is only 5.5% as presented in descriptive analysis of Table 6.1.

On the other hand, all the interactions between independent variables and FAMOWN_DIRECT exhibit insignificant relationship to the likelihood of fraud except for BOD_GEN*FAMOWN_DIRECT. The result shows that the interaction of BOD_GEN*FAMOWN_DIRECT is negatively significant to the likelihood of fraud at 5% (-0.231, $t = -1.982$) and 10% (-0.194, $t = -1.663$) for Model 1 and 2 respectively. This indicates that FAMOWN_DIRECT moderates the relationship between BOD_GEN and PS by weakening its positive effect. Consequently, the influence of BOD_GEN is reduced, thus the likelihood of fraud is higher. According to Amin et al. (2022), family business may override the role of corporate governance that weakens gender diversity on board. This result is consistent with the entrenchment effect where the family members expropriate the minority shareholders, and this leads to lessening the corporate governance mechanisms and monitoring in the firms. Based on the analysis result, except for BOD_GEN*FAMOWN_DIRECT, all the interaction hypotheses are not accepted. Therefore, only H4(a3) is accepted, while H4(a1), H4(a2), H4(a4), H4(a5), H4(a6), H4(a7), H4(a8) are not accepted.

On top of that, with the inclusion of moderating variable FAMOWN_DIRECT in this analysis, the control variables BOD_SIZE, FIRM_SIZE, and AGE exhibit significant relationship to the likelihood of fraud which is consistent with the analysis result in Table 6.10. The BOD_SIZE and AGE exhibit significant positive relationship to the likelihood of fraud at 10% level (0.002, $t = 1.921$; 0.000, $t = 1.903$) respectively. These indicates that both variables are associated with lower PS, resulted in higher likelihood of fraud. The finding is similar to Sadique et al. (2019), and Teguh and Kristanto (2020) who found similar evidence.

Meanwhile, FIRM_SIZE consistently exhibits negative relationship with the likelihood of fraud at 10% level (-0.000, $t = -1.749$). This indicates that FIRM_SIZE is associated with lower PS, which resulted in higher likelihood of fraud. This is because larger firms have to maintain their reputations, and this would lead to unethical behaviour in the firms. The collapse of Enron Corporation, WorldCom, and Transmile Group demonstrated that the large firms would engage in fraudulent activities to maintain their reputation and trust of the stakeholders (Zin et al., 2020).

Table 6.13
Regression Analysis for Corporate Governance Moderated by Indirect Family
Ownerships and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.027 ** 2.007	0.015 0.856
Panel A: Independent Variables		
BOD_IND	0.024 1.390	0.032 * 1.797
BOD_TEN	-0.011 -1.575	-0.013 * -1.913
BOD_GEN	0.019 1.100	0.019 1.076
BOD_REM	-0.000 -1.619	-0.000 -0.833
BOD_MEET	0.001 1.504	0.001 1.573
AUD_IND	0.019 1.317	0.014 0.939
RMC	-0.003 -0.462	-0.005 -0.631
RMC_IND	-0.005 -0.597	-0.004 -0.491
FAMOWN_INDIRECT	0.049 0.673	0.049 0.653
Panel B: Moderating Variables		
BOD_IND*FAMOWN_INDIRECT	-0.024 -0.352	-0.032 -0.471
BOD_TEN*FAMOWN_INDIRECT	-0.003 -0.086	0.015 0.486
BOD_GEN*FAMOWN_INDIRECT	0.025 0.433	0.035 0.620
BOD_REM*FAMOWN_INDIRECT	-0.000 ** -2.272	-0.000 ** -2.204
BOD_MEET*FAMOWN_INDIRECT	0.006 1.006	0.005 0.772
AUD_IND*FAMOWN_INDIRECT	-0.036 -0.541	-0.038 -0.571
RMC*FAMOWN_INDIRECT	0.070 ** 2.235	0.064 * 1.910
RMC_IND*FAMOWN_INDIRECT	-0.091 ** -2.501	-0.088 ** -2.312
Panel C: Control Variables		
LIQUIDITY		0.000 0.159
LEVERAGE		-0.000 -0.283
BOD_SIZE		0.001 0.802
FIRM_SIZE		-0.000 -1.393
AGE		0.000 ** 2.207
R-squared	0.138	0.161
F-statistic	2.650 ***	2.400 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.13 exhibits the regression analysis for corporate governance moderated by indirect family ownerships on the likelihood of fraud. Models 1 and 2 represent the result with and without control variables respectively. The F-statistic of both models shows strong significance at 1% level (2.650, 2.400). The result shows that when FAMOWN_INDIRECT is added as the moderating variable in this analysis, only BOD_IND consistently remains significant with the result reported in Table 6.10 and Table 6.11. Interestingly, BOD_TEN also exhibits significant result in this analysis. Variable BOD_IND exhibits significant positive relationship to the likelihood of fraud at 10% level (0.032, $t = 1.797$) in Model 2. This result suggests that the higher percentage of BOD_IND is associated with PS, thus it would help in decreasing the likelihood of fraud. According to Mousavi et al. (2022), the independence of the board is negatively associated with fraud because of the primary determinant of the board's efficiency. In order to have good corporate governance, the board must have its feature which is the independence of the board to monitor the behaviour of the managers on the disclosure manipulation. Therefore, H1(a) is accepted.

The variable BOD_TEN exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.013, $t = -1.913$) in Model 2. The finding indicates that the longer tenure directors are associated with lower PS, thus the likelihood of fraud is higher. This is because the directors have familiarity with the firms they govern. In addition, in order to achieve certain goals or expectations from the shareholders, the directors may engage in unethical behaviour like fraud. This result is consistent with Yaacob and Wan Mohd Yusof (2020) who found that longer tenure of the directors offers an opportunity to commit fraud. Accordingly, it gives them enough time to gain knowledge and allows them to broaden expertise in committing fraud. Therefore, H1(b) is accepted.

Meanwhile, BOD_GEN, BOD_REM, BOD_MEET, RMC_IND, and FAMOWN_INDIRECT show insignificant effects which contradict with the result reported in Table 6.10 and Table 6.11. BOD_GEN exhibits insignificant positive relationship to the likelihood of fraud. The result indicates that the presence of women on board does not influence in reducing the likelihood of fraud. The reason for insignificant relationship could be due to lower compliance of MCCG which is only 12.7% of the women on board as presented in descriptive statistics of Table 6.1. Thus, H1(c) is not accepted. Besides that, BOD_REM also exhibits insignificant negative relationship to the likelihood of fraud, indicating that higher BOD_REM does not

influence in reducing the likelihood of fraud. The evidence is similar to Yaacob and Wan Mohd Yusof (2020) who found insignificant effect of board remuneration and corporate fraud. They argued that the director's remuneration should reflect the duties and responsibilities of directors, expertise as well as the complexity of the firm's activities. Therefore, H1_(d) is not accepted. BOD_MEET exhibits negative insignificant relationships to the likelihood of fraud in both models. The finding indicates that the frequency of BOD_MEET is not effective in mitigating the likelihood of fraud. This is because frequent meeting does not guarantee better oversight and reduces risk occurrence in the firm (Ebaid, 2023). This result is consistent with Girau et al. (2022) who found similar evidence that meeting frequency does not influence fraud incidence in Malaysia. BOD_MEET is not in line with the hypothesis of this study, therefore, H1_(e) is not accepted.

The variable AUD_IND exhibits a positive insignificant relationship with the likelihood of fraud in both models. The finding indicates that AUD_IND does not exert an influence in reducing the likelihood of fraud. The result is consistent with Sadique et al. (2019) where the insignificant result is due to the fact that all the samples have complied with the MCCG 2017 recommendations. Therefore, H2 is not accepted. The variables of RMC and RMC_IND show negative insignificant relationship with the likelihood of fraud in both models. The insignificant result of RMC is consistent with Madah Marzuki et al. (2024). The insignificant RMC_IND is due to the lower compliance of MCCG 2017 requirement to have majority of RMC_IND on board. Based on the descriptive analysis in Table 6.1, in average only 49.4% of RMC_IND is on board. It is contrary to the theoretical hypotheses of this study, therefore, H3_(a) and H3_(b) are not accepted. Lastly, the independent variable FAMOWN_INDIRECT exhibits a positive insignificant relationship with the likelihood of fraud. This evidenced that the existence of larger FAMOWN_INDIRECT does not influence in reducing the likelihood of fraud. The finding is consistent with Wan Mohammad and Wasiuzzaman (2020) who documented that insignificant result is due to the lack of variation in the percentage of FAMOWN_INDIRECT over the six-year period. Based on the descriptive statistics of Table 6.1, the sample firms have an average of 15.6% indirect family ownership.

On the other hand, the interaction between FAMOWN_INDIRECT and independent variables shows that BOD_REM, RMC, and RMC_IND significantly moderate the relationships with the likelihood of fraud. The variable

BOD_REM*FAMOWN_INDIRECT moderates negative relationship with the likelihood of fraud at 5% level (-0.000, $t = -2.272$; -0.000, $t = -2.204$) in both models respectively. This indicates that BOD_REM moderates the relationship between FAMOWN_INDIRECT and PS, leading to lower PS and thus increasing the likelihood of fraud. This result supported the entrenchment effect since family firms have the controlling rights in the firms, they may abuse the power and expropriate the minority of shareholders. According to Jaafar et al. (2012), family firms may abandon the remuneration policies and procedures in order to pay better or higher remuneration when they have the power and control. Additionally, the monitoring effect of remuneration committees is also reduced and this enables the manipulation of power and control for expropriation via remuneration (Jaafar et al., 2012). Therefore, consequently, the likelihood of fraud is higher because family firms are more concerned about their benefits rather than taking the opportunity to fight against unusual or unethical behaviour that leads to fraud. Consistent with the theoretical hypothesis for this study, the H4(a4) is accepted.

The interaction variable RMC*FAMOWN_INDIRECT moderates positive relationship with the likelihood of fraud at 5% level (0.070, $t = 2.235$) in Model 1 and 10% level (0.064, $t = 1.910$) in Model 2. This result indicates that FAMOWN_INDIRECT moderates the relationship between RMC and PS, resulted in higher PS and lowers the likelihood of fraud. The result further explains that FAMOWN_INDIRECT influences the establishment of RMC of the firm so that it enables the committee to function effectively in assessing risks within the firms as well as reducing the likelihood of fraud. According to Wan Mohammad et al. (2014), the control right possessed by indirect family ownership exerts greater control over the firm's operation that lead to greater understanding over the firm's activities and strategies. In addition, Madah Marzuki et al. (2024) also documented that the firms face lower likelihood of fraud in family firms because of the alignment effects and reducing Type I agency conflict as the manager reports the accounting information according to the firm's economic performance. The result is not aligned with the theoretical hypothesis of this study, thus, H4(a7) is not accepted.

Nevertheless, the interaction variable RMC_IND*FAMOWN_INDIRECT moderates a negative relationship with the likelihood of fraud at 5% level for both models 1 (-0.091, $t = -2.501$) and 2 (-0.088, $t = -2.312$). This result evidenced that the RMC_IND moderates the relationship between RMC_IND and PS, resulted in lower

PS, thus higher likelihood of fraud. This finding further justifies that FAMOWN_INDIRECT undermines the monitoring role of RMC_IND, resulted in higher likelihood of fraud. Although FAMOWN_INDIRECT influences the establishment of RMC, the appointment of RMC_IND might not truly be independent but rather merely to fulfil the requirements of MCCG. This finding is consistent with the entrenchment perspective where family ownership may influence over governance structures in ways that limit the effectiveness of monitoring mechanisms (Wang, 2006). In line with the theoretical hypothesis for this study, H4_(a8) is accepted. Meanwhile, the other interaction variables are not significant in this analysis, therefore, H4_(a1), H4_(a2), H4_(a3), H4_(a5), and H4_(a6) are not accepted.

Lastly, from all the control variables, only one variable shows significant relationship with the likelihood of fraud which is AGE. This variable is consistently significant, similar to the previous result of Table 6.10 and Table 6.11. The variable age exhibits a significant positive relationship with the likelihood of fraud at 5% level (0.000, $t = 2.207$). This indicates indicates older firms are associated with higher PS, thus lowering the likelihood of fraud. The finding is consistent with Teguh and Kristanto (2020).

6.4.4.4 Relationship between Corporate Governance Moderated by Institutional Ownership and Polarity Scores

Table 6.14
Regression Analysis for Corporate Governance Moderated by Indirect Institutional Ownerships and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.035 *** 2.762	0.012 0.710
Panel A: Independent Variables		
BOD_IND	0.024 1.606	0.040 ** 2.523
BOD_TEN	-0.005 -1.016	-0.008 -1.549
BOD_GEN	0.027 ** 2.113	0.026 * 1.964
BOD_REM	-0.000 *** -2.972	-0.000 ** -2.226
BOD_MEET	0.001 * 1.730	0.001 * 1.770
AUD_IND	0.010 0.731	0.003 0.233
RMC	0.005 0.794	0.003 0.545
RMC_IND	-0.014 * -1.930	-0.014 * -1.899
INSOWN_INDIRECT	-0.787 -0.926	-0.130 -0.147
Panel B: Moderating Variables		
BOD_IND*INSOWN_INDIRECT	-0.903 -1.515	-0.875 -1.429
BOD_TEN*INSOWN_INDIRECT	-0.541 -0.909	-0.025 0.040
BOD_GEN*INSOWN_INDIRECT	-0.907 -1.353	-0.578 -0.850
BOD_REM*INSOWN_INDIRECT	0.000 0.806	0.000 0.417
BOD_MEET*INSOWN_INDIRECT	0.031 0.724	0.005 0.121
AUD_IND*INSOWN_INDIRECT	1.567 1.556	0.863 0.839
RMC*INSOWN_INDIRECT	0.063 0.157	-0.208 -0.511
RMC_IND*INSOWN_INDIRECT	-0.227 -0.579	0.104 0.253
Panel C: Control Variables		
LIQUIDITY		-0.000 -0.063
LEVERAGE		-0.000 -0.395
BOD_SIZE		0.003 ** 2.181
FIRM_SIZE		-0.000 * -1.702
AGE		0.000 ** 2.044
R-squared	0.093	0.132
F-statistic	1.707 **	1.903 **

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.14 presents the regression analysis for corporate governance moderated by institutional ownership and the likelihood of fraud. Model 1 exhibits the result without control variables, whereas Model 2 exhibits the result with control variables. The F-statistic for Model 1 and 2 shows significance at 5% level (1.707, 1.903). Based on the analysis, when the institutional ownership is included in the analysis, the independent variables of BOD_IND, BOD_GEN, BOD_REM, BOD_MEET and RMC_IND consistently remain significant with the previous analysis of Table 6.10 and Table 6.11. This further justifies that when institutional ownership is added as a moderating variable in this analysis, the result is still the same, indicating that these variables are robust and play a crucial corporate governance mechanism and the likelihood of fraud.

The variable BOD_IND exhibits significant positive relationship with the likelihood of fraud at 5% level (0.040, $t = 2.523$) in model 2. Consistent with the previous analyses, the higher number of independence on board is associated with higher PS, thus reducing the likelihood of fraud. The finding is consistent with Kaituko et al. (2023) where the independent directors may help in preventing likelihood of fraud. Therefore, H1_(a) is accepted. Variable BOD_GEN exhibits a significant positive relationship with the likelihood of fraud at 5% level (0.027, $t = 2.113$) in Model 1, whereas 10% level (0.026, $t = 1.964$) in Model 2. This analysis is supported by the previous literature that women are more concerned about ethical issues and more risk averse in accounting tasks than men while maintaining higher moral sensitivity (Maulidi, 2023). In line with the hypothesis, this study concluded that H1_(c) is accepted. The variable BOD_REM also exhibits a significant negative relationship with the likelihood of fraud at 1% (-0.000, $t = -2.972$) and 5% (-0.000, $t = -2.226$) respectively in Models 1 and 2. This result indicates that higher remuneration paid to the board of directors is associated with lower PS, thus resulted in an increase in the likelihood of fraud. This result is consistent with Chen et al. (2021) where higher remuneration to the director would create an opportunity for the directors to commit fraud. This is because the independence of the directors' will be impaired when they are offered higher compensation. According to Dah and Frye (2017), excessive board compensation would create a negative impact on the board monitoring incentives, which leads to the directors' losing their independence. Therefore, they are motivated to engage in fraudulent activities. In accordance with the hypothesis, H1_(d) is supported.

Meanwhile, the variable BOD_MEET exhibits significant positive relationship with the likelihood of fraud at 10% level for both models (0.001, $t = 1.730$, 0.001, $t = 1.770$). The higher frequency of board meetings is associated with higher PS, thus resulted in lower likelihood of fraud. The frequent meetings held in the firms gives opportunities for the board to discuss and monitor the firm's operation especially related to unethical issues or any suspicious transactions that occurred. This result is aligned with Mohd Salleh and Othman (2016) and Kaituko et al. (2023) who evidenced that the higher frequency of board meetings would lead to lower the likelihood of fraud. In line with the hypothesis for this study, H1_(e) is supported. The variable RMC_IND exhibits negative significant relationship with the likelihood of fraud at 10% level for both models (-0.014, $t = -1.982$, -0.014, $t = -1.915$). The result indicates that higher independence directors in RMC is associated with lower PS, thus the likelihood of fraud is increased. The reason for the diverse effect of RMC_IND would be the appointment of independent directors in RMC merely for complying with the MCCG recommendation. Besides, the independence of directors in RMC does not play their roles as the establishment itself relates to the strategies and operations of the firms (Malik et al., 2023). The result is not supported by the literature that higher percentage of RMC_IND would lead to lower the likelihood of fraud. Therefore, H3_(b) is not accepted.

Apart from that, the other independent variables which are BOD_TEN, AUD_IND, RMC and INSOWN_INDIRECT exhibit insignificant relationship with the likelihood of fraud. It indicates that all these variables are not influencing factors that contribute to the likelihood of fraud. The insignificant relationship between BOD_TEN and likelihood of fraud contradicts with Yaacob and Wan Mohd Yusof (2020) who documented that longer tenure directors are positively associated with corporate fraud. Meanwhile the insignificant result for AUD_IND is due to all the firms that have already appointed more than 90% of independent directors in the Audit Committee to oversee the risks in the firms. Meanwhile, the variable RMC has a negative insignificant relationship to the likelihood of fraud. The insignificant result of RMC is consistent with Madah Marzuki et al. (2024) which might be due to some of the sample firms have not established RMC since they combine the roles of RMC and Audit Committee in the firms. Therefore, all of these variables are not supported by previous literature on the likelihood of fraud. Thus, H1_(b), H2, and H3_(a) are not accepted. Lastly, the INSOWN_INDIRECT also exhibits insignificant relationships to the likelihood of

fraud. The finding indicates that INSOWN_INDIRECT does not influence in mitigating fraud occurrence. The insignificant result is due to the lack of variation in the percentage of the ownership over the six-year period of this study.

However, for the interaction between independent variables and INSOWN_INDIRECT, all the variables are insignificant to the likelihood of fraud. The insignificant result is due to small data of the INSOWN_INDIRECT of the sample. This further exacerbates that the role of INSOWN_INDIRECT in this study does not influence in mitigating the likelihood of fraud. Therefore, H4_(b1) until H4_(b8) are not accepted. As for the control variables, BOD_SIZE, FIRM_SIZE, and AGE exhibit a significant relationship with the likelihood of fraud which is consistent with the previous analysis of Table 6.10 and Table 6.11. The variable BOD_SIZE shows a negative significant relationship with the likelihood of fraud at 5% level (-0.003 , $t = -2.210$). This indicates that the likelihood of fraud in the sample selection is influenced by the size of the board of directors. The large size of the board, the likelihood of fraud is lower. This is because the large size of the board will increase the efficiency and control in the firms, thus leading to fraud prevention (Khoufi & Khoufi, 2018).

The control variables BOD_SIZE, FIRM_SIZE, and AGE exhibit significant relationship to the likelihood of fraud. BOD_SIZE exhibits significant positive relationship to the likelihood of fraud at 5% level (0.003 , $t = -2.181$). The larger board is associated with lower PS; thus, the likelihood of fraud is reduced. The result is similar to Martins and Júnior (2020) where the increasing number of board will result in reducing the chances of fraud due to the comprehensive and effective monitoring. Meanwhile, the FIRM_SIZE exhibits significant negative relationships with the likelihood of fraud at 10% level (-0.00 , $t = -1.702$). The result indicates that larger firms are associated with lower PS, thus the likelihood of fraud is larger. The larger the firms the more visible the firms to the public and investors. This finding is supported by a recent study of Madah Marzuki et al. (2024) who evidenced that the larger firms have higher potential for FFR. Lastly, the variable AGE exhibits significant positive relationships to the likelihood of fraud at 5% level (0.000 , $t = 2.044$). The findings indicate that it is consistent with Teguh and Kristanto (2020) where older firms usually have more expertise as compared to younger firms. This will create opportunities for the older firms to increase their expertise to improve the firms' efficiency as well as better control. Therefore, the likelihood of fraud can be mitigated.

6.4.4.5 Relationship between Corporate Governance and Likelihood of Fraud

This section discusses the second dependent variable which is FFR. The dependent variable is a dummy variable labelled as “0” and classified as non-likelihood of fraud firms, whereas “1” is likelihood of fraud firms. Binary Logistic Regression analysis is conducted for this study.

Table 6.15
Regression Analysis for Corporate Governance and Likelihood of Fraud

VARIABLES	FFR	FFR
	Model 1	Model 2
INTERCEPT	-0.194	-0.879
	-0.306	-1.089
Panel A: Dependent Variable		
BOD_IND	0.206	0.886
	0.304	1.161
BOD_TEN	-1.518 ***	-1.564 ***
	-5.704	-5.688
BOD_GEN	-0.861	-0.841
	-1.418	-1.314
BOD_REM	0.000 *	0.000
	1.773	1.193
BOD_MEET	0.138 ***	0.138 **
	2.690	2.530
AUD_IND	-0.230	-0.079
	-0.377	-0.125
RMC	0.048	-0.011
	0.169	-0.037
RMC_IND	0.117	0.259
	0.368	0.764
Panel B: Control Variables		
LIQUIDITY		-0.029 **
		-1.967
LEVERAGE		0.008
		1.453
BOD_SIZE		0.095
		1.575
FIRM_SIZE		0.000
		-0.945
AGE		-0.010 *
		-1.837
McFadden R-squared	0.156	0.193
LR statistic	64.683 ***	79.929 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.15 presents the regression analysis of the Binary Logistic regression for equation 1. The result of Model 1 presents the regression analysis without control

variables, whereas Model 2 presents regression analysis with control variables. The LR statistics for both models are significant at 1% level. This indicates that the models are statistically significant components of the variation in the dependent variable as explained by the variation in the set of independent variables.

Variable BOD_TEN exhibits significant negative relationship to the likelihood of fraud at 1% level for both models (-1.518 , $z = -5.704$, -1.564 , $z = -5.688$). The result indicates that the longer the directors tenure, the likelihood of fraud is lower. The longer tenure of the board of directors leads to more knowledge, experience and expertise in the industry they are involved in. Due to this, they are able to solve the issues that arise in the firms, especially in fraudulent financial reporting issues. The finding is consistent to Sadique et al. (2019) that the longer tenure directors are reluctant to take risks which could destroy the good reputation in engaging unethical behaviour such as fraud. Since the result contradicts the hypothesis of this study, H1_(b) is not accepted.

The variable BOD_REM exhibits significant positive relationship with the likelihood of fraud at 10% level (0.000 , $z = 1.773$) in Model 1. The result shows that the higher payment of director's remuneration, the likelihood of fraud is higher. The excessive rewards or remuneration package paid to the directors will lead them to commit fraud. Besides that, the firms usually pay the directors based on their performance of the year. Additional rewards such as bonus, stock option, house, etc. make the directors engage in fraudulent activities to show good performance. The finding is consistent with Chen et al. (2021) in which the directors are motivated to commit fraud when they hold a large number of stock options. This implies that they may intentionally hire low quality auditors to exert influence and hide the fraudulent activities since they have power to control the firm. The low-quality auditor usually gives less effort in finding significant issues that arise in the firms. Therefore, aligned with the hypothesis, H1_(d) is accepted.

On the other hand, BOD_MEET exhibits significant positive relationship with the likelihood of fraud in both models. Model 1 shows significant positive relationship at 1% level (0.138 , $z = 2.690$), whereas Model 2 shows significant positive relationship at 5% level (0.138 , $z = 2.530$). The result indicates that frequent board meetings held in the firms leads to a higher likelihood of fraud. This is because a large frequency of board meetings shows a signal that the firms have significant issues or problems that need to be solved. The finding is inconsistent with the recent studies reported by Rezaei and Rostami (2022) and Kaituko et al. (2023) who evidenced that frequency of board

meeting contributes to lower FFR. Nevertheless, Zhou et al. (2018) revealed that frequent board meeting could be related to the board's effort to deal with irregular or emergency issues. This is due to the urgency of the board member to meet and discuss and to find possible solutions to prevent it. The BOD_MEET shows that it contradicts with the hypothesis for this study, therefore, H1_(e) is not accepted.

The other independent variables show insignificant relationship to the likelihood of fraud in this study. The BOD_IND exhibits positive insignificant relationship to the likelihood of fraud. The result indicates that the independent directors on board are not significantly influenced by the likelihood of fraud. The insignificant result could be due to the appointment of the independent directors merely due to comply with the requirement of MCCG. The result is similar to the recent study by Girau et al. (2022) who found that large percentage of independent directors does prevent fraud occurrences of firms in Malaysia. Therefore, the result of this variable is not supported by the theoretical framework of this study, Thus, H1_(a) is not accepted. Variable BOD_GEN exhibits negative insignificant relationship with the likelihood of fraud. The result indicates that the percentage of women on board does not influence in reducing the likelihood of fraud. The insignificant relationship can be explained because of the lower appointment of women as directors. This is supported by the descriptive statistics where only 12.7% of the women directors are on board which is less than half from the MCCG recommendation (30% women on board). As the finding contradicts to the hypothesis of this study, therefore H1_(c) is not accepted.

The variable AUD_IND also exhibits negative insignificant relationship with the likelihood of fraud in both models. The result indicates that the independence of Audit Committee does not exert influence in reducing the likelihood of fraud. The insignificant finding is because the firms have solely appointed an independent Audit Committee as recommended by MCCG. This is proven by the descriptive statistics in Table 6.1, showing that most of the samples have already appointed an independent Audit Committee of 90.7%. Meanwhile, the variable RMC exhibits insignificant relationship with the likelihood of fraud in both models. The finding indicates that the establishment of RMC exhibits no influence in reducing the likelihood of fraud. The reason for the insignificant finding might be due to whether the establishment of RMC is for the sake of recommendation of MCCG. The descriptive result shows that an average of 69.3% of the sample selection has already implemented RMC in the firms. According to Malik et al. (2023), the establishment of RMC may be a hindrance of the

board to monitor risk effectively as it relates to the strategies and operation. Additionally, the collapse of large firms such as Lehman Brothers has raised the question whether the establishment of RMC is needed in the firms. The establishment of RMC is considered not the best strategy to monitor risks (Malik et al., 2023). Meanwhile, RMC_IND exhibits positive insignificant relationship with the likelihood of fraud in both models. This shows that the larger proportion of RMC_IND does not exert an influence in mitigating the likelihood of fraud. The insignificant result can be explained by the appointment of independent directors in RMC which is still low with only 49.4% of RMC_IND in the firm as presented in descriptive statistics of Table 6.1 as compared to the MCCG 2017 requirement that the firms should appoint a majority independent directors in RMC. This finding is similar to Musa and Ibrahim (2024) who found insignificant relationship between RMC_IND and earning management. Since both variables are not aligned with the hypothesis, H3_(a) and H3_(b) are not accepted.

On top of that, the control variables LIQUIDITY and AGE exhibit a significant relationship with the likelihood of fraud. LIQUIDITY exhibits negative significant relationship at 5% level (-0.029 , $z = -1.967$). The result indicates that, the larger LIQUIDITY, the likelihood of fraud will be lower. The finding is consistent with Mulyandini (2022) who found that liquidity can reduce the likelihood of fraud. Meanwhile, AGE exhibits negative significant relationship with the likelihood of fraud at 10% level (-0.010 , $z = -1.837$). The older the firms, the likelihood of fraud will be reduced. The older firms had faced many problems and issues in the firms, but they are still operating. This is because they are gaining more knowledge and experience and thus leading to increasing their efficiency (Teguh & Kristanto, 2020).

Apart from that, the other control variables of LEVERAGE, BOD_SIZE and FIRM_SIZE exhibit insignificant relationship with the likelihood of fraud. This indicates that these variables are not the factors that contribute to the likelihood of fraud. The insignificant LEVERAGE is similar to Ismail Khan and Muhammad Hapiz (2022). Meanwhile, the variable BOD_SIZE shows positive insignificant relationship with the likelihood of fraud. This indicates that larger board does not affect the likelihood of fraud. Consistent with Devarajar et al. (2022), the size of the board does not increase the chances of the firms to commit fraud. Lastly, the variable FIRM_SIZE exhibits positive insignificant relationship with the likelihood of fraud. The result evidenced that FIRM_SIZE is not a predictor in determining the likelihood of fraud. The finding is

supported by Madah Marzuki et al. (2024) who found that larger firms are associated with FFR.

6.4.4.6 Relationship between Corporate Governance, Ownership Structure and Likelihood of Fraud

Table 6.16

Regression Analysis for Corporate Governance, Ownership Structures and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
INTERCEPT	-0.222	-0.868
	-0.348	-1.054
Panel A: Dependent Variable		
BOD_IND	0.241	0.959
	0.348	1.239
BOD_TEN	-1.540	-1.554 ***
	-5.420	-5.275
BOD_GEN	-0.757	-0.792
	-1.151	-1.123
BOD_REM	0.000 *	0.000
	1.906	1.177
BOD_MEET	0.152 ***	0.138 **
	2.770	2.415
AUD_IND	-0.324	-0.095
	-0.522	-0.147
RMC	0.114	0.006
	0.390	0.020
RMC_IND	0.045	0.236
	0.137	0.678
FAMOWN_DIRECT	-0.257	-0.465
	-0.347	-0.556
FAMOWN_INDIRECT	0.139	0.216
	0.358	0.485
INSOWN_INDIRECT	-2.368	0.323
	-0.828	0.105
Panel B: Control Variables		
LIQUIDITY		-0.028 *
		-1.906
LEVERAGE		0.008
		1.441
BOD_SIZE		0.092
		1.418
FIRM_SIZE		0.000
		-0.907
AGE		-0.011 *
		-1.945
McFadden R-squared	0.158	0.194
LR statistic	65.770 ***	80.602 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total

shares outstanding (indirect ownership), INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment

Table 6.16 presents the regression analysis of corporate governance as the moderating variable (treated as independent variable) to the likelihood of fraud. Model 1 presents the variables without control variables, whereas Model 2 presents the variables with control variables. The LR-statistics for both models show significance at 1% level (65.770, 80.602). This indicates that the models are statistically significant components of the variation in the dependent variable as explained by the variation in the set of independent variables. The analysis indicates that, after including family ownership and institutional ownership as independent variables, the result remain significantly consistent as presented in Table 6.15 which are BOD_TEN, BOD_REM, and BOD_MEET.

The variable BOD_TEN exhibits negative significant relationship with the likelihood of fraud at 1% level in Model 2 (-1.554, $z = -5.275$). The result indicates that the longer tenure of the directors, the likelihood of fraud is reduced. This indicates that firms with longer tenure directors offer opportunity for them to gain more knowledge and experience of the firms and industry. Additionally, the longer tenure of the board could increase the ability of directors to monitor the board and at the same time improve the efficiency of the management. Consistent with Sadique et al. (2019), the tenure gives them opportunity to increase knowledge and experience and contribute to reducing the likelihood of fraud. Contrary to the hypothesis, H1_(b) is not accepted.

The variables BOD_REM exhibit significant positive relationship with the likelihood of fraud at 10% level (0.000, $z = 1.906$) in Model 1. This indicates that the higher remuneration paid to the directors, the likelihood of fraud is increased. The large director's remuneration offered to directors, the independence will be compromised. The finding is consistent with Chen et al. (2021) who documented that higher executive options of incentives gives the directors the motivation to commit fraud. This result is further evidenced by the univariate analysis in Table 6.9, where likelihood of fraud firms paid higher remuneration as compared to non-likelihood of fraud firms, which is RM3.4 million and 2.8 million respectively. Consistent with the theoretical hypothesis of this study, H1_(d) is accepted.

The variable BOD_MEET exhibits significant positive relationship with the likelihood of fraud. This indicates that higher board meeting frequency reflects higher

likelihood of fraud. Frequent meetings shows a signal that the firms are in an emergency or irregular situation. The descriptive result in Table 6.1 shows that the maximum meeting is 24 times over the year. Based on the result, the maximum meeting of 24 times was conducted by the fraud firm, Serba Dinamik Berhad, which is a large oil and gas trader in Malaysia. During the year 2021, Serba Dinamik held 19 board meetings, while 24 board meetings were held in 2022. This further evidenced that on 28 September 2021, SC charged Serba Dinamik, its directors and officers for falsifying information in its financial statement (Malaysian Securities Commission, 2021). The charged was filed for discrepancies regarding transactions worth some RM4.54 billion in its financial year end 2020 (The Edge, 2023). This evidenced further justify that the frequency of board meetings increases when the firms are involved in fraudulent or illegal activities since the board members need to meet and discuss regarding the matter. The finding is consistent with Zhou et al. (2018) who evidenced similar findings that frequent board meetings are a signal of FFR.

Meanwhile, the other independent variables exhibit insignificant relationship. The BOD_IND presents positive insignificant relationship with the likelihood of fraud in both models. The reason for insignificant findings is because the firms might have simply complied with the requirement of MCCG (Hasnan et al., 2021; Girau et al., 2022) but not truly independent. According to Hasnan et al. (2021), the role of the independent directors is to provide views to the board rather than provide an oversight function in monitoring the management. The finding is not in line with the hypothesis for this study, therefore, H1_(a) is not accepted. BOD_GEN also presents negative insignificant relationship with the likelihood of fraud. This result indicates that the women on board are not statistically influenced to reduce the likelihood of fraud. The reason for the insignificant result is due to the lower compliance of the MCCG 2017 recommendation. Based on the statistical result in Table 6.1, it shows that an average of only 12.7% of the women are involved as directors. This evidenced that the lower level of compliance of this MCCG 2017 recommendation leads to insignificant result. According to Zin et al. (2020), the firms are reluctant to comply with the MCCG 2017 recommendation because the policy is not necessary to adopt in the firms' as the firms are committed to provide equal opportunities and nurturing within the group. The result is not in line with the hypothesis of this study, therefore H1_(c) is not accepted.

AUD_IND presents negative insignificant relationship with the likelihood of fraud. The reason for the insignificant result is due to some of the samples have not

appointed AUD_IND in the firms. The descriptive result in Table 6.1 shows that the minimum AUD_IND is 40%, indicating that some of the firms only have 40% AUD_IND on board which is below than half of the board. The finding is supported by Sadique et al. (2019). Contrary to the theoretical literature, H2 is not accepted. The variables RMC and RMC_IND also exhibit insignificant positive relationship with the likelihood of fraud. This indicates that the establishment of RMC and RMC_IND does not exert an influence in mitigating the likelihood of fraud. According to Madah Marzuki (2024), the insignificant finding is due to the combination of roles of RMC and Audit Committee in some of the samples which resulted in insignificant roles of RMC. Furthermore, the insignificance of RMC_IND could be due to the appointment of RMC_IND which is merely due to the requirement of MCCG 2017 rather than to oversight the function of RMC. Therefore, based on the analysis, H1_(a) and H1_(b) are not accepted. The variables FAMOWN_DIRECT, FAMOWN_INDIRECT and INSOWN_INDIRECT also exhibit insignificant relationship with the likelihood of fraud. The analysis result reveals that the ownership structures which are family ownership and institutional ownership do not play a role in reducing the likelihood of fraud. The reason for the insignificant result is due lack of the variation in the percentage of ownership over the six-year period. This is evidenced as there is an average of only 5.5% FAMOWN_DIRECT and 15.6% FAMOWN_INDIRECT in the firms as tabulated in Table 6.1. Meanwhile, there is an average of only 0.09% for INSOWN_INDIRECT in the sample firms.

For the control variables, the variables LIQUIDITY and AGE exhibit significant negative relationship with the likelihood of fraud, revealing consistent result as presented in Table 6.15. LIQUIDITY is negatively significant at 10% level (-0.028, $z = -1.906$). The result indicates that the higher LIQUIDITY of the firms, the likelihood of fraud is lower. The result is consistent with Kazemian et al. (2017) and Hasnan et al. (2021) where the firms with lower liquidity have higher likelihood of fraud. The variable AGE exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.011, $z = -1.945$). This result is consistent with Teguh and Kristanto (2020) where older firms have more expertise in their organizations to combat fraud. Nevertheless, the other control variables exhibit insignificant relationship with the likelihood of fraud.

6.4.4.7 Relationship between Corporate Governance Moderated by Family Ownership and Likelihood of Fraud

Table 6.17
Regression Analysis for Corporate Governance Moderated by Direct Family Ownerships and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
INTERCEPT	-0.102 -0.150	-0.653 -0.763
Panel A: Dependent Variable		
BOD_IND	-0.300 -0.403	0.356 0.424
BOD_TEN	-1.721 *** -5.450	-1.694 *** -5.197
BOD_GEN	-0.584 -0.844	-0.540 -0.736
BOD_REM	0.000 1.284	0.000 1.069
BOD_MEET	0.159 *** 2.860	0.169 *** 2.812
AUD_IND	0.053 0.075	0.173 0.235
RMC	-0.326 -0.933	-0.341 -0.933
RMC_IND	0.308 0.772	0.462 1.092
FAMOWN_DIRECT	3.375 0.231	3.153 0.213
Panel B: Moderating Variables		
BOD_IND*FAMOWN_DIRECT	25.981 ** 1.965	24.405 * 1.811
BOD_TEN*FAMOWN_DIRECT	2.882 0.761	2.614 0.675
BOD_GEN*FAMOWN_DIRECT	-10.327 -1.398	-8.373 -1.101
BOD_REM*FAMOWN_DIRECT	0.000 0.578	0.000 0.152
BOD_MEET*FAMOWN_DIRECT	-0.645 -0.486	-0.838 -0.607
AUD_IND*FAMOWN_DIRECT	-19.177 -1.458	-16.790 -1.277
RMC*FAMOWN_DIRECT	8.932 ** 2.036	8.916 ** 1.991
RMC_IND*FAMOWN_DIRECT	-4.903 -1.125	-5.991 -1.323
Panel C: Control Variables		
LIQUIDITY		-0.027 * -1.726
LEVERAGE		0.008 1.363
BOD_SIZE		0.067 1.028
FIRM_SIZE		0.000 -0.857
AGE		-0.011 * -1.872
McFadden R-squared	0.191	0.221
LR statistic	79.334 ***	91.565 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), LIQUIDITY is the current assets divided by current liabilities

(CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment

Table 6.17 presents the regression analysis for corporate governance moderated by direct family ownerships. This regression analysis aims to achieve the RO4 by equation 2. Model 1 presents the analysis result without control variables, whereas Model 2 shows the result with control variables. Based on the analyses in Model 1 and 2, both LR-statistics show significance at 1% level (79.334, 91.565). This indicates that the models are statistically significant components of the variation in the dependent variable as explained by the variation in the set of independent variables. Based on the analysis, after adding FAMOWN_DIRECT as the moderating variable, BOD_TEN and BOD_MEET remain consistent significant as shown in the results of Table 6.15 and Table 6.16. However, BOD_REM is not statistically significant in this analysis.

BOD_TEN exhibits significant negative relationship with the likelihood of fraud at 1% level in both models (-1.721, $z = 5.450$, -1.694, $z = 5.197$). The finding indicates that the longer tenure of the directors, the likelihood of fraud is reduced. This result is consistent with Sadique et al. (2019) and Chen et al. (2006) where the shorter tenure of the directors leads them to be more likely to commit fraud because of the less experience of the business. Consequently, it is less able to deter the likelihood of fraud. Inconsistent with the hypothesis for this study, H1(b) is not accepted. Meanwhile, BOD_MEET exhibits positive significant relationship with the likelihood of fraud at 1% level in both models (0.159, $z = 2.860$, 0.169, $z = 2.812$). The outcome indicates that the higher frequency of the BOD_MEET is associated with the higher likelihood of fraud. According to Zhou et al. (2018), the frequent BOD_MEET is related to the board efforts to deal with the irregularity of emergency issues. Since the PLC naturally draws the attention of the investors and regulators, they probably manage to avoid fraud in a prudent manner. Further investigation has been done on the selected samples of this study. The investigation reveals that the fraud firm of Khee San Berhad held 19 and 12 board meetings in the year 2020 and 2021. A report by The Edge dated 13 October 2020 stated the auditors at BDO Governance Advisory Sdn Bhd revealed that Khee San is likely to be involved in fraudulent activities, where the fictitious sales invoices amounted to RM39.45 million and purchase invoice amounted to RM4.47 million are not supported by the stock card movements which are used as a basis to drawdown credit facilities (The Edge, 2020). However, the result contradicts to the hypothesis of this study, therefore, H1(e) is not accepted.

The other independent variables are not significant for this analysis. BOD_IND exhibits insignificant relationship with the likelihood of fraud in both models. The findings indicate that the proportion of BOD_IND does not influence the likelihood of fraud in Malaysia. MCCG 2017 suggested that at least half of the board of directors must be independent. However, based on the descriptive analysis in Table 6.9, the average of the independent directors on board is 53% which already complied with the MCCG requirement to have at least half of independent directors on board. This leads to the conclusion that the minimum requirement of half of the board of directors is independent is not adequate to monitor the management in reducing the likelihood of fraud. This result also consistent with Girau et al. (2022), which explained the insignificant roles of BOD_IND since the appointment of BOD_IND is merely for complying the MCCG requirements and Bursa Malaysia Listing requirements. Therefore, H1_(a) is not accepted. BOD_GEN exhibits negative insignificant relationship with the likelihood of fraud in both models. The result indicates that the involvement of women on board does not mitigate the likelihood of fraud. The finding contradicts Haron et al. (2021) who evidenced that higher percentage of women reduces the likelihood of fraud. Thus, H1_(c) is not accepted.

Moving forward, BOD_REM exhibits positive insignificant relationship with the likelihood of fraud. This finding indicates that the remuneration of the board does not influence in mitigating the likelihood of fraud. Consistent with Yaacob and Wan Mohd Yusof (2020), the insignificant result could be explained that the director's remuneration should reflect the responsibility of the director's itself. The amount of the remuneration package depends on their expertise and the complexities of the firms they govern. Based on univariate analysis is Table 6.9, the likelihood of fraud firms paid more remuneration than non-likelihood of fraud firms which is RM3.4 million and RM2.8 million respectively. This could explain that when the firms have problems like fraud, they might hire more experience and expert directors to solve the problem that arises in the firm. Therefore, the fees that need to be incurred are supposedly higher as normal remuneration package. The result is not aligned with the hypothesis of this study, therefore, H1_(d) is not accepted. Meanwhile, AUD_IND exhibits positive insignificant relationship with the likelihood of fraud in both models. The outcome indicates that the percentage of AUD_IND does not influence the likelihood of fraud. The insignificant relationship could be due to some of the selected firms do not comply with the MCCG 2017 requirement which is the independent of Audit Committee that

consists of solely independent directors. Based on the descriptive analysis in Table 6.1, the minimum percentage of AUD_IND is only 40% which is below the requirement of MCCG. The result of this variable is not aligned with the hypothesis of this study, therefore, H2 is not accepted.

On the other hand, RMC exhibits negative insignificant relationship with the likelihood of fraud. The result reveals that the establishment of RMC does not influence in mitigating the likelihood of fraud. The insignificant relationship could be due to the combination of roles between Audit Committee and RMC which is consistent with the finding of Madah Marzuki et al. (2024). The firm that does not establish RMC has the perspective that RMC and Audit committee have the same role which is monitoring the risks of the firms. Additionally, the size of independent directors of the firm is small. Therefore, they decided not to have separate committee of risk management, instead they absorbed the function of RMC in Audit Committee. Besides that, RMC_IND exhibits positive insignificant relationship with the likelihood of fraud in both models. This indicates that RMC_IND does not influence in mitigating the likelihood of fraud. The insignificant result is aligned with the low compliance of establishment of RMC_IND. The descriptive statistics in Table 6.1 shows that in average only 49.4% of RMC_IND is appointed in the firms which is lower than 66.66% as required by MCCG 2017. Contradicting the hypothesis of this study, H3_(a) and H3_(b) are not accepted. The variable FAMOWN_DIRECT exhibits positive insignificant relationship with the likelihood of fraud. The outcome reveals that direct family ownerships does not influence the firms in mitigating the likelihood of fraud. The insignificant result could be due to the lack of variation in the percentage of direct ownership over the six-year period which is consistent with Wan Mohammad and Wasiuzzaman (2020).

On the other hand, for the moderating variables, only BOD_IND*FAMOWN_DIRECT and RMC*FAMOWN_DIRECT are statistically significant to the likelihood of fraud. BOD_IND*FAMOWN_DIRECT moderates positive relationship with the likelihood of fraud at 5% level in Model 1 (25.981, $z = 1.965$) and 10% level in Model 2 (24.405 $z = 1.811$). The finding indicates that FAMOWN_DIRECT overrides the monitoring role of BOD_IND by opportunistically act according to their own interest, resulted in higher likelihood of fraud. Even though there is a presence of larger proportion of BOD_IND, the decision made is in the hand of the controlling shareholders which is family ownerships. Therefore, since they have the power, they are more likely to exploit the interest of non-controlling shareholders

as they have power and right to choose accounting policies and decide the extent of information that can be disclosed to the stakeholders (Teh et al., 2017). This evidence is aligned with the entrenchment perspective where FAMOWN_DIRECT offers opportunities to the controlling shareholders, consequently resulting to poor corporate governance and higher likelihood of fraud. Consistent with the hypothesis for this study, H4_(a1) is accepted.

The interaction variable of RMC*FAMOWN_DIRECT exhibits moderate positive relationship with the likelihood of fraud at 5% level in both Models (8.932, $z = 2.036$; 8.916, $z = 1.991$). The result indicates that the establishment of RMC in the firm does not reduce the likelihood of fraud in the presence of FAMOWN_DIRECT. This is because, according to Wan Mohammad and Wasiuzzaman (2020), the higher proportion of family ownerships, the entrenchment effect is more dominant if the percentage of ownership is more than 26%. However, in average, the mean of FAMOWN_DIRECT as stated in Table 6.1 is only 5.5%. Nevertheless, the maximum ownership is 63.8%. This result aligns with the argument by Wan Mohammad and Wasiuzzaman (2020). Since the FAMOWN_DIRECT has a significant power and control in the firms, they might take opportunities in the expense of minority shareholders. Although RMC is established in the firms, the decision made in the firms is subsequently reflected from the controlling shareholders themselves. Therefore, the establishment of RMC is suggested as to comply with the MCCG 2017 requirement but it does not significantly meet its main objectives to oversee the risks in the firm. In line with the theoretical hypothesis for this study, H4_(a7) is accepted.

The other interaction variables exhibit insignificant relationship with the likelihood of fraud. This outcome reveals that other variables do not have influence in reducing the likelihood of fraud in the presence of FAMOWN_DIRECT. Therefore, except for H4_(a1) and H4_(a7), all the hypotheses of family ownerships are not accepted. Apart from that, the control variable LIQUIDITY and AGE exhibit significant negative relationship with the likelihood of fraud which is consistent with the result presented in Table 6.15 and Table 6.16. LIQUIDITY exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.027 , $z = -1.726$). The result is consistent with Izzalqurny et al. (2019), who found that LIQUIDITY has a negative effect on fraud risks in financial statement. The AGE exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.011 , $z = -1.872$). The result is consistent with Teguh

and Kristanto (2020) who documented that older firms are less likely to engage in unethical behaviours such as fraud.

Other control variables, LEVERAGE, BOD_SIZE, and FIRM_SIZE, show insignificant relationship with the likelihood of fraud. The insignificant negative relationship between LEVERAGE and the likelihood of fraud is consistent with Izzalqurny et al. (2019) who found LEVERAGE does not have an effect with financial statement fraud. BOD_SIZE exhibits insignificant positive relationship with the likelihood of fraud, indicating that BOD_SIZE does not influence the firms in mitigating the likelihood of fraud which is consistent with Razali Arshad (2014). Lastly, the variable FIRM_SIZE exhibits insignificant negative relationship with the likelihood of fraud, indicating the size of the firm does not influence the likelihood of fraud.

Table 6.18
Regression Analysis for Corporate Governance Moderated by Indirect Family
Ownerships and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
INTERCEPT	0.480	0.905
	0.672	0.978
Panel A: Dependent Variable		
BOD_IND	0.274	0.218
	0.317	0.234
BOD_TEN	-2.034 ***	-2.023 ***
	-5.577	-5.180
BOD_GEN	-0.241	-0.655
	-0.269	-0.695
BOD_REM	0.000	-0.000 *
	-1.584	-1.734
BOD_MEET	0.106 **	0.106 **
	2.223	2.135
AUD_IND	-0.688	-0.553
	-0.899	-0.696
RMC	-0.317	-0.388
	-0.811	-0.954
RMC_IND	0.854 *	0.966 **
	1.891	2.075
FAMOWN_INDIRECT	-12.146 ***	-13.134 ***
	-2.822	-2.973
Panel B: Moderating Variables		
BOD_IND*FAMOWN_INDIRECT	2.817	2.990
	0.747	0.750
BOD_TEN*FAMOWN_INDIRECT	2.445	1.868
	1.476	1.048
BOD_GEN*FAMOWN_INDIRECT	1.246	1.070
	0.402	0.335
BOD_REM*FAMOWN_INDIRECT	0.000 ***	0.000 ***
	4.612	4.774
BOD_MEET*FAMOWN_INDIRECT	0.647 *	0.725 *
	1.682	1.800
AUD_IND*FAMOWN_INDIRECT	3.939	4.471
	1.034	1.159
RMC*FAMOWN_INDIRECT	1.226	2.199
	0.651	1.096
RMC_IND*FAMOWN_INDIRECT	-2.462	-3.409
	-1.199	-1.545
Panel C: Control Variables		
LIQUIDITY		-0.042 ***
		-2.696
LEVERAGE		0.007
		1.172
BOD_SIZE		-0.055
		-0.693
FIRM_SIZE		0.000
		0.970
AGE		0.000
		0.051
McFadden R-squared	0.290	0.315
LR statistic	120.455 ***	130.534 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities

(CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), PERFORMANCE is the Net Profits for the year are divided by Total Asset (Net Profit/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment

Table 6.18 presents the regression analysis for corporate governance moderated by indirect family ownership structure. Model 1 presents the regression analysis without control variables, while Model 2 presents the analysis with control variables. The LR-statistics for both models are significant at 1% level (120.455, 130.534), indicating that the models are statistically significant components of the variation in the dependent variable as explained by the variation in the set of independent variables. The analysis indicates that, after adding the FAMOWN_INDIRECT as a moderating variable, the BOD_TEN, BOD_REM, and BOD_MEET remain consistently significant, which is consistent with the result presented in Table 6.15 and Table 6.16. Interestingly, RMC_IND and FAMOWN_INDIRECT exhibit significant relationship in this analysis.

BOD_TEN reveals significant negative relationship with the likelihood of fraud at 1% level for both models ($-2.034, z = 5.577$; $-2.023, z = -5.180$). The result indicates that the longer tenure of the directors leads to a lower likelihood of fraud. The result is consistent with Sadique (2019) where the long tenure of directors gives them opportunities to gain as much as possible the knowledge and experience of the particular firm. Therefore, H1_(b) is accepted. The BOD_REM exhibits significant negative relationship with the likelihood of fraud in 10% level of Model 2 ($-0.000, z = -1.734$). This finding contradicts the result of Table 6.15 and Table 6.16 where BOD_REM exhibits positive relationship to the likelihood of fraud. This result reveals that higher director remuneration leads to a lower likelihood of fraud. This is because, the higher remuneration of directors reflects their workload and expertise of the particular firm. The result is consistent with Girau et al. (2022) who documented that higher director's compensation tends to diminish fraud occurrences. According to Martins and Júnior (2020), the compensation of the board is an incentive to the management in aligning their objectives with shareholders. Therefore, BOD_REM actually has a negative association with the likelihood of fraud, as BOD_REM reduces the agency problems. Additionally, the higher BOD_REM may help the opportunistic behaviour of the management and thus reduces the likelihood of the management to manipulate the information of the firms (Hasnan et al., 2021). However, the result contradicts with the hypothesis of this study, therefore, H1_(d) is not accepted.

Meanwhile, the variable BOD_MEET exhibits significant positive relationship with the likelihood of fraud at 5% level in both models (0.106, $z = 2.223$; 0.106, $z = 2.135$). The result reveals that the higher frequency of BOD_MEET leads to an increase in the likelihood of fraud. The result is consistent with Sadique et al. (2019), where the frequent board meeting unlikely reduces the likelihood of fraud. The increase number of BOD_MEET is related to board effort in dealing with irregular or emergency issue that arises in the firm (Zhou et al., 2018). The RMC_IND exhibits significant positive relationship with the likelihood of fraud in both models. Model 1 shows significant positive relationship at 10% level (0.854, $z = 1.891$), while Model 2 shows significant relationship at 5% level (0.966, $z = 2.075$). The result indicates that the higher percentage of RMC_IND leads to higher likelihood of fraud. It can be justified that the appointment of RMC_IND is merely to comply with the MCCG recommendation, rather than truly being independent (Girau et al., 2022). Moreover, the RMC_IND may have insufficient knowledge and expertise of the firm's activities, which limits their ability to provide effective oversight and risk mitigation. Therefore, H3(b) is not accepted.

The variable FAMOWN_INDIRECT exhibits significant negative relationship with the likelihood of fraud at 1% level (-12.146, $z = -2.822$; -13.134, $z = -2.973$) for both models. The finding reveals that the presence of FAMOWN_INDIRECT lowers the likelihood of fraud. The result is aligned with the effect that higher ownership of FAMOWN_INDIRECT exerts the family to effectively monitor the firms and avoid unethical behaviours such as fraud. Due to the influence of FAMOWN_INDIRECT in the firms, the family reputation can be preserved and creates incentive for the future generation (Wang, 2006). This finding is consistent with Wan Mohammad et al. (2014) where the control held by indirect ownerships exerts greater control over the firms' operation, subsequently leading to greater understanding of the firm's activities and business strategies. Therefore, the strong presence of family can reduce earning management, and at the same time reducing the likelihood of fraud. Accordingly, Wan Mohammad and Wasiuzzaman (2020) argued that family firms with lower level of family ownership, which is between 5% to 25%, are less likely to engage in earning management. The finding of this study supports the argument by Wan Mohammad and Wasiuzzaman (2020) where the mean of FAMOWN_INDIRECT of this study is 15.6%. It can be documented that lower level of FAMOWN-INDIRECT strengthens the interest of the stakeholders, therefore resulting in lower likelihood of fraud.

Other independent variables are not statistically significant in this analysis. BOD_IND exhibits insignificant relationship with the likelihood of fraud in both models. The finding is similar to Devarajar et al. (2022). The insignificant result raised questions on whether the directors are really independent or merely fulfilling the MCCG 2017 requirements. Additionally, the minimum requirement of MCCG 2017 in which the firms should have at least half of independent directors seems not enough in mitigating the likelihood of fraud. This is because, in average, all the firms already appoint half of the board that consists of independent directors. The result contradicts the Agency theory where the percentage of independent directors improves the effectiveness of management monitoring and reduces the agency problems (Jensen & Meckling, 1976), subsequently reducing the likelihood of fraud. Therefore, H1_(a) is not accepted. BOD_GEN exhibits negative insignificant relationship with the likelihood of fraud. The insignificant result might be due to lower compliance of firms in appointing women on board. The result is not aligned with the hypothesis of this study, therefore, H1_(c) is not accepted.

The variable AUD_IND exhibits insignificant negative relationship with the likelihood of fraud in both models. The result indicates that the percentage of AUD_IND does not influence the firm in mitigating the likelihood of fraud. Therefore, H2 is not accepted. Lastly, RMC exhibits insignificant negative relationship with the likelihood of fraud. The result indicates that the establishment of RMC does not influence the firms in reducing the likelihood of fraud. The insignificant result could be due to the combination role of RMC and Audit Committee in some firms. The combination of the role is due to the small number of independent directors in the firms, thus they are unable to establish separate RMC to oversee the risks in the firms. The result is similar to Madah Marzuki et al. (2024) who documented insignificant effect between RMC and the likelihood of fraud.

Moving forward, two interaction variables are found to be significant with the likelihood of fraud which are BOD_REM*FAMOWN_INDIRECT, and BOD_MEET*FAMOWN_INDIRECT. The interaction variable BOD_REM*FAMOWN_INDIRECT moderates positive relationship with the likelihood of fraud in both models (0.000, $z = 4.612$; 0.000, $z = 4.774$). The finding reveals that FAMOWN_INDIRECT moderates the relationship between BOD_REM and the likelihood of fraud by weakening its negative effect. Consequently, the influence of BOD_REM is reduced, thus the likelihood of fraud is higher. The result

suggests that when there is higher proportion of FAMOWN_INDIRECT in the firm, they have power and control on the remuneration committee of the firm. Since they have power and control, they might abandon the remuneration policies and procedures and provide better rewards to the directors especially when they are involved in unethical behaviour such as fraud. The result is proven through univariate analysis where likelihood of fraud firms paid higher remuneration as compared to non-likelihood of fraud firms (likelihood of fraud firms: RM3.4M, non-likelihood of fraud firms: RM2.8M). The finding is supported by Amin et al. (2022) in which when power and control are in the hand of the family, they can act according to their own personal interest in the expense of the minority and non-family shareholders. Accordingly, this result supports the argument by Basu et al. (2007); when a family is the major owner of the firm, the family members have incentives to overpay themselves. In line with the hypothesis of this study, H4_(a4) is accepted.

The interaction variable BOD_MEET*FAMOWN_INDIRECT exhibits moderate positive relationship with the likelihood of fraud at 10% level in both models (0.647, $z = 1.682$; 0.725, $z = 1.800$). This indicates that FAMOWN_INDIRECT strengthens the positive relationship between of BOD_MEET and the likelihood of fraud. According to Sadique et al. (2019), frequent BOD_MEET is a signal that the firm is in distress situation or risk of fraud. Nevertheless, in the presence of FAMOWN_INDIRECT, the meetings may be dominated by family influence, in which the discussion and decision are to protect the family's interests rather than strengthening monitoring or resolving governance problems. This result is aligned with the entrenchment perspective where the family has power to control the firms, and they might take opportunities in the expense of minority shareholders (Amin et al., 2022). Therefore, H4_(a5) is accepted. Other interaction variables exhibit insignificant result with the likelihood of fraud. Therefore, except for H4_(a4) and H4_(a5), all other interaction variables are not accepted.

As for the control variables, only variable LIQUIDITY exhibits significant negative relationship with the likelihood of fraud. The variable LIQUIDITY exhibits significant negative relationship with the likelihood of fraud at 1% level (-0.042 , $z = -2.696$), indicating that higher LIQUIDITY could reduce the likelihood of fraud. The higher liquidity indicates that the firms have higher ability to pay their short-term obligations. The result is consistent with Mohd Aripin et al. (2022) where LIQUIDITY is significant to the likelihood of fraudulent financial reporting. The insignificant LEVERAGE is

consistent with Izzalqurny et al. (2019). The BOD_SIZE exhibits insignificant relationship with the likelihood of fraud. The result indicates that BOD_SIZE does not influence the likelihood of fraud. The result is similar to Razali and Arshad (2014) and Devarajar et al. (2022). The insignificant relationship between FIRM_SIZE and the likelihood of fraud indicates that the size of the firm does not influence the likelihood of fraud. The finding is consistent with Ismail Khan and Muhammad Hapiz (2022) which is insignificantly related to the likelihood of fraud. The finding is also similar to Aziz et al. (2017) who documented that AGE is not statistically significant with financial statement restatement.

6.4.4.8 Relationship between Corporate Governance Moderated by Institutional Ownership and Likelihood of Fraud

Table 6.19

Regression Analysis for Corporate Governance Moderated by Indirect Institutional Ownerships and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
INTERCEPT	-0.776	-1.673 *
	-1.170	-1.941
Panel A: Dependent Variable		
BOD_IND	0.253	1.004
	0.361	1.262
BOD_TEN	-1.431 ***	-1.459 ***
	-5.322	-5.238
BOD_GEN	-0.526	-0.636
	-0.834	-0.965
BOD_REM	0.000 **	0.000
	2.195	1.042
BOD_MEET	0.168 ***	0.149 **
	2.868	2.429
AUD_IND	0.121	0.344
	0.190	0.517
RMC	0.108	-0.056
	0.356	-0.174
RMC_IND	-0.010	0.228
	-0.029	0.623
INSOWN_INDIRECT	1705.044	370.367
	0.000	0.000
Panel B: Moderating Variables		
BOD_IND*INSOWN_INDIRECT	-846.965	-509.469
	0.000	-0.000
BOD_TEN*INSOWN_INDIRECT	-1518.207	-1177.729
	0.000	-0.000
BOD_GEN*INSOWN_INDIRECT	-2455.691	-848.340
	0.000	-0.000
BOD_REM*INSOWN_INDIRECT	0.000	0.000
	0.000	0.000
BOD_MEET*INSOWN_INDIRECT	-44.614	0.794
	0.000	0.000
RMC*INSOWN_INDIRECT	-553.300	177.946
	0.000	0.000
RMC_IND*INSOWN_INDIRECT	1038.537	-78.898
	0.000	-0.000
Panel C: Control Variables		
LIQUIDITY		-0.026 *
		-1.814
LEVERAGE		0.009
		1.615
BOD_SIZE		0.113 *
		1.769
FIRM_SIZE		0.000
		0.085
AGE		-0.006
		-0.961
McFadden R-squared	0.214	0.243
LR statistic	88.882 ***	100.836 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, INSOWN is the ratio of institutional owners to the total shares outstanding (indirect), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.19 presents the regression analysis result for corporate governance moderated by indirect institutional ownerships. Model 1 presents the regression analysis without control variables, while Model 2 presents the analysis with control variables. The LR-statistics for both models are significant at 1% level (88.882, 100.836), indicating that the models are statistically significant components of the variation in the dependent variable as explained by the variation in the set of independent variables. After adding moderating variable institutional ownership, the result shows that BOD_TEN, BOD_REM, and BOD_MEET remain significant, which is consistent with the result in Table 6.15 and Table 6.16. BOD_TEN exhibits significant negative relationship with the likelihood of fraud at 1% level in both models (-1.431, $z = -5.322$; -1.459, -5.238). This result is consistent with Sadique et al. (2019) in which longer tenure directors are less likely to be involved in unethical behaviour such as fraud due their good reputations, therefore they are reluctant to take risks that could destroy their reputation. Nevertheless, this result contradicts with Yaacob and Wan Mohd Yusof (2020) who found that the longer tenure of the directors is associated with corporate fraud since longer tenure offers opportunities for directors to commit fraud as they have enough knowledge and experience. Inconsistent with the hypothesis of this study, H1_(b) is not accepted.

Meanwhile, BOD_REM exhibits significant positive relationship with the likelihood of fraud at 5% level in model 1 (0.000, $z = 2.195$). The result indicates that higher remuneration paid to the directors increases the likelihood of fraud. This is because, when the remuneration is excessive, the directors may lose their independence (Dah & Frye, 2017). This argument further explains that when the firms offer higher remuneration to the directors, the directors will take it as an opportunity to commit fraud to meet the shareholders expectations. In other words, the directors would most likely commit fraud when they are promised to receive higher compensation if they meet the shareholders expectations, usually by giving good performance of the firms which can attract more investors to invest in the firm. This finding is consistent with Chen et al. (2021) in which higher executive compensation increases the likelihood of fraud. Therefore, H1_(a) is accepted. On the other hand, variable BOD_MEET exhibits significant positive relationship with the likelihood of fraud in both models. Model 1 indicates BOD_MEET is significant at 1% level (0.168, $z = 2.868$) while Model 2 is significant at 5% level (0.149, $z = 2.429$). The result reveals that higher frequency of

BOD_MEET leads to higher likelihood of fraud. The result is consistent with Shan et al. (2013) and Zhou et al. (2018) where high frequency of board meeting is related to the urgency of the board member to meet and discuss the issues that may involve in illegal or unethical activities. Therefore, H1(e) is not accepted.

Other independent variables are not significant in this analysis. BOD_IND exhibits insignificant relationship with the likelihood of fraud. This finding is consistent with Sadique et al. (2019) and Girau et al. (2022) who found similar result in which board independence does not reduce fraud occurrences in Malaysia. BOD_GEN exhibits insignificant negative relationship with the likelihood of fraud in both models. This indicates that the percentage of women on board does not influence the firm in reducing the likelihood of fraud. The result contradicts with Maulidi (2023) who documented that women are more concerned about unethical issues, less risk taking in accounting tasks, and have higher moral sensitivities than man, thus reducing the likelihood of fraud. Meanwhile, AUD_IND exhibits insignificant relationship with the likelihood of fraud. This indicates that the higher percentage of AUD_IND does not play an influence in reducing the likelihood of fraud in this study. The result supported the argument by Beasley (1996) where audit committee effectively carries out their duties whether it is largely or entirely consisting of independent directors. Therefore, H1(a), H1(c), H2 are not accepted.

The variable RMC exhibits insignificant relationship with the likelihood of fraud. The result indicates that the establishment of RMC does not influence the firm in reducing the likelihood of fraud. The result supported the argument by Madah Marzuki et al. (2024) where the insignificant result is due to the combination of the roles of RMC and Audit committee that caused the firms to be less efficient in managing risks. Meanwhile, the variable RMC_IND also exhibits insignificant relationship with the likelihood of fraud. This indicates that the presence of RMC_IND in RMC does not reduce the likelihood of fraud. Therefore, H3(a) and H3(b) are not accepted. The INSOWN_INDIRECT and all the moderating variables exhibit insignificant relationship with the likelihood of fraud. The result indicates that the presence of INSOWN_INDIRECT does not help the firms in reducing the likelihood of fraud. The insignificant result is due to the small variation of INSOWN_INDIRECT over the 6 years of time. The result is evidenced by the descriptive statistics in Table 6.1 where the ownership of institutional investors is only 0.9%. Therefore, all the hypotheses from H4(b1) to H4(b8) are not accepted.

The control variables LIQUIDITY and BOD_SIZE show significant relationship with the likelihood of fraud. The variable LIQUIDITY exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.026 , $z = -1.814$). This indicates that higher liquidity in the firms lowers the likelihood of fraud. The result is supported by the argument of Mulyandini (2022) in which lower LIQUIDITY of the firm will encourage the firm to commit fraud in order to show the firm is in good condition. Meanwhile, BOD_SIZE exhibits significant positive relationship with the likelihood of fraud at 10% level (0.113 , $z = 1.769$). The result indicates that the larger size of the board leads to a higher likelihood of fraud. The result is consistent with Girau et al. (2022) where firms that have a higher number of directors sitting on board are more likely to commit fraud. Other control variables exhibit insignificant relationship with the likelihood of fraud. The variables LEVERAGE, FIRM_SIZE, and AGE show insignificant positive relationship with the likelihood of fraud. These results indicate that LEVERAGE, FIRM_SIZE, and AGE do not exert influence in reducing the likelihood of fraud.

6.5 Further analysis and Discussion of PN17 and Non-PN17

This section further discusses on the sample of financially distressed firms (PN17) and non-financially distressed firms (Non-PN17). The final observations of this sample consist of 100 observations. The aim of this analysis is to oversee the factors that contribute to the likelihood of fraud using the firms that have higher likelihood of fraud, i.e., financially distressed firms.

6.5.1 Descriptive Statistics

Table 6.20 provides the descriptive statistics for the sample likelihood of fraud and non-likelihood of likelihood of fraud firms. A total of 100 PN17 vs. non-PN17 were tested in this study. In Table 6.20, Panels A, B, C, D provide the statistical data of the dependent variable, independent variables, moderating variables, and control variables respectively. The tabulation of data shows the minimum, maximum, mean and standard deviation for the total of 100 observations. This section aims to achieve objective 1 which is to analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms.

Table 6.20
Descriptive Statistics for PN-17 vs. Non-PN17 Firms

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
Panel A: Dependent Variable					
PS	0.054	0.051	0.155	-0.001	0.027
FFR	0.500	0.500	1.000	0.000	0.503
Panel B: Independent Variables					
BOD_IND	0.536	0.500	1.000	0.290	0.174
BOD_TEN	0.284	0.200	1.000	0.000	0.282
BOD_GEN	0.138	0.143	0.500	0.000	0.100
BOD_REM (million)	4.369	1.832	182.590	0.017	18.388
BOD_MEET	6.930	6.000	15.000	1.000	2.826
AUD_IND	0.861	1.000	1.000	0.000	0.181
RMC	0.770	1.000	1.000	0.000	0.423
RMC_IND	0.553	0.667	1.000	0.000	0.414
Panel C: Moderating Variables					
FAMOWN_DIRECT	0.021	0.000	0.465	0.000	0.071
FAMOWN_INDIRECT	0.100	0.000	0.846	0.000	0.225
Panel D: Control Variables					
LIQUIDITY	1.863	0.885	19.983	0.000	3.144
LEVERAGE	6.703	0.575	555.230	0.070	55.479
BOD_SIZE	6.330	6.000	11.000	2.000	1.621
FIRM_SIZE (million)		253.95		3.77	
	1,319.50		34,408.91		4,289.75
AGE	28.880	27.500	61.000	8.000	12.332

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Panel A describes the descriptive statistics for dependent variables PS and FFR. The mean of PS is stated in Table 6.17 with Panel A having 5.4% which shows in average the sample firms have positive sentiment, similar to the likelihood of fraud and non-likelihood of fraud firms of 5.7%. The maximum value of sentiment is 15.5% and

the minimum value of sentiment is -0.001%. The minimum score indicates that some of the firms have a higher likelihood of fraud. On the other hand, the result of FFR reveals that 50% of the samples are PN17 firms.

Panel B describes the descriptive statistics of the independent variables of the study. The mean of BOD_IND is 53.6%, indicating that the selected firms comply with the MCCG 2017 recommendations in which the firms should have at least half of the independent directors on board. The maximum value is 100%, indicating that some firms appoint all the independent directors on board, while the minimum value is 29%, indicating that some firms only appoint 29% independent directors on board. The result of this sample reported slightly lower value as compared to the study by Ismail et al. (2020) who documented 55.1% of BOD_IND from the period 2014-2018. The BOD_TEN shows the mean of 28.4% for the tenure exceeding nine years of services. The average indicates that 28.4% of the independent directors have tenure more than 9 years. The maximum value is 100%. indicating that some of the firms maintain the same directors for more than 9 years without rotation. This could lead to the directors losing their independence as they have more expertise and knowledge of the firms (Yaacob & Wan Mohd Yusof, 2020). The minimum is 0%, indicating that some of the firms implement the rotation of board of directors without extending the tenure for more than 9 years.

The average of BOD_GEN shows that only 13.8% women are appointed as directors on the board. The MCCG 2017 recommended that the firms in Malaysia should have at least 30% women on board. Based on the result, the firms in Malaysia does not comply with the MCCG recommendation since it only has an average of 13.8%. The maximum value is 50%, indicating that some of the firms already comply with the MCCG 2017 recommendation. The average result of BOD_GEN of PN17 vs. Non-PN17 is similar to likelihood of fraud vs. non-likelihood of fraud firms which is only 12.7%. Based on the analysis, Malaysia is still far from achieving the objective to have 30% women on board (Khaw & Liao, 2018; Haron et al., 2021). The result of BOD_REM shows that in average, the board of directors were paid RM4.369 million per year. The remuneration includes basic remuneration, allowances, benefit-in-kind, bonus and directors fees. The maximum value is RM182.59 million, while the minimum is RM0.017 million per year, which indicates that firms in Malaysia spend much money to pay the directors. The average BOD_REM of PN17 vs. Non-PN17 is higher than likelihood of fraud vs. non-likelihood of fraud firms by RM1.27 million.

This indicates that financially distressed firms paid larger remuneration as compared to likelihood of fraud firms. Chen et al. (2021) argued that large remuneration offers the directors to commit fraud in order to achieve the incentive or option offered by the firms.

The BOD_MEET shows that in average, the meeting was held 6.9 times per year with the maximum of 15 times and minimum 6 times. According to Lipton and Lorsch (1992), the board of directors should meet twice per month and the meeting should take full day. The MCCG 2017 requires the firms to disclose the number of their board meetings to the public while Firm Act requires the firms to have a minimum of four meetings conducted in a year (Ishak et al., 2017). Based on the result, the samples of the firms complied with MCCG 2017. Meanwhile, the average of AUD_IND is 86.1%. MCCG 2017 requires the firms to solely appointed the independent directors in Audit Committee. Nevertheless, it has an average of only 86.1%, indicating that the firms in Malaysia do not comply with the MCCG 2017 requirement. However, there are some firms that already appointed solely independent directors since the maximum value is 100%. On the other hand, the MCCG 2017 recommended that the firms in Malaysia should establish RMC and majority of the RMC member must consist of independent directors. Based on the analysis, the establishment of RMC is 77% in average, indicating that not all of the selected firms established RMC in their firms. According to Madah Marzuki et al. (2024), the firms in Malaysia combine the RMC with the Audit Committee. The RMC_IND shows that in average, only 55.3% of independent directors are serving for RMC. This result indicates that RMC_IND does not comply with the MCCG 2017 recommendation in which majority of the independent directors serve RMC with 66.66%.

Panel in Table 6.17 shows the result of family ownership in Malaysia which consists of FAMOWN_DIRECT and FAMOWN_INDIRECT. Based on the result, in average, only FAMOWN_DIRECT is 2.1% with the maximum ownership of 46.5%. Meanwhile, in average, FAMOWN_INDIRECT is 10%, while the maximum ownership is 84.6%. According to Wan Mohammad et al. (2014), higher FAMOWN_INDIRECT is due to the complexity of Malaysian family firms. The finding contradicts Wan Mohammad and Wasiuzzaman (2020) who documented that in average, direct family ownership is 78.2%, while indirect family ownership is 16.9% from the year 2004-2009. The comparison shows that FAMOWN_DIRECT is larger as compared to this study. This might be to the sample that consists of all the firms listed

in Bursa Malaysia. Lastly, Panel D of Table 6.15 shows the results of the control variables of this study. The result of LIQUIDITY shows an average of 1.863, with the maximum value of 19.98. Higher LIQUIDITY level of the firms gives a good signal that the firms are strong in the payment of their short-term obligations. Lower LIQUIDITY indicates that the firms have problems in satisfying their obligations. The mean of LEVERAGE is 6.703 which indicates that the LEVERAGE of financially distressed firms is very high. Higher LEVERAGE gives a signal that the firms are having trouble in paying their debts. The maximum value is 555.23 which reflects that the firms fall under PN17 category that shows the firms have financial problems in paying their debts. The average of BOD_SIZE is 6.3 with the minimum of 2 and the maximum of 11. According to Lipton and Lorsch (1992), board size should be limited to a maximum of ten directors while Sadique et al. (2019) suggested having at least 8 directors on board to reduce the likelihood of fraud. Meanwhile, in average, the FIRM_SIZE is RM1,319.50 million, and the maximum is RM34,408.91 million.

In conclusion, the descriptive statistics aim to achieve objective 1 of this study which is to analyse the compliance of MCCG 2017 among likelihood and non-likelihood fraud firms. Based on the analysis, four requirements have been complied by the firms which are (i) to comprise at least half of the independent directors, (ii) to disclose the detailed remuneration of each of their directors, (iii) to disclose the number of board meetings to the public, and (iv) to comprise solely independent directors in Audit Committee. Meanwhile, another four requirements do not comply by the firms which are (i) the tenure of the board of directors should not exceed nine years of service, (ii) the firm should have at least 30% women on board, (iii) to establish RMC, and (iv) to comprise majority of independent directors.

6.5.2 Likelihood of Narrative Pattern of Financial Reporting using Textual Analysis for PN17 vs. Non-PN17

This section applies the same textual analysis framework to a sample of financially distressed (PN17) and non-distressed firms. The objective is to determine if the 'fraud fingerprint' identified in the main analysis is unique to fraudulent firms, or if it is synonymous with financial distress itself. By comparing the narrative patterns of PN17 firms against both fraudulent and healthy firms, we can isolate linguistic features that are specific to intentional deception rather than mere financial failure.

6.5.2.1 Topic Modeling based on LDA Approach for PN17 and Non-PN17

In these analyses, all the processes from data collection, data cleaning including text pre-processing, text processing, text visualization, text clustering, and LDA process are repeated. Similar to likelihood of fraud vs. non-likelihood of fraud firms, the result of this process offers an insight on the financial characteristics of PN17 vs. non-PN17 from the year 2020 to 2022.

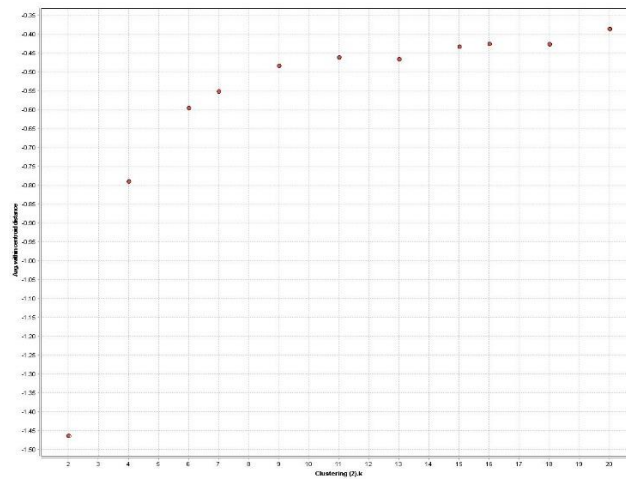


Figure 6.15 K-clusters for PN17, K = 6

In order to obtain the K-clusters of the sample, the clustering method is adopted. Table 6.15 shows the K-clusters for the sample of PN17 firms for the year 2020-2022. An elbow method is adopted to obtain the number of clusters of the selected samples. Based on the analysis, the K-clusters for PN17 firms consists of 6 clusters. These clusters represent 6 Topics that are used to address the top 30 words of MD&As section and each of the topic is named according to their financial characteristic themes.

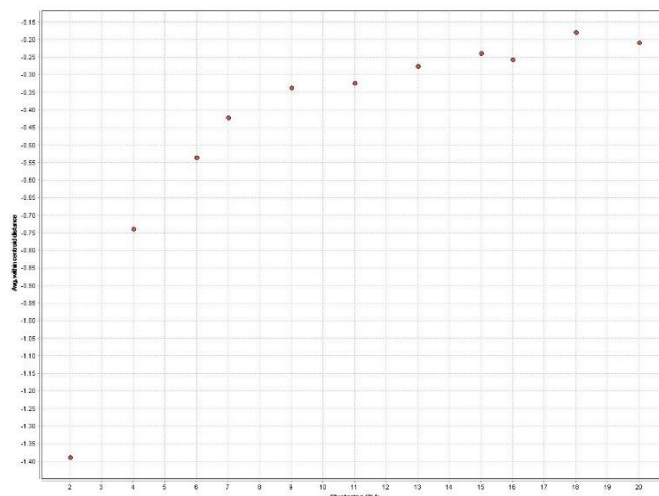


Figure 6.16 K-Clusters for Non-PN17, K = 6

Figure 6.16 shows the K-clusters of non-PN17 firms for the year 2020-2022. The method of clustering using elbow method is repeated to obtain the number of clusters of the selected samples. Based on the analysis, similar to PN17 firms, the K-clusters for non-PN17 firms also have 6 clusters of financial characteristics. Similar to PN17 firm, these 6 clusters reflected the 6 Topics indicators that highlighted the top frequent words and each of the topics is renamed according to their financial themes and characteristics.

Table 6.21
Top 30 Frequent Words for PN17 Firms from 2020-2022

TOPIC 0	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5
Loss and Regularization	Risk Management Activities	Sector- Specific Business Collapse	Volatile Commodity Operations	Non- Performing Activities	Contract and Services Activity
company	pandemic	airasia	group	million	group
year	covid	travel	industry	business	million
period	business	year	oil	capital	financial
financial	market	digital	global	time	revenue
services	management	app	business	operations	construction
covid	malaysia	super	malaysia	domestic	development
due	<i>risk</i>	airline	gas	malaysia	business
share	government	asean	growth	service	project
assets	products	aircraft	price	safety	segment
vessels	system	key	demand	bus	year
march	continue	aviation	scheme	number	bhd
debt	building	services	usd	services	proposed
<i>contracts</i>	related	airlines	support	programme	mainly
billion	economy	delivery	forward	low	sdn
cost	order	international	economic	full	projects
restructuring	compared	guests	outlook	revenue	fye
pandemic	trading	allstars	due	asia	management
affected	potential	flights	production	demand	recorded
plan	going	launched	<i>opportunities</i>	users	<i>loss</i>
oil	overall	businesses	<i>risks</i>	meanwhile	operations
board	local	indonesia	activities	platform	property
existing	including	cargo	revenue	capacity	plan
operations	businesses	air	work	<i>achieved</i>	works
cash	movement	pandemic	malaysian	stage	total
operating	years	end	supply	become	regularisation
vessel	phase	cost	quality	online	due
reduction	investment	value	increase	people	services
costs	future	total	prices	set	compared
review	sector	team	repair	december	securities
june	restrictions	thailand	ship	offer	bursa

Table 6.22

Categories of Financial Characteristics for PN17 Firms for the Year 2020-2022

PN17 Firms	Financial Characteristics					
	Topic 0	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
	Loss and Regularization	Risk Management	Sector-Specific	Volatile Commodity	Non-Performing	Contract and Services
Capital A Berhad			X			
Airasia X Berhad	X					
Barakah Offshore						X
Bertam Alliance						X
Brahim Holding	X	X				
Comintel Corporation Berhad						X
Propel Global Berhad						X
Dolomite Corporation Berhad	X					X
E.A Technique Berhad	X			X		
FSBM Holding Berhad			X			X
Iqzan Holding Berhad				X		
Ireka Corporation berhad						X
Jerasia Capital berhad	X				X	X
Epicon Berhad (Formerly Known as Konsortium Transnational Berhad)					X	X
Nationwide Express berhad	X					
Scomi-Energy Berhad	X					X
Scomi Group	X					X
Seacera Group		X				X
TH Heavy Berhad	X			X		

Table 6.21 presents the top 30 frequent words for PN17 firms, while Table 6.22 presents the categories of financial characteristics for each of the PN17 firms. Based on the selected topics, the frequent words are matched with LM dictionary to define the similarity between top 30 words and LM dictionary. Besides, the reason for the matching with LM dictionary is to obtain the nature of the topic; whether positive characteristics or negative characteristics. Similar to likelihood of fraud vs. non-likelihood of fraud firms, in this sample, the PN17 firms are expected to exhibit more negative theme or negative sentiment. The red italic words represent negative words while the blue italic words represent the positive words as per LM dictionary wordlists. Based on the analyses, only several words match the LM dictionary that can be used as a base in renaming of each of the topics.

Based on the analysis, three (3) topics are related to negative financial characteristics which are topic 0, 1, and 5. Meanwhile, two (2) topics are related to positive financial characteristics which are topic 3 and 4. Only one (1) topic which is topic 2 is not related to LM financial characteristics. These financial characteristics give an idea to rename each of the topics identified in this study. In Topic 1, the frequent words mentioned include “restructuring”, “loss”, and “regularization. Topic 1 is named as loss and regularization which reflects the financial distress of the firm. Topic 2 is named as risk management activity that is related to risk-related activity. In this topic, frequent words

mentioned include “risk” and “market”. As for Topic 2, this topic is named as sector-specific business collapse. This topic has a unique name because of the industry-specific failure. For example, aviation sector. The frequent words mentioned include “airasia”, “aircraft”, “airline”, and ‘aviation.

Topic 3 is related to volatile commodity operations that describe the specific operation of the firm. The word such as “oil”, “gas”, and “supply” are frequently mentioned in the MD&As section. Topic 4 is non-performing activities that show the underperformance or losses occurred in the firm. The words “low”, “demand”, and “capital” are frequently mentioned in this topic. Lastly, Topic 5 is contract and services activity which highlighted the service-based activity. The frequent words mentioned in this topic include “service” and “operation”. Based on the tabulation of the financial characteristics for each of the firms as presented in Table 6.18(b), 9 firms are identified and categorized according to single financial characteristics; in other words, they are only dominant to one category only.

For example, Capital A Berhad firm falls under Topic 2 of Industry specific. This firm is the Malaysian travelling and lifestyle business of airlines with the core business of aviation. The auditor of the firm, Ernst & Young PLT, highlighted uncertainty materials related to going concern resulted from the current liabilities that exceeded current assets by RM5,902 million as the firm reported shareholder’s deficit of RM1,214 million. The firm also reported net losses of RM262 million due to the uncertainty over the Covid-19 pandemic and movement control order. The auditor also continuously highlighted key audit matters related to the going concern for the year 2021 and 2022. This issue flags the risks that occurred in the firm in which the operational sustainability of the firm is yet to be recovered.

Another example is Iqzan Holding Berhad where the firm falls under Topic 3 of volatile commodity operations. This topic is concerned on the trading or handling commodities as the firm experiences price fluctuations, in which the price of the products can change rapidly or unpredictably. This firm is a diversified investment holding group involved in green packaging, environmentally friendly engineering processes, recycled industrial material processing, and smart manufacturing. The firm highlighted that the demand for packaging and boxes decreases as the demand for go-green increases. This resulted in higher cost of purchasing the material for manufacturing as well as the global economic crisis due to Covid-19 pandemic. Besides, during the financial year 2021, the firm auditor issued disclaimer opinion

resulted from its overseas subsidiary firm, Maxilion Link Enterprises Limited (MLEL) and other immediate subsidiaries that were unable to engage in any meaningful communication with MLEL management. In the absence of the information, the director submitted unaudited financial report to Bursa Malaysia which explained that no revenue was disclosed for January to March 2021 for MLEL Group. This issue introduced the cross-border risk which might hide the potential liabilities and undervalued of the assets.

On the other hand, 10 firms are identified and categorized according to more than one category of financial characteristics. As for these firms, they are later discussed according to their dominant financial characteristics. For example, Scomi Energy Services Berhad (SCOMI) falls under Topic 0 and 5, but this firm dominantly falls under Topic 0, of loss and regularization. This firm is related to this topic since the firm was classified under PN17 criteria on 20 January 2020 resulted from material uncertainty related to going concern problem. In addition, the auditor of firm, KPMG PLT issued a continuous disclaimer audit opinion for the financial year 2020 to 2022, highlighting the red flags or signals of the material uncertainty that might impair the investors' confidence. These events resulted from the firm group that defaulted in redeeming or repaying the guaranteed serial bond issued amounting to RM55 million in December 2019.

The situation became worse when one of the subsidiary firms, KMCOB Capital Berhad defaulted on the repayment of the guaranteed serial bonds amounted to RM80.4 million on 12 March 2020. These serial events resulted in the total borrowings of the firm group amounted approximately RM116.9 million in 2022. Apart from that, the firm was also involved in multiple attempts of restructuring plan, including selling their assets in paying their debts. For example, on 26 August 2021, the firm disposed their subsidiary firm, PT Rig Tenders Indonesia, representing 80.54% of the equity interest amounted RM40.1 million. The firm also disposed their indirect subsidiary firm, Scomi Oiltools (Cayman) Ltd of its 99.99% equity interest amounted to RM2.7 million on 29 June 2021. The recent regularization plan is the firm disposes their key assets of offshore drilling, consisting of Scomi Oilfield Ltd together with nine of its subsidiaries and 48% of equity interest in Scomi KMC SB to Cahya Mata Oiltools SB amounted to RM 21 million cash (Malay Mail, 2022).

Another example is Seacera Group Berhad where the firm falls under Topic 1 and Topic 5 but dominantly categorized in Topic 1 of risk management activity. This

firm falls under PN17 on 18 April 2019, resulted from a default of loans or credit facilities of the firm's group and its subsidiaries in which the firm was unable to provide solvency declaration to Bursa Malaysia. For the financial year 2020, the firm was involved with a number of on-going material litigations against various financial institutions in relation the default payment of the credit facilities. These on-going material litigations issue are continuously under court procedures until the financial year end 2022. In order to settle the firm creditors and bank borrowings, in November 2021, the firm engaged into two Sale and Purchase (S&P) agreements to dispose all the lands in Mukim Asam Kumbang, Perak, amounted to RM9 million.

Table 6.23
Top Frequent Words for Non-PN17 Firm from 2020-2022

TOPIC 0	TOPIC 1	TOPIC 2	TOPIC 3	TOPIC 4	TOPIC 5
Investment Activity	Income and Profit Activity	Operational Performance	Earning Review and Financial Adjustments	Business opportunities	Future Activity
million	million	oil	financial	group	malaysia
group	revenue	work	year	business	year
financial	group	project	million	icon	pandemic
year	services	petra	revenue	<i>risk</i>	covid
development	financial	gas	tax	demand	business
construction	year	activities	previous	operations	market
project	uzma	sustainability	june	production	global
current	fye	management	review	market	products
decrease	cost	carimin	<i>loss</i>	performance	increase
property	contributed	petronas	berjaya	employees	review
phase	<i>contract</i>	division	business	rates	services
expenses	operating	energy	hotel	various	customers
quarter	business	<i>contracts</i>	resort	drilling	continue
investment	segment	group	compared	covid	due
expected	cash	services	food	face	higher
mainly	lower	maintenance	registered	industry	growth
share	capital	segment	total	competitive	supply
compared	line	support	division	segment	<i>risks</i>
increase	service	<i>contract</i>	sales	customers	strategies
land	management	vessels	ended	businesses	rate
total	profit	projects	gross	<i>improved</i>	provide
trade	industry	offshore	hotels	term	economic
company	growth	production	recorded	health	hwa
bank	compared	mcm	due	technology	xin
shares	end	ensure	bhd	reduce	logistics
works	solutions	major	sdn	strategic	cost
completed	include	marine	occupancy	training	operations
performance	time	continue	toto	value	economy
continue	term	vessel	profit	continues	government
capital	local	performance	units	<i>opportunities</i>	costs

Table 6.24

Categories of Financial Characteristics of Non-PN17 Firms for the Year 2020-2022

Non-PN17 Firms	Financial Characteristics					
	Topic 0	Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
	Investment Activity	Income and Profit Activity	Operational Performance	Earning Review and Financial Adjustments	Business opportunities	Future Activity
Berjaya Land Berhad				X		
Berjaya Food Berhad	X			X		
Carimin Berhad			X			
Farlim Berhad	X					
Rex Industry	X					X
Dolphin Berhad				X		
Petra Berhad			X			
Pansar Berhad	X					
Hubline Berhad						X
MMS Venture Berhad					X	
TSR Capital berhad	X	X				
Marco Berhad	X					X
Pan Malaysia Berhad				X		
Xin Hwa Berhad	X					X
Icon Offshore			X		X	
Handal Energy	X	X				
Hume Cement					X	
Uzma Berhad	X	X				
Komakorp Berhad					X	

Table 6.23 presents the top frequent words of non-PN17 firms for the year 2020 to 2022, while Table 6.24 presents the categories of financial characteristics for each of non-PN17 firms for the year 2020-2022. Similar to PN17 firm, this analysis also adopted LM dictionary to obtain the nature of the topic; whether it is positive characteristic or negative characteristic. The non-PN17 firms are expected to be emphasized on the positive or neutral characteristics that reflect the stable operation of the firms. Nevertheless, based on analysis, four (4) topics are related to financial negative which are topic 1, 2, 3 and 5, while one (1) topic is related to financial positive which is topic 4, and also one (1) topic is not related to LM dictionary.

The first topic, Topic 0, is named as investment activity which discusses on the investment of the firms. In this topic, the words “development”, “projects”, and “investment” are frequently mentioned in the MD&As. Topic 1 is income and profit activity that mainly focuses on the profitability of the firms. The words “revenue”, “profit”, and “services” are frequently mentioned in this topic. Meanwhile, Topic 2 is named as operational performance that is related to the operational outcomes of the firm. In this topic, the words “gas”, “offshore”, and “contract” are frequently used. As for Topic 3, the words “tax”, “loss”, and “review” are frequently mentioned in the MD&As. However, this topic is unique since it does not exactly mention “loss and regularization”. Therefore, this topic is named as earning review and financial

adjustments. Topic 4 is business opportunities that focus on the growth of the firm. The words “opportunities” “improved” and “strategies” are frequently mentioned in the topic. Lastly, Topic 5 is future activity where it involves strategic planning of the firm.

On the other hand, based on the tabulation of financial characteristics of each of the firms as stated in Table 6.18(b), 11 firms dominantly fall under one category of financial characteristics. For example, Farlim Group (M) Berhad falls under Topic 0 of investment activity. This topic is related to the capital investment of the firm. This is evidenced when the firm consecutively subscribed redeemable preference shares in its subsidiary from the year 2020 to 2022 which amounted to RM493,640, RM400,000, and RM350,000 respectively. In addition, the firm also made investment in cash management fund from investment management firms with a total portfolio of RM47.028 million in 2022. This reflects the stable operation of the firm and the ability to sustain in the market.

6.5.2.2 Sentiment Analysis using LM Dictionary

This analysis is done by repeating all the processes as stated in Figure 4.10 in chapter 4. The sample used for this analysis is changed to PN17 and non-PN17 firms. The result of the analyses is discussed as follows:

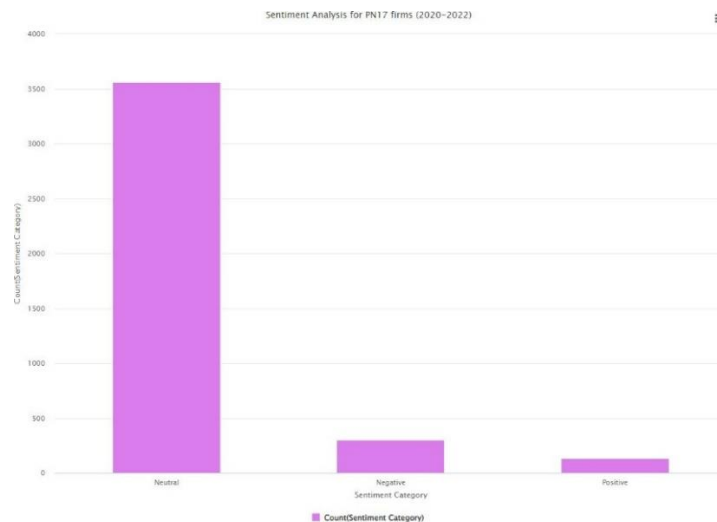


Figure 6.17: Sentiment Analysis Result for PN17 Firms

Table 6.17 above shows the sentiment analysis results for PN17 firms from the year 2020 to 2022. The result revealed that 303 (7.6%) words fall under negative sentiment, 132 (3.3%) words fall under positive sentiment, and 3,560 (89.1%) words fall under neutral sentiment. This finding reveals that the MD&As of PN17 firms

consist of both positive and negative sentiments but the negative sentiment is 2.3 times more than positive sentiment. This indicates that the financially distressed firms have higher likelihood to commit fraud when they have more negative tones than positive tones. The finding is similar to Goel and Uzuner (2016) who found that fraudulent MD&As contain 4 times negative tones as compared to truthful MD&As. Li et al. (2023) also documented that the less positive intonation of language gives the signal of financial fraud. Based on the previous literatures, this finding implies that when the financially distressed firms disclose more negative tones, they are more likely to be involved in fraudulent financial reporting.

In addition, based on the analysis, the frequent negative sentiment words that appeared in MD&As include words like “loss”, “contract”, “risk”, “risks”, “restructuring”, and “impairment”. The word “restructuring” indicates that the PN17 firms are in financially distressed situation in which they have been given time to restructure their firms. This gives a signal that the firms are having problems that might lead to fraudulent activities.

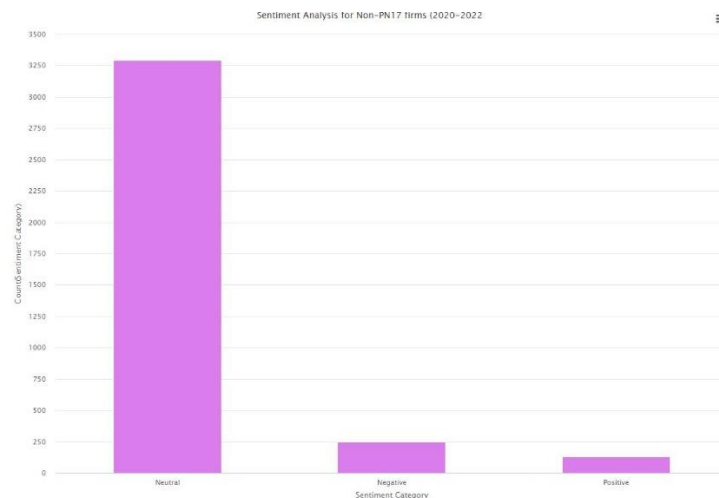


Figure 6.18: Sentiment Analysis Result for Non-PN17 Firms

Table 6.18 above shows the sentiment analysis result for non-PN17 firms from 2020 to 2022. The result reveals that the neutral sentiment dominates the chart by 3,292 words (89.7%), followed by negative sentiment of 246 words (6.8%), and positive sentiment of 130 words (3.5%). The result further explained that non-PN17 firms have 1.9 times of negative sentiment as compared to positive sentiment. The finding also reveals that PN17 firms have 2.3 times of negative sentiment as compared to non-PN17 which is only 1.9 times.

Based on the analysis, the frequent words of negative sentiment are also similar to non-PN17 firms which include “loss”, “risk”, “contract”, and challenges. Nevertheless, the word “restructuring” appeared only 15 times in non-likelihood of fraud firms, but 89 times in likelihood of fraud firms. This indicates that PN17 firms focus on restructuring their firms as ordered by Bursa Malaysia. The word also described that in non-PN17 firms, they are less likely to restructure their business as compared to PN17 firms.

6.5.2.3 Sentiment Analysis using SentiWordNet

This analysis involves repeating the process as stated in Figure 4.12 (chapter 4). The previous process involves the sample of fraud and non-fraud firm, while in this process, the samples are changed to PN17 and non-PN17 firms. This analysis consists of 100 observations (19 firms) from the year 2020 to 2022. Based on the analyses, for PN17 firms, 93 (93%) of MD&As are classified as positive MD&As, and 7 (7%) are classified as neutral MD&As. For this sample observation, no negative sentiment is addressed. Meanwhile, for non-PN17 firms, 92 (92%) of MD&As are classified as positive MD&As, 1 (1%) is classified as negative MD&As, and 7 (7%) are classified as neutral MD&As. The neutral MD&As refers to the firms that do not have MD&A i.e. unavailability of MD&A.

Based on the analyses, both PN17 and non-PN17 consist of more than 90% of the positive sentiment and only 1% negative sentiment is addressed in non-PN17 firms. The finding shows that the MD&As reports are written in positive tone to express their overall performance for the year even they are PN17 firms or non-PN17 firms. Similar to fraud and likelihood of fraud firms sample, the sentiment scores are shown in different weight. For PN17 firms, the minimum sentiment score is 0.006 while the maximum score is 0.155. For non-PN17 firms, the minimum score is -0.001 while the maximum score is 0.102. The finding shows that the weight of MD&As positive sentiment scores is higher than non-PN17 firms. This can raise the question whether the report of PN17 is intentionally written in more positive tone to hide the bad report or to influence the stakeholders since they are currently in financial difficulties and have higher likelihood of committing fraud. The result on the sentiment for each of the MD&As text is used as the dependent variable for this study and the analysis of sentiment trend is presented in the following section.

6.5.2.4 MD&As Polarity Sentiment Trend for PN17 vs. Non-PN17

(i) Sentiment Analysis Trend for PN17 Firms

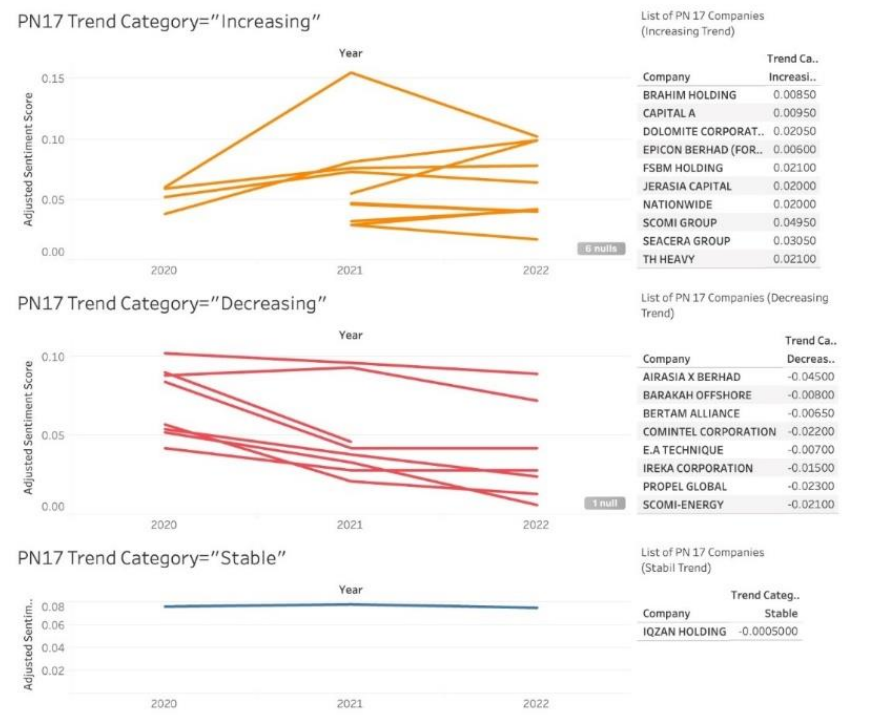


Figure 6.19: Sentiment Trend Analysis for PN17 Firms

Figure 6.19 above shows the sentiment trend of PN17 for the year 2020-2022. Based on the analysis, 10 firms fall under increasing trend, 8 firms fall under decreasing trend, and only one firm falls under stable or consistent trend.

For the increasing trend, for example FSBM Holding Berhad, the sentiment scores increased from 0.06 in 2020 to 0.102 in 2022. An investigation in the MD&As section of the annual report from 2020 to 2022 shows that the positive sentiment could be due to the firm continuously reporting an increase of profit for the firm from the loss before tax of RM128 thousand in 2020 to RM4.45 million in 2022. The revenue also presented 3000% increase year-on year. The higher revenue due to the commencement of new project in 2021 and written back payables resulted in the increase of other income of RM2.3 million. Nevertheless, the firm reported an overall loss of RM9.2 million due to impairment of financial assets and written off doubtful debts. Besides that, the increase trend could be due to the approval of Proposed Regularisation Plan by Bursa Malaysia that can increase the investors' confidence about the future plan that has been considered by the firm to leave the PN17 status and going concern problem.

FSBM slipped into PN17 status in 2019 due to its external auditor expresses a disclaimer opinion for the audited financial statement ended 2018 due to its inability to obtain enough appropriate evidence to provide a basis for an audit opinion (The Edge Market, 2024a).

Another example of the firm is Epicon Berhad (Formerly known as Konsortium Transnational), where the sentiment increased from 0.052 in 2020 to 0.064 in 2022. Epicon slipped into PN17 status in 2020 due to the current liabilities that exceeded the current assets. This firm frequently mentioned that Covid-19 pandemic led to the slow transport business operation. Nevertheless, in 2021, the scores increased to 0.073 even when the group revenue decreased to 10.83%. The increase score might be due to the contribution of the new construction division that was introduced in fourth quarter of 2021 and the income from Land Public Transport Agency (APAD) for MyBus program which is classified as fleet operation. However, the sentiment score decreased to 0.064 in 2022 even when the firm reported the revenue increased by 254.43%.

For the decreasing trend, an example is Bertam Alliance Berhad, in which the sentiment scores slightly decreased from 0.102 in 2020 to 0.089 in 2022. This firm slipped into PN17 status in 2018 when the Bursa Malaysia announced a winding-up order to Bertam Development Sdn Bhd, a wholly owned subsidiary. The score decreased to 0.096 in 2021 when the firm recorded loss before tax of RM4.1 million for the year as the revenue declined due to the decrease of revenue from the construction contract. In addition, the decrease in sentiment score might be due to the impairment of property development expenditure in 2021. However, the score continued to decrease in 2022 to 0.089 even when the firm reported the profit after tax of RM15.3 million for the year. The decrease of the sentiment score is due to the external auditor, PKF LPT, which addresses material uncertainty related to going concern as the firm incurred negative operating cash flow of RM1.46 million where the current liabilities exceeded its current assets by RM17.1 million. This matter casts significant doubt on the firm's ability to continue as concerned.

Another example for decreasing trend is Comintel Corporation Berhad (Comcorp). The sentiment scores significantly decreased from 0.057 in 2020 to 0.013 in 2022. The firm slipped into PN17 status in 2019 when the shareholder's equity dipped less than 50% of the issued capital. Based on the analyses of the audit report, the firm received Qualified Opinion report for the year 2020 to 2021 as the external auditor, RSM Malaysia, addresses the ability of the firm to operate as going concern.

The sentiment scores decreased to 0.021 in 2021 due to the proposed regularisation plan aborted resulted from share sale agreement, subscription agreement, and agreement to award have not been fulfilled on or before the cut-off date. In addition, the firm reported the current liabilities exceeded its current assets by RM1.86 million which resulted the firm to have the problem to operate as going concern.

Lastly, as for consistent or stable trend, only one firm falls under this category which is Iqzan Holding Berhad. The sentiment scores for this firm show a stable trend of 0.076 in 2020, 0.078 in 2021, and 0.075 in 2022. The firm slipped into PN17 on 6 November 2019 when the auditor expressed a disclaimer of opinion on its audited financial statement 2019. In 2020, the auditor highlighted that the firm's current liabilities exceeded its current assets by RM22.09 million, resulted into significant doubt on the firm's ability to continue as going concern. In the year 2021, the auditor once again expressed a disclaimer opinion to the firm, highlighted that the firm has not consolidated their financial results of its intermediate subsidiaries. This is event because the directors were unable to engage any meaningful communication with its subsidiaries management, resulted in the absence of information to the Group. Apart from that, the consistent trend is also due to the firm that continuously reported losses since the year 2020. The loss before tax were reduced to RM832 million in 2021 from RM3.3 billion in 2020. Nevertheless, the loss before tax significantly increased to RM3.4 billion in 2020. This resulted from the decreasing demand of their product, packaging and boxes as demand for go-green increases. It also resulted in higher cost of purchasing the material for manufacturing as well as the global economic crisis due to Covid-19 pandemic.

In conclusion, the sentiment trends among PN17 firms are predominantly volatile and declining, as seen in cases like Comintel and Bertam Alliance. This pattern reflects the ongoing uncertainty, operational instability, and often unsuccessful nature of their turnaround efforts. The consistently negative or deteriorating tone in their MD&A provides a textual corroboration of their documented financial distress and the significant challenges they face in restoring market confidence.

(ii) Sentiment Analysis Trend for Non-PN17 Firms

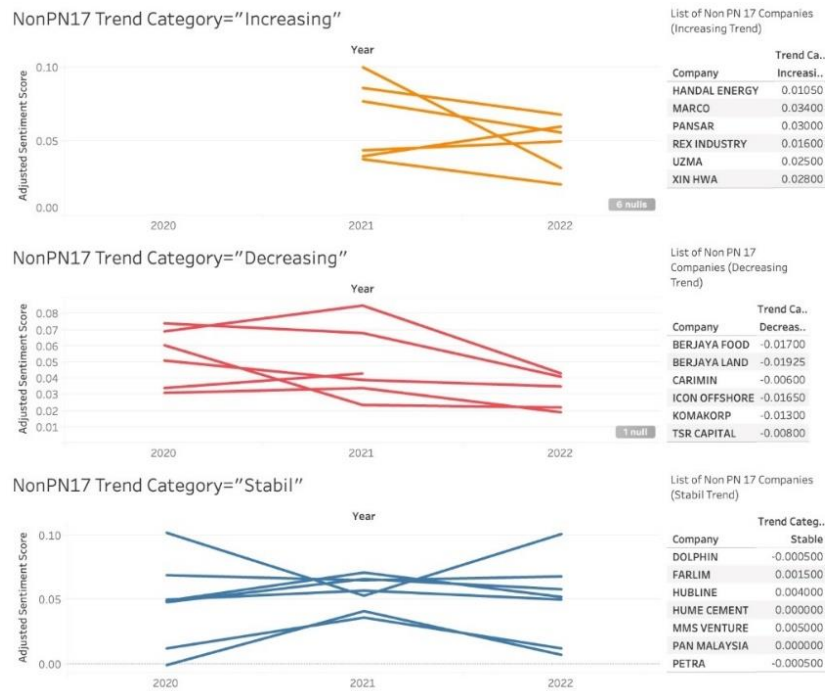


Figure 6.20: Sentiment Trend Analysis for Non-PN17 Firms

Figure 6.20 above presents the result of sentiment trend for non-PN17 firms from the year 2020 to 2022. Similar to PN17 firms, the non-PN17 firms are also categorized into three categories which are increasing, decreasing, and consistent/stable trend. Based on the analysis, 6 firms fall under increasing trend, 6 firms fall under decreasing trend, and 7 firms fall under consistent trend.

Firstly, an example for the firm that falls under increasing trend is Pansar Berhad. The sentiment scores increased from 0.04 to 0.06 from the year 2021 to 2022. This increasing trend is reflected when the firm successfully made two acquisitions in a bid to strengthen the firm's long term operation in 2021. Firstly, the firm successfully acquired a 51% equity interest of enlarged share capital in TASB, involving the contract works related to water and wastewater treatment as well as project management. Second, the firm entered into conditional share purchase agreement to acquire 100% equity interest from PE Holdings Sdn Bhd amounted to RM151.0 million to expand existing business into construction and civil engineering. As per year 2022, the firm recorded 97.9% increase in their revenue amounted to RM601.6 million resulted from the acquisition in the previous year.

Secondly, for decreasing trend, an example for the firm that falls under this category is Komarkorp Berhad. The sentiment scores consecutively decreased from 0.069 in 2020 to 0.043 in 2022. However, the sentiment slightly increased to 0.085 in the year 2021. The firm faced continuous losses from 2020 to 2022 which reflected the underperformance of the operation. During the year 2021, the revenue decreased by 4.8% as compared to the year 2020, mainly due to the loss of customers, shrinkage of business regionally and Covid-19 pandemic. The situation is worsened as the firm's revenue relatively depend on the few customers. The five (5) and twenty-five (25) largest customers represented 21.22% and 47.18% of revenue respectively. This dependence of the customer might give the risk of loss of any significant customer and could have material adverse effect to the business operation. Nevertheless, the score slightly increased in 2021 due to the equity raises during the year to support the operation due to the underperformance of the firm. These includes bonus issue of free warrants and private placement.

Lastly, as for consistent trend, this trend shows the financial stability of the firms during the year sample. For example, MMS Venture Berhad, the sentiment score was 0.048 in the year 2020, 0.066 in the year 2021, and 0.058 in the year 2022. The sentiment scores of the firm showed consistent trend for the three years of observations. This reflects that the firms consistently posted profitability and firms growth. The gross profit (GP) margin improved significantly to 30% and 34% for the year 2021 and 2022 respectively as compared to 2020 of 14%. Besides that, the consistent trend could also imply when the firm regularly conducted share buybacks from the year 2020. During the year 2020, the firm bought back 989,500 shares from open market that ranged from RM0.385 to RM0.775. In 2021, the firm bought back 500,000 shares from open market that ranged from RM0.820 to RM1.000. Lastly in 2022, the firm bought back 742,700 shares from open market that ranged from RM0.620 to RM0.710. The shares repurchases during the unstable economic condition like on-going war between Russia and Ukraine are the result of inflation and the prolonged Covid-19, which shows the management confidence in assessing and overcome the possible risks occurred.

Collectively, the sentiment trends for non-PN17 firms stand in stark contrast to their PN17 counterparts. The prevalence of stable or improving trends, exemplified by firms like MMS Venture and Pansar Berhad, reinforces a narrative of operational consistency, successful strategic execution, and managed risk. This sustained positive

or stable tone in their disclosures aligns with their healthier financial status and projects a greater sense of control and predictability to stakeholders.

6.5.3 Comparative Synthesis: Narrative of Distress vs. Narrative of Deception

The analysis of PN17 and non-PN17 firms reveals a second, distinct narrative archetype: that of ‘Explanatory Distress.’ When contrasted with the ‘Deceptive Obfuscation’ pattern identified in Section 6.3.1.5, a crucial dichotomy emerges for distinguishing between financial failure and intentional fraud.

Thematic analysis shows these reports are dominated by topics that explicitly acknowledge their predicament, such as “Loss and Regularization” and “Sector-Specific Business Collapse”, as seen in firms like AirAsia. This thematic focus, coupled with the highest levels of measurable negative sentiment and the frequent use of words like “restructuring,” creates a narrative of consequence and reaction. While the tone is pessimistic and the situation is complex, the narrative often maintains a degree of transparency, detailing the causes of distress and the specific steps being taken to address it, such as asset sales and formal regularization plans. The complexity here arises from the gravity of the situation itself, rather than from a clear intent to deceive.

In contrast, the narrative of Deceptive Obfuscation, identified in the main fraud firm sample, is characterized by evasion and misdirection. As established in Section 6.3, these firms employ thematic proliferation, a significantly larger number of distinct topics to create a complex and distracting narrative structure. They engage in a strategic counterbalancing act, where negative themes are overshadowed by overly prominent discussions of “Business opportunities” and “Future activity.” This is accompanied by a dissonant sentiment profile, featuring a less authentic, forced positivity alongside negativity that is acutely concentrated in disclosures about core operations and contracts. The overall picture is one of strategic ambiguity, where the primary goal is not to explain poor performance but to actively conceal it behind a veil of irrelevant information and unfounded optimism.

The crucial implication for regulators and auditors lies in discerning narrative intent. A report focused on “Loss and Regularization,” while indicating high financial risk, is not inherently deceptive. Conversely, a report characterized by thematic complexity, sentiment dissonance, and a glaring imbalance between optimistic future projections and downplayed current operational failures presents the true “deception

fingerprint.” This specific pattern should be prioritized for scrutiny, as it signals an active effort to mislead stakeholders, distinguishing intentional fraud from the transparent reporting of financial misfortune.

6.5.4 Analysis and Discussion for PN17 vs. Non-PN17 Firms

6.5.4.1 Correlation Analysis

Table 6.25 provides the correlation analysis for PN17 vs. non-PN17 firms. Both Pearson and Spearman correlation analyses are conducted in this study. The Spearman correlation analysis is presented in bold and italic in Table 6.25. Firstly, this section discusses on the dependent variable PS. As for the independent variable, the variable BOD_GEN exhibits significant negative correlation to PS in both Pearson and Spearman correlation analyses at 5% level (-0.239) and 10% level (-0.190) respectively. This indicates that the higher percentage of women on board is associated with higher PS, thus resulted in lower likelihood of fraud. This finding is similar to Haron et al. (2021) who also found negative correlation between board gender and corporate fraud. The variables RMC and RMC_IND show significant positive correlation to the PS in both Pearson and Spearman correlation analyses. RMC exhibits significant positive correlation at 10% level (0.179) and 5% level (0.224) respectively. Meanwhile, RMC_IND evidenced significant positive correlation at 5% level (0.203) and 10% level (0.187) respectively. These indicates that the higher percentage of RMC and RMC_IND is associated with lower PS, resulted in higher likelihood of fraud. According to Malik et al. (2023), the establishment of stand-alone RMC is not being considered the best strategy for mitigating risks because the large firms like Lehman Brothers do have stand-alone RMC, but they still collapsed. The other variables of BOD_IND, BOD_TEN, BOD_REM, BOD_MEET, and AUD_IND exhibit insignificant correlation, which indicates that these variables do not affect the PS, thus it does not influence the likelihood of fraud.

Next, the moderating variable FAMOWN_INDIRECT shows significant negative correlation in Pearson correlation analysis at 10% level (-0.174). This reveals that the higher percentage of FAMOWN_INDIRECT is associated with lower PS, thus the likelihood of fraud is lower. According to Kusuma and Fitriani (2020), the domination of family ownerships can help the firms in the financial reporting quality as well as the fraudulent financial reporting could be prevented. Lastly, for the control

variables, the variable LEVERAGE is positively correlated to the PS in Pearson correlation analysis at 10% level (0.169). This indicates that the higher leverage is associated with lower PS, so the likelihood of fraud also increases. The BOD_SIZE is negatively significant in both Pearson and Spearman correlation analyses at 5% level (-0.216, -0.224) respectively. The larger size of the board is associated with higher PS; thus the likelihood of fraud will be lower. The FIRM_SIZE is negatively and significantly correlated with PS in Spearman correlation at 5% level (-0.232). Meanwhile, the variable AGE shows significant negative correlation to PS in both Pearson and Spearman correlation analyses at 5% level (-0.202, -0.232). These indicates that larger FIRM_SIZE and older firms are associated with lower PS, thus resulted in lower likelihood of fraud.

Secondly, this section proceeds to the correlation analysis results for the dependent variable FFR. The variable BOD_IND shows significant positive correlation with the FFR at 1% (0.263) and 5% (0.252) in both Pearson and Spearman correlation analyses respectively. The higher percentage of BOD_IND is associated with higher likelihood of fraud. This might be due to the appointment of BOD_IND which relatively follows MCCG guidelines rather than truly independent, thus BOD_IND might lack of knowledge about the firms (Hasnan et al., 2021). Meanwhile, BOD_TEN is negatively significant to the FFR in both Pearson and Spearman correlation analyses at 5% level (-0.209, -0.199) respectively. This reveals that longer tenure directors are able to reduce the likelihood of fraud since they have more opportunities to gain knowledge and experience that can contribute in deterring the significant issues arising in the firms (Sadique et al., 2019). BOD_REM is also negatively and significantly correlated to FFR in Spearman correlation analysis, indicating that higher BOD_REM lowers the likelihood of fraud. According to Girau et al. (2022), the incidence of fraud decreases when the remuneration to the directors increases. The variable BOD_MEET exhibits significant positive correlation to FFR in both Pearson and Spearman correlation analyses at 1% level (0.445, 0.412) respectively. The frequent meeting shows the signal that the firms are under irregular or emergency issues (Zhou et al., 2018).

On the other hand, the moderating variable FAMOWN_DIRECT is negative and significantly correlated to FFR in Spearman correlation analysis at 1% level (-0.276). Meanwhile, the variable FAMOWN_INDIRECT exhibits negative and significantly correlated to FFR in both Pearson and Spearman correlation analysis at

1% level (-0.371, -0.368) respectively. The presence of larger ownership of FAMOWN_DIRECT and FAMOWN_INDIRECT in the firms lowers the likelihood of fraud. Lastly, all the control variables, except for variable AGE, are statistically significant in Spearman correlation analysis. The LIQUIDITY (1% level, -0.569), BOD_SIZE (1% level (-0.313), and FIRM_SIZE (1% level, -0.218) are negatively correlated to FFR, indicating that higher levels of these variables lowers the likelihood of fraud. Meanwhile, the variable LEVERAGE is positive and significantly correlated at 1% level (0.575) to FFR. This reveals that higher LEVERAGE of the firms shows a signal of higher likelihood of fraud.

Table 6.25
Correlation analysis for PN17 vs non-PN17 firms

VARIABLES	PS	FFR	BOD_ IND	BOD_ TEN	BOD_ GEN	BOD_ REM	BOD_ MEET	AUD_ IND	RMC	RMC_ IND	FAMOWN_ DIRECT	FAMOWN_ INDIRECT	LIQUIDITY	LEVERAGE	BOD_ SIZE	FIRM_ SIZE	AGE
PANEL A: DEPENDENT VARIABLES																	
PS	1.000	0.119	0.044	-0.119	-0.190 *	-0.117	0.057	-0.056	0.224 **	0.187 *	-0.137	-0.157	-0.052	-0.075	-0.224 **	-0.232 **	-0.232 **
FFR	0.154	1.000	0.252 **	-0.199 **	-0.010	-0.328 ***	0.412 ***	-0.149	-0.071	0.125	-0.276 ***	-0.368 ***	-0.569 ***	0.575 ***	-0.313 ***	-0.218 ***	-0.114
PANEL B: INDEPENDENT VARIABLES																	
BOD_IND	0.025	0.263 ***	1.000	-0.144	0.094	-0.208 **	0.185 *	0.220 **	0.255 **	0.325 ***	-0.209 **	-0.238 **	-0.247 **	0.272 ***	-0.499 ***	-0.071	-0.308 ***
BOD_TEN	-0.117	-0.209 **	-0.139	1.000	-0.050	0.002	-0.275 ***	0.134	-0.273 ***	-0.324 ***	0.130	0.136	0.322 ***	-0.086	0.140	-0.031	0.150
BOD_GEN	-0.239 **	-0.080	0.016	0.004	1.000	-0.148	0.004	-0.170 *	0.116	0.030	0.132	0.086	0.095	0.006	-0.179 *	0.003	-0.131
BOD_REM	0.016	0.092	-0.044	-0.121	0.025	1.000	0.110	0.151	-0.155	-0.038	0.203 **	0.354 ***	0.075	0.043	0.570 ***	0.674 ***	-0.100
BOD_MEET	0.035	0.445 ***	0.165	-0.301 ***	-0.055	0.044	1.000	0.010	0.295 ***	0.388 ***	-0.191 *	-0.268 ***	-0.321 ***	0.470 ***	0.134	0.258 ***	-0.325 ***
AUD_IND	-0.001	-0.145	0.170 *	0.113	-0.134	-0.129	-0.045	1.000	-0.083	0.276 ***	0.104	0.060	0.089	0.036	0.070	0.041	0.103
RMC	0.179 *	-0.071	0.234 **	-0.229 **	0.083	0.043	0.308 ***	-0.026	1.000	0.667 ***	-0.127	-0.202 **	-0.009	-0.051	-0.237 **	0.051	-0.291 ***
RMC_IND	0.203 **	0.151	0.282 ***	-0.364 ***	0.023	0.022	0.405 ***	0.203 **	0.734 ***	1.000	-0.088	-0.042	-0.253 **	0.198 **	-0.070	0.155	-0.225 **
PANEL C: MODERATING VARIABLES																	
FAMOWN_DIRECT	-0.013	0.015	0.062	0.017	0.164	-0.046	-0.021	0.089	0.006	-0.085	1.000	0.665 ***	0.203 **	-0.218 **	0.233 **	0.022	0.030
FAMOWN_INDIRECT	-0.174 *	-0.371 ***	-0.133	0.050	0.166 *	-0.022	-0.216 **	0.149	0.025	0.127	0.000	1.000	0.087	-0.162	0.246 **	0.255 **	0.116
PANEL D: CONTROL VARIABLES																	
LIQUIDITY	0.082	-0.282	-0.240 **	0.328 ***	0.091	-0.068	-0.196 *	-0.144	0.002	-0.177 *	0.236	-0.051	1.000	-0.608 ***	0.176 *	-0.185 *	0.135
LEVERAGE	0.169 *	0.113	0.040	-0.030	-0.146	-0.010	0.261 ***	0.076	0.056	0.114	-0.032	-0.050	-0.068	1.000	-0.074	0.254 **	-0.116
BOD_SIZE	-0.216 **	-0.254	-0.459 ***	0.056	-0.155	0.020	0.093	0.060	-0.257 ***	-0.069	-0.071	0.115	0.062	-0.087	1.000	0.503 ***	-0.058
FIRM_SIZE	-0.064	0.030	-0.160	-0.053	0.100	0.265 ***	0.002	-0.083	0.129	0.138	-0.059	0.266 ***	-0.113	-0.002	0.080	1.000	-0.106
AGE	-0.202 **	-0.104	-0.244 **	0.250 **	-0.121	-0.075	-0.224 **	0.078	-0.273 ***	-0.303 ***	0.069	0.152	0.148	-0.088	0.010	-0.116	1.000

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

6.5.4.2 Univariate Analysis

Table 6.26

Univariate Analyses for PN17 vs. Non-PN17 Firms for Dependent Variable PS

Variables	>0.054 (n = 45)		<0.054 (n = 55)		PS	
	Mean	Median	Mean	Median	F-test	Chi-Square
Panel A: Independent Variables						
BOD_IND	0.539	0.500	0.537	0.500	0.439	0.625
BOD_TEN	0.278	0.200	0.294	0.250	0.824	0.436
BOD_GEN	0.112	0.141	0.158	0.143	0.240	0.418
BOD_REM(Million)	7.03	1.66	2.26	1.86	0.755	0.087 *
BOD_MEET	7.000	6.000	6.764	6.000	0.562	0.235
AUD_IND	0.850	1.000	0.867	1.000	0.701	1.000
RMC	0.864	1.000	0.691	1.000	0.055 *	1.000
RMC_IND	0.629	0.667	0.484	0.667	0.102	0.698
Panel B: Moderating Variables						
FAMOWN_DIRECT	0.017	0.000	0.024	0.000	0.861	0.144
FAMOWN_INDIRECT	0.078	0.000	0.120	0.000	0.837	0.209
Panel C: Control Variables						
LIQUIDITY	2.333	0.790	1.510	0.898	0.607	0.679
LEVERAGE	13.857	0.535	1.076	0.590	0.895	0.384
BOD_SIZE	5.932	6.000	6.618	6.000	0.120	0.405
FIRM_SIZE(Million)	1,159.12	141.94	1,465.89	309.67	0.930	0.025 **
AGE	25.727	24.000	30.909	30.000	0.559	0.128

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.26 provides the univariate analysis for the sample PN17 vs. non-PN17 firms in Malaysia for the dependent variable PS. This test suggests several variables that support in detecting the likelihood of fraud and strong variation between the groups. Similar to the sample of likelihood of fraud vs. non-likelihood of fraud firms, this analysis also uses the threshold based on the mean of the dependent variable in Table 6.20. In this sample, the negative PS observations also show insufficient data to form reliable cutoff. The result of PS PN17 firms exhibit 93 observations as positive PS and 7 observations are neutral PS. Meanwhile, for non-PN17 firms, 92 observations are positive PS, 1 observation is negative PS, and 7 observations are neutral PS. According to Li et al. (2023). the less positive intonation of the language expression leads to higher likelihood of fraud. Therefore, the mean threshold used is 0.054 in which the threshold of more than 0.054 is classified as having higher polarity and associated

with lower likelihood of fraud while the PS of less than 0.054 is classified as lower polarity and correspond to higher likelihood of fraud.

Based on the analysis, the independent variables BOD_REM and RMC are statistically significant. The BOD_REM shows significant median at 10% level (Chi = 0.087). The median remuneration paid to the directors with higher PS is RM1.66 million, while the median remuneration paid to lower PS is RM1.86 million. The result indicates that the higher likelihood of fraud firms paid higher remuneration as compared to lower likelihood of fraud firms. This finding is similar to the sample of likelihood of fraud vs. non-likelihood of fraud firms where the lower PS firms paid higher remuneration as compared to higher PS firms. According to Davidson (2022), the likelihood of fraud is higher when the directors are offered with higher equity incentives. The argument implied in this study is that when the directors are paid with higher remuneration, the likelihood of fraud increases. Meanwhile, the variable RMC shows a significant mean at 10% level (0.055).

The mean of RMC for higher PS firms is 86.4%, while 69.1% for lower PS firms. The finding indicates that the establishment of RMC in lower likelihood of fraud firms is higher as compared to higher likelihood of fraud firms. The finding further explains that higher establishment of RMC in the firm can provide oversight role for risk management strategies, policies and processes. Thus, RMC can prevent the likelihood of fraud as good risk management creates innovation, promotes risk-taking and strengthens attention to detail (Novatiani et al., 2022). The control variable FIRM_SIZE exhibits significant median at 5% level (Chi = 0.025). The median for the higher PS firms is RM141.94 million while the median for lower PS firms is RM309.67 million. The analysis reveals that the higher likelihood of fraud firms have larger size as compared to lower likelihood of fraud firms. Other variables are found to be insignificant in this analysis.

Table 6.27
Univariate Analyses of PN17 vs. Non-PN17 Firms for Dependent Variable FFR

	PN17 (n = 50)		NON-PN17 (n = 50)		FFR	
	Mean	Median	Mean	Median	T-test	Mann-Whitney
Panel A: Dependent Variables						
PS	0.058	0.053	0.050	0.050	0.126	0.237
Panel B: Independent Variables						
BOD_IND	0.582	0.570	0.491	0.500	0.008 ***	0.013 **
BOD_TEN	0.226	0.170	0.343	0.330	0.037 **	0.053 *
BOD_GEN	0.130	0.155	0.146	0.143	0.429	0.923
BOD_REM(Million)	6.06	0.96	2.68	2.38	0.360	0.001 ***
BOD_MEET	8.180	8.000	5.680	6.000	0.000 ***	0.000 ***
AUD_IND	0.835	1.000	0.887	1.000	0.151	0.193
RMC	0.740	1.000	0.800	1.000	0.481	0.608
RMC_IND	0.615	0.667	0.491	0.667	0.134	0.232
Panel C: Moderating Variables						
FAMOWN_DIRECT	0.022	0.000	0.020	0.000	0.882	0.056 *
FAMOWN_INDIRECT	0.017	0.000	0.183	0.000	0.000 ***	0.004 ***
Panel D: Control Variables						
LIQUIDITY	0.981	0.470	2.745	1.445	0.004 ***	0.000 ***
LEVERAGE	12.966	1.015	0.439	0.445	0.261	0.000 ***
BOD_SIZE	5.920	6.000	6.740	7.000	0.011 ***	0.002 ***
FIRM_SIZE(Million)	1,446.54	220.14	1,192.45	287.69	0.769	0.031 **
AGE	27.600	27.000	30.160	30.500	0.302	0.257

Notes: Where, PS is Polarity scores, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.27 exhibits univariate analysis for the dependent variable FFR in which “0” is categorised as PN17 firms and “1” is non-PN17 firms. Similar to the sample of likelihood of fraud vs. non-likelihood of fraud firms, this analysis also includes variable PS to differentiate their PS. Based on the analysis, variable PS shows insignificant t-test and Mann-Whitney. However, the PS for PN17 firms is higher than non-PN17 firms with 0.058 and 0.050 respectively. The result is similar to likelihood of fraud vs. non-likelihood of fraud firms where likelihood of fraud firms exhibit higher PS than non-likelihood of fraud firms. This finding suggests that the PN17 also applies positive language strategically to obscure fraud or financial irregularities since they are in PN17 status, thus it can easily expose them to increased stakeholder scrutiny.

For the independent variable, BOD_IND exhibits significant mean and median at 1% level and 5% level (T = 0.008, M = 0.013) respectively. The mean for PN17 is

58.2% higher than non-PN17 which is 49.1%. According to Devarajar et al. (2022), the appointment of board is raised a question whether they are really independent or merely to fulfil the requirement of MCCG. Additionally, the appointment of higher BOD_IND in PN17 firms could suggest that they want to show to the stakeholders, particularly investors and regulators, that they are good in managing their governance. The BOD_TEN also reveals significant mean and median at 5% level and 1% level ($T = 0.037$, $M = 0.053$) respectively. The mean for board of directors with longer tenure for PN17 firms is 22.6% while non-PN17 firms is 34.3%. This indicates that the percentage of board that has longer tenure is higher in non-PN17 firms as compared to PN17 firms. The longer the directors serve the board, they gain more knowledge and experience so that they are able to handle significant issues that arise in the firms (Sadique et al., 2019; Usman et al., 2022).

Meanwhile, BOD_REM exhibits significant median at 1% level ($M = 0.001$). The median remuneration paid to PN17 firms is RM0.96 million, while RM2.38 million was paid to non-PN17 firms. This indicates that the non-PN17 firms pay higher remuneration as compared PN17 firms. The result contradicts with Table 6.26 which shows that lower PS firms paid higher remuneration than higher PS firms. Girau et al. (2022) noted that the likelihood of fraud is lower when the remuneration of the directors increases. Therefore, the higher remuneration paid to the directors tends to reduce the likelihood of fraud because the directors will act in the best interest of shareholders through remuneration. On the other hand, BOD_MEET also reveals significant mean and median at 1% level ($T = 0.000$, $M = 0.000$) respectively. The mean for PN17 firms is 8 times, while non-PN17 firms is 6 times. This indicates that the higher likelihood of fraud firms conducts meeting more frequently as compared to non-likelihood of fraud firms. According to Zhou et al. (2018), the frequent meetings may be related to the board efforts in dealing with unusual or irregular issues that arise in the firms.

The control variable FAMOWN_INDIRECT exhibits significant mean and median at 1% level ($T = 0.000$, $M = 0.004$) respectively. The mean for PN17 is 1.7% and 18.3% for non-PN17 firms. The result reveals that non-likelihood fraud firms have larger FAMOWN_INDIRECT as compared to the likelihood of fraud firms. According to Wan Mohammad and Wasiuzzaman (2020), the level of ownership ranges from 5% to 25% which shows more dominant alignment affect. The higher family ownership is less likely to engage in fraudulent behaviour because it could potentially damage the family's reputation, wealth and long-term firm performance (Hasnan et al., 2014). The

variable LIQUIDITY is shown to have significant mean and median at 1% level ($T = 0.004$, $M = 0.000$) respectively. The mean for PN17 firms is 0.981 while the mean for non-PN17 firms is 2.745. This indicates that PN17 firms have lower LIQUIDITY as compared to non-PN17 firms. The higher LIQUIDITY reflects the ability of the firms in paying their short-term obligations. It is reflected that the PN17 firms have financial problems, thus resulted in lower LIQUIDITY. Mulyandini (2022) noted that lower liquidity encourages the managers to commit fraud in order to show the firms are in good condition. Lastly, the BOD_SIZE shows significant mean and median at 1% level ($T = 0.11$, $M = 0.002$). The mean for PN17 firms is 5.9 while non-PN17 firms is 6.7. The BOD_SIZE for non-PN17 firms is larger than PN17 firms.

6.5.5 Multivariate Analysis

This section discusses the regression analyses for the sample PN17 vs. non-PN17 firms. In this section, the regression analyses are repeated to the main sample of likelihood of fraud vs. non-likelihood of fraud firms. The aim is to achieve objective 3 and objective 4.

6.5.5.1 Relationship between Corporate Governance and Polarity Scores

Table 6.28
Regression Analysis for Corporate Governance and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.072 *** 3.902	0.138 *** 5.419
Panel A: Independent Variable		
BOD_IND	-0.004 -0.229	-0.036 * -1.943
BOD_TEN	-0.005 -0.474	-0.005 -0.487
BOD_GEN	-0.072 * -2.640	-0.087 *** -3.333
BOD_REM	0.000 0.033	0.000 0.324
BOD_MEET	-0.001 -0.867	-0.001 -0.504
AUD_IND	-0.010 -0.597	-0.001 -0.038
RMC	0.005 0.558	-0.007 -0.688
RMC_IND	0.012 1.100	0.019 * 1.748
Panel B: Control Variables		
LIQUIDITY		0.001 1.641
LEVERAGE		0.000 0.770
BOD_SIZE		-0.006 *** -3.118
FIRM_SIZE		-0.000 -0.871
AGE		-0.001 ** -2.534
R-squared	0.119	0.279
F-statistic	1.531	2.565 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.28 presents the regression analysis for corporate governance and the likelihood of fraud for PN17 vs. non-P17 firms. Model 1 presents the regression analysis without control variables, whereas Model 2 presents the regression analysis with control variables. Based on the analysis above, the F-statistic for Model 2 is statistically significant at 1% level (2.565). Similarly, the previous regression results in Table 6.10 and Table 6.11 also interpret that higher PS contributes to lower likelihood of fraud. As documented by Loughran and McDonald (2011), Goel and Uzuner (2016) and Li et al. (2023), the more positive intonation of language resulted in lower likelihood of fraud.

For the independent variables, BOD_IND, BOD_GEN, and RMC_IND are statistically significant in Model 2. BOD_IND exhibits significant negative relationship with the likelihood of fraud at 10% level (-0.036, $t = -1.943$). The result reveals that the higher percentage of independent director on the board is associated with lower PS, thus resulted in higher likelihood of fraud. This finding contradicts the fraud vs. non-fraud sample that is evidenced in Table 6.10 where the higher percentage of BOD_IND is associated with lower PS, thus higher likelihood of fraud. The finding for this analysis is supported by Jodjana et al. (2021) where they argued that some of the independent directors lack of independence, therefore they are unable to monitor the performance of the firms, which leads to the increase of agency cost and causes financial distress. Additionally, the independent directors do not have enough knowledge and experience on the specific areas of the industry they are involved in; thus, they cannot provide the best governance practices and decision to improve the performance of the firms. Due to this factor, the firms that face financially distress situation may be involved in fraudulent activity in order to show the best performance of the firms. The regression analysis result is inconsistent with the theoretical hypothesis of this study, therefore, H1_(a) is not accepted.

Meanwhile, BOD_GEN reveals significant negative relationship with the likelihood of fraud at 1% level (-0.087, $t = -3.333$). This indicates that the higher percentage of women on board is associated with lower PS, thus resulted in higher likelihood of fraud. The result of this variable contradicts the result of the sample of likelihood of fraud and non-likelihood of fraud firms in Table 6.10 where the higher percentage of women on board is associated with higher PS, thus lowers the likelihood of fraud. The result in this analysis is consistent with Kalbuana et al. (2022) where the higher percentage of women on board increases the financial distress. They argued that

even though women are risk averse and less likely to be involved in unethical behaviour like fraud, the ethical behaviour will affect the concept of high-risk high return. This is because the percentage of the women will reduce the possibility of risk that occurs in the firms, but with the little risk taken, the firm will get small return (Kalbuana et al., 2022). In this situation, the financial distress situation is influenced by the percentage of women involvement on board. This will result to higher likelihood of fraud because the firms need to maintain their performance over the year, therefore this can lead the directors to be involved in unethical behaviour to meet the shareholders' expectation. This result contradicts with the agency theory that the agent does not carry the responsibilities of their principals. Since it contradicts with the theoretical hypothesis, H1(c) is not accepted.

The RMC_IND exhibits a significant positive relationship with the likelihood of fraud at 10% level (0.019, $t = 1.748$). This indicates that the higher percentage of RMC_IND is associated with higher PS, thus the likelihood of fraud is lower. The higher number of independent directors in RMC would help the Committee in assessing and managing risks that occur in the firms. Consistent with Olayinka et al. (2019), the independent of RMC has positive relationship with discretionary accruals, which means the independent directors are carrying oversight function in risk governance, risk implementation, and risk disclosure. Additionally, the presence of higher number of independent RMC would help the firms in controlling the financial distress of the firms and at the same time help to reduce the likelihood of fraud. Therefore, consistent with the theoretical hypothesis, H3(b) is accepted.

On the other hand, other independent variables are found not statistically significant for this study. BOD_TEN exhibits insignificant negative relationship with the likelihood of fraud. The result can be explained that the longer tenure of the board of directors does not influence the likelihood of fraud of the firms. The finding is inconsistent with Yaacob and Wan Mohd Yusof (2020) where longer tenure directors offer them to gain knowledge and experience of the particular industries and broaden their expertise. This result is not aligned with the hypothesis of this study, therefore H1(b) is not accepted. BOD_REM also exhibits insignificant relationship with the likelihood of fraud, indicating that board remuneration does not influence the likelihood of fraud. The finding is consistent with Yaacob and Wan Mohd Yusof (2020) where they argued that the remuneration of the directors reflects their responsibilities and expertise as well as the complexity of the firms' operations. Therefore, H1(d) is not

accepted. BOD_MEET exhibits insignificant negative relationship with the likelihood of fraud, indicating that the higher number of board meeting does not influence the likelihood of fraud. The result contradicts with the result of the sample of likelihood of fraud and non-likelihood of fraud firms in Table 6.10 where the higher number of board meeting is associated with higher PS, thus resulted in lower likelihood of fraud. The result of this analysis is consistent with Ebaid (2023) where the increased number of board meetings does not influence in reducing the likelihood of fraud. This further explains that higher number of board meetings does not guarantee better oversight or reduced fraud risks. The result is inconsistent with the hypothesis, therefore, H1(e) is not accepted.

The AUD_IND also exhibits insignificant negative relationship with the likelihood of fraud, indicating that the AUD_IND does not significantly influence the likelihood of fraud. The insignificant finding is because almost all of the firms are already complied with the MCCG 2017 recommendation which is to comprise solely independent directors in Audit Committee. As stated in descriptive statistics of Table 6.20, an average of 86.1% of the samples already include solely AUD_IND on board. The result of this variable is not aligned with the hypothesis of this study, therefore, H2 is not accepted. The variable RMC exhibits insignificant negative relationship with the likelihood, indicating that the establishment of RMC does not influence the likelihood of fraud among the financially distress firms in Malaysia. The insignificant result is justified where there are still firms that did not establish the RMC with the minimum percentage of 0. The insignificant finding is also due to the combination of Audit Committee roles and RMC roles by some of the firms (Madah Marzuki et al., 2024). The finding is also supported by Fadila (2024) who documented that stand-alone risk committee exerts insignificant influence on financial crimes. As the result contradicts the theoretical hypothesis of this study, H3(a) is not accepted.

Meanwhile, the control variable BOD_SIZE exhibits significant negative relationship with the likelihood of fraud at 1% level (-0.006, $t = -3.118$). The finding shows that the higher number of board size is associated with lower PS, thus the likelihood of fraud is higher. This is because the firms with a large number of directors will face difficulties in communication and coordination among the board, thus it will affect the effectiveness of the monitoring roles of the board in preventing the likelihood of fraud. The finding is consistent with Girau et al. (2022) where the study augmented that the firms with higher number of members sitting on the board would result in

difficulties to effectively perform their responsibilities, therefore resulted in loss of individual accountability. The variable AGE exhibits significant negative relationship with the likelihood of fraud at 5% level (-0.001 , $t = -2.534$). This indicates that the older firms are associated with lower PS, thus resulted in higher likelihood of fraud. The older firms have enough knowledge and experience in the related industry and as they grow older, they have to maintain the performance to meet the shareholders' expectations. The result is inconsistent with Teguh and Kristanto (2020) as they documented that the older firms gain more expertise than younger firms so that they can increase the efficiency as a firm, improve better internal control and reduce the fraudulent financial reporting.

The control variables of LIQUIDITY, LEVERAGE and FIRM_SIZE show insignificant relationship with the likelihood of fraud. The results reveal that these variables do not influence in reducing the likelihood of fraud. The insignificant finding of LIQUIDITY is similar to Hasnan et al. (2021) who found liquidity is insignificant to financial restatement. Ismail Khan and Muhammad Hapiz (2022) and Madah Marzuki et al., (2024) also reported that LEVERAGE is insignificant on FFR. The insignificant finding of FIRM_SIZE is also consistent to Ismail Khan and Muhammad Hapiz (2022).

6.5.5.2 Relationship between Corporate Governance, Ownership Structure, and Polarity Scores

Table 6.29
Regression Analysis for Corporate Governance, Ownership Structure, and Likelihood of Fraud

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.076 *** 4.144	0.138 *** 5.280
Panel A: Independent Variable		
BOD_IND	-0.010 -0.602	-0.037 ** -1.996
BOD_TEN	-0.004 -0.385	-0.004 -0.410
BOD_GEN	-0.065 ** -2.344	-0.083 *** -3.049
BOD_REM	0.000 0.039	0.000 0.261
BOD_MEET	-0.001 -1.350	-0.001 -0.766
AUD_IND	-0.008 -0.485	-0.001 -0.032
RMC	0.003 0.330	-0.007 -0.734
RMC_IND	0.018 1.583	0.021 * 1.920
FAMOWN_DIRECT	0.021 0.551	0.013 0.357
FAMOWN_INDIRECT	-0.024 * -1.888	-0.012 -0.966
Panel B: Control Variables		
LIQUIDITY		0.001 1.382
LEVERAGE		0.000 0.814
BOD_SIZE		-0.006 *** -2.942
FIRM_SIZE		-0.000 -0.621
AGE		-0.001 ** -2.281
R-squared	0.155	0.288
F-statistic	1.637	2.268 *

Notes: Where, PS is Polarity scores BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.29 presents the regression analysis result for corporate governance, ownership structure (treated as independent variable) and likelihood of fraud. Model 1 exhibits regression without control variables while Model 2 presents the regression with control variables. Model 2 presents significant result at 10% level with F-statistic of

2.268. It is consistent with the previous analysis of Table 6.28, and the result also indicates that a higher PS is associated with lower likelihood of fraud (Loughran & McDonald, 2011; Goel & Uzuner, 2016; Li et al., 2023). The regression reveals that when the family ownership is included in this analysis, the BOD_IND, BOD_GEN, and RMC_IND are statistically significant, consistent with the previous result in Table 6.28. BOD_IND shows a significant negative relationship with the likelihood of fraud at 5% level (-0.037 , $t = -1.996$). This indicates that the higher percentage of board independence is associated with lower PS, thus the likelihood of fraud is increased. This result can be explained that the independent directors are appointed merely due to the requirement of MCCG 2017. Moreover, the independent directors may not totally be independent and do not have enough knowledge and experience on the related industry involved. This result is supported by Jodjana et al. (2021) where they argued that the independent directors may lack of independence, so they are unable to monitor the performance of the firms that increases the agency problem and causes financial distress. Since the result of the analysis is not aligned with the hypothesis, H1_(a) is not accepted.

BOD_GEN exhibits significant negative relationship with the likelihood of fraud at 1% level (-0.083 , $t = -3.049$). The result indicates that the higher percentage of women on board is associated with lower PS, therefore resulted in higher likelihood of fraud. The analysis result does not support the empirical evidence that the presence of women on board will help in mitigating fraudulent financial reporting because women are risk averse, more conservative and ethical than men (Y. Wang et al., 2022). Since the involvement of women is still lower among PN17 and non-PN17 firms (only 13.8% involvement of women in average), which is far from the requirement of MCCG 2017 with 30% women on board, the result is not aligned with the theoretical review of the presence of women on board. According to Kalbuana et al. (2022), the higher presence of women on board will increase the financial distress because women are less risk taking and this will result in lower return. It will also result in higher financial distress as the firm's profits are not sufficient in satisfying the firms obligations. As such, it provides opportunities to the management to commit fraud in order to meet the stakeholders expectations and show good financial performance (Rainingtyas et al., 2021). Based on the result of the analysis, this study concludes that H1_(c) is not accepted. RMC_IND exhibits a significant positive relationship with the likelihood of fraud at 10% level (0.021 , $t = 1.920$). This indicates that the higher percentage of RMC_IND is

associated with higher PS, thus resulted in lower likelihood of fraud. The involvement of higher RMC_IND is aligned with the agency theory in which the agency conflict is minimized through extensive internal control and risk assessment. The finding is similar to Yahaya (2024) who revealed that the increase of independence in RMC is associated with lower risk because the independent directors of RMC exert objective oversight, improve risk management as well as reduce risk exposure. Therefore, as the finding is aligned with the hypothesis, H3_(b) is accepted.

Other independent variables are found to be insignificantly associated with the likelihood of fraud. BOD_TEN has insignificant negative relationship with the likelihood of fraud, indicating that the BOD_TEN does not influence the likelihood of fraud among the PN17 and non-PN17 firms. The finding is inconsistent with Yaacob and Wan Mohd Yusof (2020) where the longer tenure of the directors in the board gives them opportunities to commit fraud because they have enough knowledge and experience of the firms. As the analysis result is not aligned with the hypothesis, H1_(b) is not accepted. The BOD_REM also exhibits insignificant positive relationship with the likelihood of fraud. This indicates that BOD_REM does not play a significant role in reducing the likelihood of fraud among PN17 and non-PN17 firms in Malaysia. The result is consistent with Yaacob and Wan Mohd Yusof (2020) where the amount of remuneration received by the directors does not influence the incident of fraud. The result of the analysis contradicts with the theoretical hypothesis of this study, therefore H1_(d) is not accepted. The regression also exhibits BOD_MEET has insignificant negative relationship with the likelihood of fraud. This indicates that the frequency of board meeting does not influence the likelihood of fraud among PN17 and non-PN17 firms in Malaysia. The result is similar to Ebaid (2023) and Girau et al. (2022) where the board meeting does not influence fraud occurrence. The frequent board meetings do not guarantee a better oversight and reduce fraud risks. Since the result is insignificant, H1_(e) is not accepted.

On the other hand, the variable AUD_IND exhibits insignificant negative relationship with the likelihood of fraud. The result reveals that Audit Committee Independence does not exert an influence in reducing the likelihood of fraud among the PN17 and non-PN17 firms in Malaysia. The insignificant finding is because the firms are already complied with the MCCG 2017 recommendations to have solely AUD_IND on board, as presented in Table 6.20. Inconsistent with the hypothesis of this variable, H2 is not accepted. The variable RMC also reveals insignificant relationship with the

likelihood of fraud, indicating that the establishment of RMC does not influence in mitigating the likelihood of fraud among PN17 and non-PN17 firms in Malaysia. The reason of insignificant result is due to the reason that some firms have not established RMC, which is 0%. This finding is consistent with Madah Marzuki et al. (2024) who documented that the combination roles of RMC and Audit Committee might lessen the efficiency of RMC, so it resulted in insignificant roles of managing risks. Since it contradicts the hypothesis of this study, H3_(a) is not accepted. The variables FAMOWN_DIRECT and FAMOWN_INDIRECT exhibit insignificant relationship with the likelihood of fraud. The finding indicates that the presence of family ownership either direct ownership or indirect ownership does not influence the firms in reducing the likelihood of fraud. The insignificant finding is consistent with Wan Mohammad and Wasiuzzaman (2020) who evidenced that the insignificant family ownership is due to the lack of variation in the percentage of ownership over the three-year period.

Meanwhile, BOD_SIZE exhibits significant negative relationship with the likelihood of fraud at 1% level (-0.006 , $t = -2.942$). This indicates that the larger board size is associated with lower PS, thus resulted in higher likelihood of fraud. This is because, when the size of board is larger, the communication between the directors will be difficult. Besides that, the decision-making process will be difficult and challenging (Girau et al., 2022). The finding is similar to Ebaid (2023) who documented that greater number of boards could give negative effect on the effectiveness of monitoring the board, thus increases the likelihood of fraud. The variable AGE also shows a negative significant relationship with the likelihood of fraud at 5% level (-0.001 , $t = -2.281$). The finding indicates that the older firms are associated with lower PS, thus the likelihood of fraud is higher. The older firms have more experience and knowledge of their industry. So, they tend to be involved in fraudulent activities to show the good performance of the firms. The result is inconsistent with Teguh and Kristanto (2020) who documented that older firms are less likely to be involved in fraudulent activities as they have more expertise which increases the efficiency of the firms' operation. Apart from that, the variables LIQUIDITY, LEVERAGE and FIRM_SIZE are also insignificant in this analysis. This indicates that these variables have no influence in reducing the likelihood of fraud. This finding is consistent with Ismail Khan and Muhammad Hapiz (2022) and Madah Marzuki et al. (2024) who documented the same findings.

6.5.5.3 Relationship between Corporate Governance Moderated by Family Ownership and Polarity Scores

Table 6.30

Regression Analysis for Corporate Governance Moderated by Direct Family Ownership and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.063 *** 3.100	0.136 *** 5.148
Panel A: Independent Variable		
BOD_IND	-0.007 -0.394	-0.044 ** -2.242
BOD_TEN	-0.014 -1.285	-0.009 -0.866
BOD_GEN	-0.062 ** -2.191	-0.085 *** -3.123
BOD_REM	-0.000 -0.016	0.000 0.136
BOD_MEET	-0.001 -0.612	0.000 -0.253
AUD_IND	-0.003 -0.145	0.009 0.556
RMC	-0.012 1.155	0.003 0.268
RMC_IND	0.010 0.841	0.015 1.265
FAMOWN_DIRECT	0.582 0.754	-0.011 -0.015
Panel B: Moderating Variable		
FAMOWN_DIRECT*BOD_IND	1.421 1.247	1.908 * 1.727
FAMOWN_DIRECT*BOD_TEN	0.370 0.624	0.622 1.094
FAMOWN_DIRECT*BOD_GEN	-1.592 -0.537	0.008 0.003
FAMOWN_DIRECT*BOD_REM	-0.000 * -1.736	-0.000 -0.341
FAMOWN_DIRECT*BOD_MEET	-0.029 -0.295	0.011 0.116
FAMOWN_DIRECT*AUD_IND	-0.441 -0.538	-0.748 -0.919
FAMOWN_DIRECT*RMC	-0.484 -1.424	-0.773 ** -2.302
FAMOWN_DIRECT*RMC_IND	-0.056 -0.422	-0.010 -0.082
Panel C: Control Variables		
LIQUIDITY		0.001 0.714
LEVERAGE		0.000 0.537
BOD_SIZE		-0.006 -3.026
FIRM_SIZE		-0.000 -0.593
AGE		-0.001 -2.992
R-squared	0.255	0.398
F-statistic	1.649 *	2.310 ***

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.30 presents the regression result for PN17 vs. non-PN17 firms and the likelihood of fraud moderated by direct family ownership. Model 1 presents the result without control variables, whereas Model 2 presents the result with control variables. Based on the analysis result, both models show F-statistics are significant at 10% level (1.649) and 1% level (2.310) respectively. The analysis indicates that when FAMOWN_DIRECT is added as the moderating variable in this analysis, only BOD_IND and BOD_GEN remain significant, consistent with the result in Table 6.28 and Table 6.29.

The BOD_IND exhibits significant negative relationship with the likelihood of fraud at 5% level (-2.242, $t = -0.044$). This indicates that the higher percentage of BOD_IND is associated with lower PS, thus the likelihood of fraud is higher. The result is similar to Jodjana et al. (2021) who documented that the independent directors may have less experience or good knowledge of the industrial sector; thus, they are unable to provide good decision to improve the firm’s performance and reduce the likelihood of fraud. Inconsistent with the hypothesis for this study, H1_(a) is not accepted. Meanwhile, BOD_GEN exhibits significant negative relationship with the likelihood of fraud in both models at 5% level (-2.191, $t = -0.062$) and 1% level (-3.123, $t = -0.085$) respectively. This indicates that higher percentage of women on board is associated with lower PS, thus increases the likelihood of fraud. According to Kalbuana et al. (2022), women are more less risk taking which resulted in lower return, and thus lead to increase financial distress. Since the firm is unable to generate higher profits from the operation, they are facing problems in satisfying the firms’ obligations. Therefore, this provide opportunities to the management to commit fraud in order to meet the stakeholders expectations and to show they are doing better and improve the firm’s performance (Rainingtyas et al., 2021). The result is not aligned with the hypothesis of this study, therefore H1_(c) is not accepted.

Other independent variables for this study are not statistically significant with the likelihood of fraud. The variable BOD_TEN is insignificant with the likelihood of

fraud, indicating that the tenure of the directors does not influence the likelihood of fraud. The BOD_REM is insignificant to the likelihood of fraud which is consistent with Yaacob and Wan Mohd Yusof (2020). The remuneration of the directors should reflect their responsibility, expertise and the complexity of the firms. The BOD_MEET also exhibits insignificant relationship to the likelihood of fraud in both models. The result is similar to Ebaid (2023) who documented that board meetings are found to be insignificant to the likelihood of fraud. The variable AUD_IND also exhibits insignificant relationship with the likelihood of fraud. This indicates that the AUD_IND does not exert influence in reducing the likelihood of fraud. The result is similar to Beasley (1996) where the insignificant result is due to the Audit Committee that has effectively carried out their duties whether they are largely or solely consisting of independent directors. Meanwhile, the variables RMC and RMC_IND exhibit insignificant relationship with the likelihood of fraud, indicating that both variables do not exert influence in mitigating the likelihood of fraud. The result of this study is consistent with Madah Marzuki et al. (2024) where they documented that the insignificant finding might be due to the combination of the role of Audit Committee and Risk Management Committee. In conclusion, the results of BOD_TEN, BOD_REM, BOD_MEET, AUD_IND, RMC, and RMC_IND are not aligned with the hypotheses of this study. Therefore, H1_(b), H1_(d), H1_(e), H2, H3_(a), and H3_(b) are not accepted. The FAMOWN_DIRECT exhibits insignificant relationship with the likelihood of fraud. This shows that FAMOWN_DIRECT does not influence in reducing the likelihood of fraud. The finding is similar to Ghafoor et al. (2019) who reported that family ownership is not significant to corporate fraud.

Meanwhile, for the moderating variables, FAMOWN_DIRECT*BOD_IND, FAMOWN_DIRECT*BOD_REM and FAMOWN_DIRECT*RMC are found to be statistically significant with the likelihood of fraud. The FAMOWN_DIRECT*BOD_IND is negatively significant with the likelihood of fraud at 10% level (-1.727, $t = -1.908$) in Model 2. This indicates that FAMOWN_DIRECT moderates the relationship between BOD_IND and PS by strengthening its negative effect. Since the monitoring role of BOD_IND is improved, the likelihood of fraud is lower. This shows that the presence of FAMOWN_DIRECT is aligned with the alignment effect theory in which higher percentage of FAMOWN_DIRECT causes them to be less likely engage in unethical behaviour that could potentially damage the family's reputation, wealth and long-term firm performance (Hasnan et al., 2014). This

finding is similar to Alhebri et al. (2021) where the presence of BOD_IND is effective in reducing the earning management in the presence of family firms. The finding is not aligned with the hypothesis of this study, therefore, H4_(a1) is not accepted.

The moderating variable FAMOWN_DIRECT*BOD_REM exhibits a moderate negative significant relationship with the likelihood of fraud at 10% level in Model 1 (-1.736, $t = -0.000$). The result indicates that FAMOWN_DIRECT shifts the influence of BOD_REM by opportunistically acting according to their own interest, thus results to lower PS and increases the likelihood of fraud. This finding is aligned with the entrenchment theory where the family has control over the remuneration policy and procedures to pay higher remuneration to the directors to meet their personal interests and expropriate the minority shareholders. Thus, the directors are likely to engage with opportunistically behaviours as they may aim to achieve higher remuneration in the firms. The finding is consistent with Jaafar et al. (2012) who documented that the director's remuneration is run by family firm and remuneration committee. They added that family firms abandon the remuneration policies and procedures in order to provide better reward when they combine power and control. Since it aligns with the hypothesis of this study, H4_(a4) is accepted.

The moderating variable FAMOWN_DIRECT*RMC exhibits a moderate negative relationship with the likelihood of fraud in Model 2 at 5% significant level (-2.302, $t = -0.773$). The finding indicates that FAMOWN_DIRECT shifts the influence of RMC, leading to lower PS, thus resulted in higher likelihood of fraud. This finding supports the entrenchment theory where the higher family ownership would have incentive and opportunities to expropriate the minority shareholders by engaging in fraudulent activities. Since the family ownership controls over the rights and decision-making process of the firms, the establishment of the RMC seems to be less effective because they opportunistically control the decision in the firms for their families' interest. In addition, the establishment of RMC is also lower when there is higher FAMOWN_DIRECT because they rather combine the role of Audit Committee and RMC as a sole department in managing risks over the firms. This result is similar to Malik et al. (2023) who found that family is less likely to establish RMC. Since it aligns with the hypothesis of this study, H4_(a6) is accepted.

Other moderating variables are found to be insignificant with the likelihood of fraud. These variables indicate that the presence of FAMOWN_DIRECT does not influence the likelihood of fraud in the presence of corporate governance mechanism.

Since the result is not aligned with the theoretical hypotheses of this study, H4_(a2), H4_(a3), H4_(a5), H4_(a6), and H4_(a8) are not accepted. As for the control variables of this study, the result found that all control variables are not statistically significant with the likelihood of fraud. This indicates that all control variables do not play a crucial role in determining the likelihood of fraud in this analysis.

Table 6.31
Regression Analysis for Corporate Governance Moderated by Indirect Family Ownership and Polarity Scores

Variables	PS	PS
	Model 1	Model 2
INTERCEPT	0.086 *** 4.121	0.145 *** 5.253
Panel A: Independent Variable		
BOD_IND	-0.008 -0.407	-0.033 -1.596
BOD_TEN	-0.009 -0.787	-0.010 -0.925
BOD_GEN	-0.070 ** -2.332	-0.090 *** -3.044
BOD_REM	0.000 0.001	0.000 0.115
BOD_MEET	-0.001 -0.840	-0.001 -0.447
AUD_IND	-0.017 -0.847	-0.009 -0.443
RMC	0.000 0.028	-0.008 -0.741
RMC_IND	0.014 1.211	0.018 1.582
FAMOWN_INDIRECT	-0.120 -0.507	-0.173 -0.764
Panel B: Moderating Variable		
FAMOWN_INDIRECT*BOD_IND	-0.116 -1.182	-0.048 -0.504
FAMOWN_INDIRECT*BOD_TEN	0.229 1.416	0.279 * 1.781
FAMOWN_INDIRECT*BOD_GEN	-0.006 -0.036	-0.034 -0.209
FAMOWN_INDIRECT*BOD_REM	-0.000 -1.584	-0.000 -0.802
FAMOWN_INDIRECT*BOD_MEET	-0.001 -0.110	-0.003 -0.350
FAMOWN_INDIRECT*AUD_IND	0.094 0.498	0.129 0.710
FAMOWN_INDIRECT*RMC	-0.097 -0.747	-0.137 -1.093
FAMOWN_INDIRECT*RMC_IND	0.206 1.185	0.212 1.278
Panel C: Control Variables		
LIQUIDITY		0.001 1.525
LEVERAGE		0.000 0.749
BOD_SIZE		-0.005 ** -2.531
FIRM_SIZE		-0.000 -0.389
AGE		-0.001 ** -2.554
R-squared	0.241	0.361
F-statistic	1.534	1.982 **

Notes: Where, PS is Polarity scores, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.31 presents the regression result for PN17 vs. non-PN17 firms and the likelihood of fraud moderated by indirect family ownership. Model 1 presents the result without control variables, whereas Model 2 presents the result with control variables. Based on the analysis result, the F-statistic is significant at 5% level (1.982) in Model 2 only. The result of the analysis reveals that when the moderating variable FAMOWN_INDIRECT is added in the analysis, only variable BOD_GEN is statistically significant, consistent with the result tabulated in Table 6.28 and Table 6.29. BOD_GEN exhibits significant negative relationship with the likelihood of fraud at 1% level (-0.090, $t = -3.044$). This indicates that higher percentage of women on board is associated with lower PS, thus increases the likelihood of fraud. The finding is not aligned with previous study which documented that higher number of women on board will reduce the fraud, for example Madah Marzuki et al. (2024) and Khaw and Liao (2018). The hypothesis for this study proposes that the higher number of women on board will reduce the likelihood of fraud as well as supporting the agency theory that the involvement of women on board is able to reduce the agency conflict in the firm. Since it is not aligned with the theoretical hypothesis, H1(c) is not accepted.

Nevertheless, other independent variables of BOD_IND, BOD_TEN, BOD_REM, BOD_MEET, AUD_IND, RMC, and RMC_IND exhibit insignificant relationship with the likelihood of fraud. The BOD_IND shows insignificant positive relationship, similar to the finding of Girau et al. (2022) and Devarajar et al. (2022). On the other hand, the BOD_TEN exhibits an insignificant relationship with the likelihood of fraud. However, the finding contradicts Yaacob and Wan Mohd Yusof (2020) who found the longer tenure directors are positively associated with corporate fraud. Meanwhile, the insignificant result of BOD_REM is consistent with Yaacob and Wan Mohd Yusof (2020). The insignificant result for BOD_MEET is similar to Girau et al. (2022) and Ebaid (2023), which suggest that the frequency of BOD_MEET does not influence in reducing the likelihood of fraud. The insignificant of AUD_IND is similar to Beasley (1996) and Owens-Jackson et al. (2009) where they documented that the

audit committee effectively carries out their duties and responsibilities whether the board consists of largely or entirely of independent director. Both RMC and RMC_IND are also insignificant to the likelihood of fraud, indicating that this committee does not influence in mitigating fraud. The variable FAMOWN_INDIRECT exhibits insignificant relationship even when the analysis adds it as an independent variable. It shows that this variable does not influence the likelihood of fraud. Based on the result of independent variables, hypotheses H1_(a), H1_(b), H1_(d), H1_(e), H2, and H3 are not accepted.

On the other hand, for the moderating variables, only variable FAMOWN_INDIRECT*BOD_TEN exhibits a significant relationship with the likelihood of fraud. The FAMOWN_INDIRECT*BOD_TEN exhibits a moderate positive relationship with the likelihood of fraud at 10% level (0.279, $t = 1.781$). This indicates that FAMOWN_INDIRECT strengthens the effect of BOD_TEN, leading to higher PS and lowers the likelihood of fraud is lower. The result further justifies that the longer tenure director can help in reducing the likelihood of fraud in the presence of FAMOWN_INDIRECT. The larger ownership by FAMOWN_INDIRECT improves the monitoring of the long-serving directors as they are more concerned about the firm's welfare in long-term, so that supported the alignment effect. Nevertheless, the finding contradict Wang et al. (2024) who documented that the long tenure director offers opportunity to the directors to be less speedy in fraud detection when there is large ownership by family members. Even though the findings are statistically significant, the result contradicts the hypothesis of this study. Therefore, H4_(a2) is not accepted. As for the other variables, since the analysis results are not significant, H4_(a1) until H4_(a8) are not accepted.

As for the control variables, two variables are statistically significant with the likelihood of fraud which are BOD_SIZE and AGE. BOD_SIZE shows a significant negative relationship with the likelihood of fraud at 5% level (-0.005, $t = -2.531$). The result reveals that the larger size of the board is associated with lower PS, thus the likelihood of fraud will be higher. This is because when the firm has larger board, the board is less effective due to difficulties in communication and coordination between the board (Ahmed et al., 2021; Girau et al., 2024). The variable AGE exhibits a significant negative relationship with the likelihood of fraud at 5% level (-0.001, $t = -2.554$), indicating that the older firms are associated with lower PS, thus the likelihood of fraud will be higher. This is because the older firms have enough knowledge and

experience in the industry, so this gives them the opportunity to commit fraud without getting caught. This finding is inconsistent with the previous study of Ilaboya and Lodikero (2017) and Teguh and Kristanto (2020) who documented that the older firms lower the likelihood of fraud.

Other control variables are not statistically significant with the likelihood of fraud. The variable LIQUIDITY exhibits insignificant negative relationship with the likelihood of fraud. This finding is similar to Hasnan et al. (2021) and Hosseininia (2015) who failed to find statistical relationships. According to Hasnan et al. (2021), the level of the liquidity of the firm does not influence the incidence of financial restatement because the liquidity merely measures the ability of the firm to pay its short-term obligation, but not the total obligation. The LEVERAGE is also not significant in this analysis, indicating that the firm's LEVERAGE does not influence the ability of the firm in detecting the likelihood of fraud among PN17 firms. The finding is consistent with Ismail Khan and Muhammad Hapiz (2022) who found statistically significant relationship between LEVERAGE and fraudulent financial reporting. Lastly, FIRM_SIZE does not statistically influence the likelihood of fraud.

6.5.5.4 Relationship between Corporate Governance and Likelihood of Fraud

Table 6.32
Regression Analysis for Corporate Governance and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
C	1.591	10.376 ***
	1.352	3.355
Panel A: Independent Variable		
BOD_IND	3.926 ***	2.491
	3.407	1.158
BOD_TEN	-0.103	-0.706
	-0.152	-0.493
BOD_GEN	-3.009	-4.619
	-1.560	-1.467
BOD_REM	0.000	0.000
	0.444	1.046
BOD_MEET	0.333 ***	0.533 ***
	4.100	2.933
AUD_IND	-4.956 ***	-9.244 ***
	-3.458	-2.935
RMC	-2.993 ***	-7.233 ***
	-3.975	-3.230
RMC_IND	2.012 ***	4.909 **
	2.651	2.528
Panel B: Control Variables		
LIQUIDITY		-0.209
		-1.427
LEVERAGE		4.092 ***
		2.863
BOD_SIZE		-0.977 ***
		-3.156
FIRM_SIZE		-0.000 ***
		-2.642
AGE		0.014
		0.570
McFadden R-squared	0.402	0.737
LR statistic	55.712 ***	102.235 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.32 shows the regression analysis result for PN17 vs. non-PN17 using binary logistic regression analysis. As stated in Table 6.31, Model 1 represents the

regression analysis without control variables, while Model 2 represents regression analysis with control variables. Based on the analysis, the LR-statistics for both models are significant at 1% level respectively (55.712, 102.235).

Firstly, BOD_IND exhibits a significant positive relationship with the likelihood of fraud at 1% level in Model 1 (3.926, $z = 3.407$). The result reveals that the higher BOD_IND in the firm leads to a higher likelihood of fraud among the financially distressed firms. According to the agency theory, the presence of larger proportion of BOD_IND is expected to improve the firm's monitoring and reduce the agency problems and the likelihood of fraud. Nevertheless, the findings contradict and not consistent with the study of Ebaid (2023) and Kaituko et al. (2023) who found a significant negative relationship with fraud. The finding raised the question whether the involvement of majority BOD_IND in the board merely complies with the MCCG 2017 recommendation. Since it is not in line with the theoretical hypothesis, H1(a) is not accepted. Secondly, the variable BOD_MEET presents a significant positive relationship with the likelihood of fraud at 1% level in both models (0.333, $z = 4.100$, 0.533, $z = 2.933$). The finding indicates that the higher frequency of board meetings will increase the likelihood of fraud. This is because when the firms have significant problems arising in the firm, the directors might hold more meetings to solve the problems. This finding is consistent with Chen et al. (2006) and Zhou et al. (2018). Chen et al. (2006) documented that the frequent board meeting shows a signal that the firms face increased vigilance and oversight of the top management as well as when the firm is under financial distress situation. Nevertheless, the finding contradicts with the hypothesis of this study. Therefore, H1(e) is not accepted.

Thirdly, the variable AUD_IND exhibits a significant negative relationship with the likelihood of fraud at 1% level in both models (-4.956, $z = -3.458$, -9.244, $z = 2.935$). The result reveals that the higher percentage of AUD_IND lowers the likelihood of fraud. Aligning to the agency theory, the higher involvement of AUD_IND will reduce the agency problem as well as reducing the likelihood of fraud because the independent directors are not biased in monitoring the firm's financial statement. The finding is consistent with Mousavi et al. (2022) where they documented that the presence of AUD_IND can improve the disclosure quality and lowers the errors. The result is consistent with the hypothesis of this study, therefore, H2 is accepted.

The variable RMC presents a significant negative relationship with the likelihood of fraud at 1% in both models (-2.993, $z = -3.975$, -7.233, $z = 3.230$). The

result shows that the establishment of RMC is able to monitor the risk and improve the oversight roles and strategies in detecting the likelihood of fraud in the firm. The finding is similar to Novatiani et al. (2022) who documented that the establishment of RMC is able to prevent false financial reporting as the RMC creates innovation and addresses the risks by giving attention into details. Nevertheless, the RMC_IND exhibits a significant positive relationship with the likelihood of fraud at 1% level (2.012, $z = 2.651$) for model 1 and 5% level (4.909, $z = 2.528$) for model 2. The positive coefficient indicates that higher percentage of RMC_IND lowers the likelihood of fraud. This can be explained that RMC_IND might lack knowledge and experience in assessing risks and strategies of the firm. In addition, the appointment of RMC_IND might be done to comply with the MCCG recommendation only. Based on the analysis result, H3_(a) is accepted, while H3_(b) is not accepted.

The independent variables are not statistically significant in this analysis. BOD_TEN exhibits insignificant negative relationship with the likelihood of fraud in both models. This indicates that the longer tenure of the board does not influence the likelihood of fraud among financially distressed firms. The negative coefficient could suggest that the longer tenure of the directors lowers the likelihood of fraud. According to Yaacob and Wan Mohd Yusof (2020), the longer tenure director gives them opportunity to commit fraud due to long time serving in gaining knowledge and experience about the firm. The result of BOD_TEN is not consistent with the theoretical hypothesis of this study, therefore, H1_(b) is not accepted. Meanwhile, BOD_GEN exhibits insignificant negative relationship with the likelihood of fraud in both models. The result reveals that the presence of BOD_GEN does not influence in reducing the likelihood of fraud among the financially distressed firms. The insignificant result could be due to the lower compliance among the samples. The result of descriptive analysis in Table 6.20 shows that there are only 13.8% of women on board. The finding shows that the compliance level is still lower as compared to MCCG 2017 recommendation to include 30% women on board.

The variable BOD_REM also exhibits insignificant positive relationship with the likelihood of fraud. The larger remuneration of the board does not influence the likelihood of fraud among the financially distressed firms. The finding is similar to Yaacob and Wan Mohd Yusof (2020) who found the insignificant relationship between board compensation and fraud. According to them, the remuneration of the directors should reflect the duties and responsibilities of the directors as well as the complexity

of the business activities. Based on the findings of BOD_GEN and BOD_REM, it concludes that both variables are not aligned with the hypotheses of this study. Therefore, H1_(c) and H1_(d) are not accepted.

As for the control variables, three control variables are found to be statistically significant with the likelihood of fraud. Firstly, the variable LEVERAGE exhibits a significant positive relationship with the likelihood of fraud at 1% level (4.092, $z = 2.863$). This indicates that the firms with higher LEVERAGE tend to engage in fraudulent activities as they are in financial difficulties. The finding is consistent with Yendrawati et al. (2023) where the higher rate of the firm leverage leads to the strong likelihood of manipulation in financial statement. Secondly, the variable BOD_SIZE shows a significant negative relationship with the likelihood of fraud. The larger the size of the board, the likelihood of fraud will be lower. However, according to Ahmed et al. (2021), the excessive size of the board leads to inefficient monitoring due to difficulties in communication and coordination between them. This finding is similar to Khoufi and Khoufi (2018) where the larger board would promote the efficiency of management and prevention of fraud. Thirdly, the FIRM_SIZE shows a significant negative relationship with the likelihood of fraud at 1% level (-0.000, $z = -2.642$). The larger the size of the firm lessens the likelihood of fraud. This is due to the large firm tending to avoid unethical behaviour that might destroy their reputation. In addition, large firms usually have more expertise in people dealing with the issues that arise, and they tend to avoid engaging in fraudulent behaviors. This finding is similar to Teguh and Kristanto (2020) where larger firms have better internal control system that makes it difficult to be involved in fraud.

Meanwhile, the variable LIQUIDITY reveals insignificant negative relationship with the likelihood of fraud. LIQUIDITY is not a control factor that influences the likelihood of fraud. The finding is consistent with Hasnan et al. (2021) and Hosseininia (2015). According to Hasnan et al. (2021), LIQUIDITY only measures the short-term of firms obligation, but not all the total obligations. Lastly, the variable AGE also exhibits insignificant positive relationship with the likelihood of fraud. The AGE of the firm does not influence the firm in reducing the likelihood of fraud. The finding is similar to Hasnan et al. (2021) who found insignificant relationship with financial restatement.

6.5.5.5 Relationship between Corporate Governance, Ownership Structure and Likelihood of Fraud

Table 6.33
Regression Analysis for Corporate Governance, Ownership Structure and Likelihood of Fraud

Variables	FFR	FFR
	Model 1	Model 2
C	2.016	14.276 **
	1.584	2.069
Panel A: Independent Variable		
BOD_IND	3.766 ***	7.314
	2.880	1.628
BOD_TEN	0.185	0.077
	0.247	0.031
BOD_GEN	-2.347	-9.123
	-1.048	-1.534
BOD_REM	0.000	0.000
	0.486	0.923
BOD_MEET	0.306 ***	0.671 **
	3.489	2.124
AUD_IND	-5.244 ***	-18.990 **
	-3.127	-2.251
RMC	-3.959 ***	-13.174 *
	-3.603	-1.926
RMC_IND	3.338 ***	11.802 *
	2.728	1.798
FAMOWN_DIRECT	4.973 *	35.032 **
	1.662	1.996
FAMOWN_INDIRECT	-3.491 **	-4.147
	-2.489	-1.348
Panel B: Control Variables		
LIQUIDITY		-0.326 **
		-2.319
LEVERAGE		6.206 **
		2.347
BOD_SIZE		-0.983 ***
		-2.939
FIRM_SIZE		0.000 *
		-1.890
AGE		0.042
		0.969
McFadden R-squared	0.489	0.809
LR statistic	67.845 ***	112.210 ***

Notes: Where, FFR is dummy variable is “1” if likelihood of fraud firm and “0” if non-likelihood of fraud firm, BOD_IND is the percentage of independent board of directors, BOD_TEN is the percentage of board directors served for more than nine years of services, BOD_GEN is the percentage of women on board, DIR_REM is the disclosure of total remuneration, BOD_MEET is the number of board meetings, AUD_IND is the percentage of independent Audit Committee, RMC is the dummy variable of “1” if the firm have establish RMC or “0” for otherwise, RMC_IND is the percentage of independent RMC, FAMOWN_DIRECT is the ratio of family owners to the total shares outstanding (direct ownership), FAMOWN_INDIRECT is the ratio of family owners to the total shares outstanding (indirect ownership), LIQUIDITY is the current assets divided by current liabilities (CA/CL), LEVERAGE is Total Debts are divided by Total Assets (TD/TA), BOD_SIZE is the number of board of directors in the firm, FIRM_SIZE is the total assets, AGE is the number of years of the firms since their establishment.

Table 6.33 presents the regression analysis for corporate governance, ownership structure (treated as independent variables) and the likelihood of fraud as the dependent

variable for PN17 vs. non-PN17 firms. Model 1 presents the regression result without control variables, while Model 2 presents the regression result with control variables. Based on the analysis result, both LR-statistics for Models 1 and 2 are significant at 1% level (67.845, 112.210). The finding reveals that with the inclusion of family ownership as the independent variable in this analysis, the variables BOD_IND, BOD_MEET, AUD_IND, RMC, and RMC_IND remain significant, consistent with the previous analysis in Table 6.32. Meanwhile, FAMOWN_DIRECT and FAMOWN_INDIRECT also exhibit significant results.

BOD_IND exhibits a significant positive relationship with the likelihood of fraud at 1% level in Model 1 (3.766, $z = 2.880$). The result reveals that the higher percentage of BOD_IND leads to a higher likelihood of fraud. The finding contradicts agency theory proposed by Jensen and Meckling (1976) that higher BOD_IND will improve the board monitoring as well as reduce the likelihood of fraud. The finding is similar to Kamarudin et al. (2018) who found that the higher proportion of independent directors is more likely to commit fraud. The positive coefficient gains a question whether BOD_IND is totally independent or merely to comply with the MCCG 2017 recommendation. Since this variable is not aligned with the hypothesis for this study, $H_{(1a)}$ is not accepted. Meanwhile, BOD_MEET shows significant positive relationship with the likelihood of fraud at 1% (0.306, $z = 3.489$) and 5% (0.671, $z = 2.124$) levels for both models, respectively. The result indicates that higher frequency of BOD_MEET leads to higher likelihood of fraud. This can be explained that when the firms are currently in financially distressed situations, they have a higher likelihood to be involved in fraudulent activities. Thus, frequent meetings will be held to discuss the matter and solve the problems. The findings are similar to Shan et al. (2013) and Kaituko et al. (2023) who found that higher frequency of BOD_MEET is a signal to fraud. Thus, $H_{(1c)}$ is not accepted.

AUD_IND exhibits a significant negative relationship with the likelihood of fraud at 1% (-5.244, $z = -3.127$) and 5% (-18.990, $z = -2.251$) in both models, respectively. This indicates that higher AUD_IND lowers the likelihood of fraud. The result is similar to Abbott et al. (2004) and Mousavi et al. (2022) who found negative effect of AUD_IND and fraudulent financial reporting. AUD_IND will improve the quality of disclosure as well as reporting of lower errors (Mousavi et al., 2022). This finding also supports the agency theory that when the firms have more independent directors, monitoring management will be effective as it reduces the agency cost and

the likelihood of fraud. Thus, H2 is accepted. The variable RMC exhibits a significant negative relationship at 1% (-3.959, $z = -3.603$) and 10% (-13.174, $z = -1.926$) for both models, respectively. This indicates that the establishment of RMC in the firms is able to reduce the likelihood of fraud. This finding is similar to Jia et al. (2019) who found that stand-alone RMC will improve the risk management disclosure. They conclude that RMC can solely focus on risk management by increasing risk monitoring as well as reducing the agency costs and information asymmetry. This implies that, when the firm has RMC, they are able to improve the risk strategies in combating the likelihood of fraud.

Nevertheless, the RMC_IND exhibits a significant positive relationship with the likelihood of fraud at 1% (3.338, $z = 2.728$) and 10% (11.802, $z = 1.798$) for both models, respectively. The higher percentage of RMC_IND will result in a higher likelihood of fraud. This could be explained that the independent directors might not have enough knowledge and experience of the firms so that they are unable to properly monitor the firms' RMC. Besides, the appointment of RMC_IND might be due to the recommendation of MCCG 2017 but not based on the knowledge and expertise of the director. This finding is inconsistent with Musa and Ibrahim (2024) who found that RMC_IND is negatively associated with real earning management. Based on the finding, the author concludes that H3_(a) is accepted, while H3_(b) is not accepted.

The variable FAMOWN_DIRECT exhibits a significant positive relationship with the likelihood of fraud at 10% (4.973, $z = 1.662$) and 5% (35.032, $z = 1.996$) levels for both models, respectively. The finding indicates that higher FAMOWN_DIRECT leads to higher likelihood of fraud. This finding is consistent with the entrenchment effect of Wang et al. (2024) in which when the family owns a large percentage of ownership, they tend to use the opportunity to expropriate the wealth of minority shareholders by engaging fraudulent activities to meet their personal interest. The finding is similar to Teh et al. (2017) where the controlling families are associated with discretionary accruals in which they opportunistically manage earnings for their families' self-interest so that financial reporting is more favorable to them. Meanwhile, the FAMOWN_INDIRECT exhibits a significant negative relationship with the likelihood of fraud at 5% (-3.491, $z = -2.489$) level in Model 1. The result reveals that higher FAMOWN_INDIRECT leads to the likelihood of fraud. Inconsistent with FAMOWN_DIRECT, this variable supports the alignment effect where they are less likely to expropriate wealth of minority shareholders as they are more concerned on the

family's reputation, wealth and long-term performance (Hasnan et al., 2014). The finding is similar to Kusuma and Fitriani (2020) who also documented that the strong presence of family members will improve the quality of financial reporting, thus the fraudulent activities could be prevented.

Other independent variables are not statistically significant in this analysis. BOD_TEN has insignificant positive relationship with the likelihood of fraud. It indicates that longer tenure directors who serve on board do not influence the likelihood of fraud among financially distressed firms. The result is not consistent with the hypothesis of this study, thus H1_(b) is not accepted. Meanwhile, BOD_GEN is insignificant to the likelihood of fraud in both models which is similar to the previous regression analysis. BOD_GEN does not influence the firm in reducing the likelihood of fraud. The insignificant result is due to the lower compliance among PN17 and non-PN17 firms in appointing 30% of women on board. The mean for BOD_GEN reveals that only 13.8% women served the board from 2020 to 2022. In contrast, BOD_REM has insignificant positive relationship with the likelihood of fraud in both models. The findings are similar to Ghafoor et al. (2019) and Yaacob and Wan Mohd Yusof (2020) which suggested that the remuneration received by the directors should reflect the responsibilities and complexities of the firm's activities. Since both are not statistically aligned with the hypotheses of this study, H1_(c) and H1_(d) are not accepted.

As for the control variables, all of the control variables are statistically significant with the likelihood of fraud except for the variable AGE. The variable LIQUIDITY exhibits a significant negative relationship with the likelihood of fraud at 5% (-0.326, $z = -2.319$) level. This indicates that the higher the LIQUIDITY, the likelihood of fraud will be lower. This is because the LIQUIDITY shows the ability of the firms in paying their short-term obligations. The finding is consistent with Zainudin and Hashim (2016) who documented that LIQUIDITY has a significant relationship with fraud. They noted that the firms with higher LIQUIDITY have a large margin of safety to cover their short-term obligations. Meanwhile, the variable LEVERAGE exhibits a significant positive relationship with the likelihood of fraud at 5% (6.206, $z = 2.347$) level. The finding reveals that firms with higher LEVERAGE have a higher likelihood to commit fraud. The finding is similar to Yendrawati et al. (2023) who found statistical relationship between firms leverage and fraud. They concluded that firms with large debt structures and leverage issues have a strong likelihood to commit fraud. The variable BOD_SIZE exhibits a significant negative relationship with the

likelihood of fraud at 1% (-0.973, $z = -2.939$) level. This indicates that the larger size of the board, the likelihood of fraud will be lower. This is because the larger board will improve the monitoring of the firms since they have various expertise that can deal with the firm's management. This finding is similar to Khoufi and Khoufi (2018) who suggested that the increase size of the board will reduce the chances of fraud since effective control and management becomes more efficient.

The FIRM_SIZE exhibits a significant negative relationship with the likelihood of fraud at 10% (-0.000, $z = -1.890$) level. The finding shows that the larger the size of the firm, the likelihood of fraud will be lower. It is similar to the study of Teguh and Kristanto (2020) where the bigger firms are less likely to engage in fraudulent activities because they have better internal control system which makes it difficult to commit fraud. Nevertheless, the variable AGE exhibits insignificant relationship with the likelihood of fraud, indicating that AGE of the firms does not influence the firms in reducing the likelihood of fraud. The finding is consistent with Hasnan et al. (2021) who found that AGE does not have an effect on the financial restatement. Nonetheless, the positive coefficient could suggest that the older firms have higher likelihood to engage into fraudulent behaviour due to better experience, control, and governance (Hasnan et al., 2021).

6.6 Conclusion

Overall, this chapter has presented the empirical analyses and the corresponding discussions based on the research objectives of the study. The analyses have provided a clearer understanding of the relationships between corporate governance, ownership structure and likelihood of fraud and how the findings relate to the underpinning theories to the prior literature. This chapter also demonstrated that each research objective has been systematically addressed through the analytical procedures employed. Although the analyses may be subject to several limitations, the results obtained offer important insights that form the foundation for the overall conclusion of the study. The next chapter will summarise the key contributions of the research, discuss its theoretical and practical implications and provide recommendations for future studies.

6.7 Summary of Regression Analyses

(I) Comparison between Dependent Variables – PS vs. FFR (Likelihood of Fraud vs. Non-likelihood of Fraud Firms)

(A) Table 6.34 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.34:
Comparative Summary of Regression Analyses for Corporate Governance and Likelihood of Fraud for Likelihood of Fraud and Non-Likelihood of Fraud Firms

Hypotheses		IV + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
<u>Panel A: Independent variables</u>							
H1 _(a)	There is a significant negative relationship between percentage of independent directors and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1 _(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Not Accepted
H1 _(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted

Hypotheses		IV + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H1 _(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Accepted
H1 _(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Not accepted
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H3 _(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Negative Relationship	Not Accepted
H3 _(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
<u>Panel B: Control variables</u>							
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA
	Leverage	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA
	Board Size	NA	Significant Positive Relationship	NA	NA	Insignificant Positive Relationship	NA

Hypotheses			IV + CV			
DV	PS			FFR		
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Firms Size	NA	Significant Negative Relationship	NA	NA	Insignificant Negative Relationship	NA
Age	NA	Significant Positive Relationship	NA	NA	Significant Negative Relationship	NA

NA = non-applicable

(B) Table 6.35 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) added with moderating variables (act as IV) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.35

Comparative Summary of Regression Analyses for Corporate Governance, Ownership Structure and Likelihood of Fraud for Likelihood of Fraud and Non-Likelihood of Fraud Firms

Hypotheses		IV + MV (as IV) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
<u>Panel A: Independent variables</u>							
H1 _(a)	There is a significant negative relationship between percentage of independent directors and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1 _(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Not Accepted
H1 _(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1 _(d)	There is a significant positive relationship between the director's remuneration and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Accepted
H1 _(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + MV (as IV) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
	Direct Family Ownerships	Insignificant Negative Relationship	Significant Negative Relationship	NA	Insignificant Negative Relationship	Insignificant Negative Relationship	NA
	Indirect Family Ownerships	Significant Positive Relationship	Insignificant Positive Relationship	NA	Insignificant Positive Relationship	Insignificant Positive Relationship	NA
	Indirect Institutional Ownership	Insignificant Positive Relationship	Insignificant Positive Relationship	NA	Insignificant Negative Relationship	Insignificant Positive Relationship	NA
Panel B: Control variables							
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA
	Leverage	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA

Hypotheses		IV + MV (as IV) + CV				
DV	PS	FFR				
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Board Size	NA	Significant Positive Relationship	NA	NA	Insignificant Positive Relationship	NA
Firms Size	NA	Significant Negative Relationship	NA	NA	Insignificant Negative Relationship	NA
Age	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA

NA = non-applicable

(C) Table 6.36 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) added with moderating variable (Direct family ownership) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.36

Comparative Summary of Regression Analyses for Corporate Governance Moderated by Direct Family Ownership and Likelihood of Fraud for Likelihood of Fraud and Non-Likelihood of Fraud Firms

Hypotheses		IV + MV (FAMOWN_DIRECT) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Panel A: Independent variables							
H1 _(a)	There is a significant negative relationship between percentage of independent directors and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted
H1 _(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Not Accepted
H1 _(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1 _(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1 _(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + MV (FAMOWN_DIRECT) + CV					
DV		PS	FFR				
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
	Direct Family Ownerships	Insignificant Negative Relationship	Insignificant Negative Relationship	NA	Insignificant Positive Relationship	Insignificant Positive Relationship	NA
Panel B: Moderating variables							
H4(a1)	Direct Family ownerships moderate negative relationship between board independence and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Moderate Positive Relationship	Moderate Positive Relationship	Not Accepted
H4(a2)	Direct Family ownerships moderate negative relationship between board tenure and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4(a3)	Direct Family ownerships moderate negative relationship between board gender and the likelihood of fraud.	Moderate Negative Relationship	Moderate Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted

Hypotheses		IV + MV (FAMOWN_DIRECT) + CV					
DV		PS	FFR				
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H4 _(a4)	Direct Family ownerships moderate negative relationship between board remuneration and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4 _(a5)	Direct Family ownerships moderate negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4 _(a6)	Direct Family ownerships moderate negative relationship between independent audit committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4 _(a7)	Direct Family ownerships moderate negative relationship between risk management committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Moderate Positive Relationship	Moderate Positive Relationship	Not Accepted
H4 _(a8)	Direct Family ownerships moderate negative relationship between independent risk management committees and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
Panel C: Control variables							
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA
	Leverage	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA

Hypotheses		IV + MV (FAMOWN_DIRECT) + CV				
DV	PS	FFR				
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Board Size	NA	Significant Positive Relationship	NA	NA	Insignificant Positive Relationship	NA
Firms Size	NA	Significant Negative Relationship	NA	NA	Insignificant Negative Relationship	NA
Age	NA	Significant Positive Relationship	NA	NA	Significant Negative Relationship	NA

NA = non-applicable

(D) Table 6.37 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) added with moderating variable (Indirect family ownership) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.37

Comparative Summary of Regression Analyses for Corporate Governance Moderated by Indirect Family Ownership and Likelihood of Fraud for Likelihood of Fraud and Non-Likelihood of Fraud Firms

Hypotheses		IV + MV (FAMOWN_INDIRECT) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
<u>Panel A: Independent variables</u>							
H1(a)	There is a significant negative relationship between percentage of independent directors and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Significant Negative Relationship	Accepted	Significant Negative Relationship	Significant Negative Relationship	Not Accepted
H1(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Significant Negative Relationship	Not Accepted
H1(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + MV (FAMOWN_INDIRECT) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted
	Indirect Family Ownerships	Insignificant Positive Relationship	Insignificant Positive Relationship	Nil	Significant Negative Relationship	Significant Negative Relationship	Nil
<u>Panel B: Moderating variables</u>							
H4(a1)	Indirect Family ownerships moderate negative relationship between board independence and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4(a2)	Indirect Family ownerships moderate negative relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4(a3)	Indirect Family ownerships moderate negative relationship between board gender and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted

Hypotheses		IV + MV (FAMOWN_INDIRECT) + CV					
DV		PS	FFR				
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H4 _(a4)	Indirect Family ownerships moderate negative relationship between board remuneration and the likelihood of fraud.	Moderate Negative Relationship	Moderate Negative Relationship	Not Accepted	Moderate Positive Relationship	Moderate Positive Relationship	Not Accepted
H4 _(a5)	Indirect Family ownerships moderate negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Moderate Positive Relationship	Moderate Positive Relationship	Not Accepted
H4 _(a6)	Indirect Family ownerships moderate negative relationship between independent audit committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4 _(a7)	Indirect Family ownerships moderate negative relationship between risk management committee and the likelihood of fraud.	Moderate Positive Relationship	Moderate Positive Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4 _(a8)	Indirect Family ownerships moderate negative relationship between independent risk management committee and the likelihood of fraud.	Moderate Negative Relationship	Moderate Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
Panel C: Control variables							
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA
	Leverage	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA

Hypotheses		IV + MV (FAMOWN_INDIRECT) + CV				
DV	PS	FFR				
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Board Size	NA	Insignificant Positive Relationship	NA	NA	Insignificant Negative Relationship	NA
Firms Size	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA
Age	NA	Significant Positive Relationship	NA	NA	Insignificant Positive Relationship	NA

NA = non-applicable

E) Table 6.38 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) added with moderating variable (Indirect Institutional ownership) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.38

Comparative Summary of Regression Analyses for Corporate Governance Moderated by Indirect Institutional Ownership and Likelihood of Fraud for Likelihood of Fraud and Non-Likelihood of Fraud Firms

Hypotheses		IV + MV (INSOWN_INDIRECT) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H1(a)	There is a significant negative relationship between percentage of independent of directors and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Not Accepted
H1(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Accepted	Significant Positive Relationship	Insignificant Positive Relationship	Accepted
H1(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Significant Positive Relationship	Significant Positive Relationship	Not Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + MV (INSOWN_INDIRECT) + CV					
DV		PS	FFR				
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Significant Positive Relationship	Significant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Negative Relationship	Not Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted
	Indirect Institutional Ownerships	Insignificant Negative Relationship	Insignificant Negative Relationship	Na	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H4(b1)	Institutional ownerships moderate positive relationship between board independence and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4(b2)	Institutional ownerships moderate positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4(b3)	Institutional ownerships moderate positive relationship between board gender and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4(b4)	Institutional ownerships moderate positive relationship between board remuneration and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted

Hypotheses		IV + MV (INSOWN_INDIRECT) + CV					
DV		PS	FFR				
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H4 _(b5)	Institutional ownerships moderate positive relationship between board meeting frequency and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H4 _(b6)	Institutional ownerships moderate positive relationship between independent audit committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted
H4 _(b7)	Institutional ownerships moderate positive relationship between risk management committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted
H4 _(b8)	Institutional ownerships moderate positive relationship between independent risk management committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Negative Relationship	Not Accepted
Liquidity		NA	Insignificant Negative Relationship	NA	NA	Significant Negative Relationship	NA
Leverage		NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA
Board Size		NA	Significant Positive Relationship	NA	NA	Significant Positive Relationship	NA

Hypotheses		IV + MV (INSOWN_INDIRECT) + CV				
DV	PS	FFR				
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Firms Size	NA	Significant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA
Age	NA	Significant positive Relationship	NA	NA	Insignificant Negative Relationship	NA

NA = non-applicable

(ii) Comparison between Dependent Variables – PS vs. FFR (PN17 vs. Non-PN17 Firms)

(A) Table 6.39 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.39
Comparative Summary of Regression Analyses for Corporate Governance and Likelihood of Fraud for PN17 And Non-PN17 Firms

Hypotheses		IV + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H1(a)	There is a significant negative relationship between percentage of independent of directors and the likelihood of fraud.	Insignificant Negative Relationship	Significant Negative Relationship	Not Accepted	Significant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Positive Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Insignificant Negative Relationship	NA
	Leverage	NA	Insignificant Positive Relationship	NA	NA	Significant Positive Relationship	NA
	Board Size	NA	Significant Negative Relationship	NA	NA	Significant Negative Relationship	NA
	Firms Size	NA	Insignificant Negative Relationship	NA	NA	Significant Negative Relationship	NA
	Age	NA	Insignificant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA

NA = non-applicabl

(B) Table 6.40 below presents the summary of comparison for dependent variable Polarity sentiment (PS) and dummy variable (FFR). Model 1 presents the result of independent variables (IV) added with moderating variables (act as IV) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.40

Comparative Summary of Regression for Corporate Governance, Ownership Structure and Likelihood of Fraud for PN17 Vs Non-PN17 Firms

Hypotheses		IV + MV (as IV) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H1(a)	There is a significant negative relationship between percentage of independent of directors and the likelihood of fraud.	Insignificant Negative Relationship	Significant Negative Relationship	Not Accepted	Significant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not Accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted
H1(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not Accepted
H1(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted

Hypotheses		IV + MV (as IV) + CV					
DV		PS			FFR		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Accepted
H3(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Positive Relationship	Insignificant Negative Relationship	Not Accepted	Significant Negative Relationship	Significant Negative Relationship	Accepted
H3(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Accepted	Significant Positive Relationship	Significant Positive Relationship	Not Accepted
	Direct Family Ownerships	Insignificant Positive Relationship	Insignificant Positive Relationship	NA	Significant Positive Relationship	Significant Positive Relationship	NA
	Indirect Family Ownerships	Significant Negative Relationship	Insignificant Negative Relationship	NA	Significant Negative Relationship	Insignificant Negative Relationship	NA
	Liquidity	NA	Insignificant Positive Relationship	NA	NA	Significant Negative Relationship	NA
	Leverage	NA	Insignificant Positive Relationship	NA	NA	Significant Positive Relationship	NA
	Board Size	NA	Significant Negative Relationship	NA	NA	Significant Negative Relationship	NA

Hypotheses		IV + MV (as IV) + CV				
DV	PS	FFR				
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Firms Size	NA	Insignificant Negative Relationship	NA	NA	Significant Negative Relationship	NA
Age	NA	Significant Negative Relationship	NA	NA	Insignificant Positive Relationship	NA

NA = non-applicable

(C) Table 6.41 below presents the summary of comparison for dependent variable Polarity sentiment (PS). Model 1 presents the result of independent variables (IV) added with moderating variable (Direct family and Indirect family ownership) without control variables (CV), while Model 2 presents the result with control variables.

Table 6.41
Comparative Summary of Regression Analyses for Corporate Governance Moderated by Direct and Indirect Family Ownership for PN17 Vs Non-PN17 Firms

Hypotheses		IV + MV + CV					
DV		FAMOWN_DIRECT			FAMOWN_INDIRECT		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H1(a)	There is a significant negative relationship between percentage of independent of directors and the likelihood of fraud.	Insignificant Negative Relationship	Significant Negative Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H1(b)	There is a significant positive relationship between board tenure and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H1(c)	There is a significant negative relationship between percentage of women participation in the board and the likelihood of fraud.	Significant Negative Relationship	Significant Negative Relationship	Not accepted	Significant Negative Relationship	Significant Negative Relationship	Not accepted
H1(d)	There is a significant positive relationship between the director remuneration and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted
H1(e)	There is a significant negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted

Hypotheses		IV + MV + CV					
DV		FAMOWN_DIRECT			FAMOWN_INDIRECT		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H2	There is a significant negative between Independence Audit Committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H3 _(a)	There is a significant negative relationship between risk management committee and the likelihood of fraud	Insignificant Negative Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Positive Relationship	Insignificant Negative Relationship	Not accepted
H3 _(b)	There is a negative relationship between independent of risk management committee and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted
	Direct Family / Indirect Family Ownerships	Insignificant Positive Relationship	Insignificant Negative Relationship	NA	Insignificant Negative Relationship	Insignificant Negative Relationship	NA
H4 _(a1)	Direct Family ownerships moderate negative relationship between board independence and the likelihood of fraud.	Insignificant Positive Relationship	Significant Positive Relationship	Supported	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H4 _(a2)	Direct Family ownerships moderate negative relationship between board tenure and the likelihood of fraud.	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Positive Relationship	Significant Positive Relationship	Supported
H4 _(a3)	Direct Family ownerships moderate negative relationship between board gender and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H4 _(a4)	Direct Family ownerships moderate negative relationship between board remuneration and the likelihood of fraud.	Significant Negative Relationship	Insignificant Negative Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted

Hypotheses		IV + MV + CV					
DV		FAMOWN_DIRECT			FAMOWN_INDIRECT		
		Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
H4 _(a5)	Direct Family ownerships moderate negative relationship between board meeting frequency and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Positive Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H4 _(a6)	Direct Family ownerships moderate negative relationship between independent audit committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted
H4 _(a7)	Direct Family ownerships moderate negative relationship between risk management committee and the likelihood of fraud.	Insignificant Negative Relationship	Significant Negative Relationship	Not accepted	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted
H4 _(a8)	Direct Family ownerships moderate negative relationship between independent risk management committee and the likelihood of fraud.	Insignificant Negative Relationship	Insignificant Negative Relationship	Not accepted	Insignificant Positive Relationship	Insignificant Positive Relationship	Not accepted
Liquidity		NA	Insignificant Positive Relationship	NA	NA	Insignificant Positive Relationship	
Leverage		NA	Insignificant Positive Relationship	NA	NA	Insignificant Positive Relationship	
Board Size		NA	Insignificant Negative Relationship	NA	NA	Significant Negative Relationship	

Hypotheses		IV + MV + CV				
DV	FAMOWN_DIRECT		FAMOWN_INDIRECT			
	Model 1	Model 2	RESULT	Model 1	Model 2	RESULT
Firms Size	NA	Insignificant Negative Relationship	NA	NA	Insignificant Negative Relationship	
Age	NA	Insignificant Negative Relationship	NA	NA	Significant Negative Relationship	

NA = non-applicable

CHAPTER SEVEN

CONCLUSION

7.1 Introduction

This chapter discusses the conclusion of the study by summarizing the results and findings. This chapter also discusses the implications and contributions for the study and provides suggestions for future research. Section 6.2 presents the capitulation of the study, followed by section 6.3 that discusses the summary of the findings for fraud vs. non-fraud firms and the findings for further analysis of PN17 vs non-PN17. Meanwhile, section 6.4 discusses the implications of the study, followed by section 6.5 on the contribution of the study. Section 6.6 then describes the limitations for the study and lastly section 6.7 presents suggestions for future research.

7.2 Capitulation of Study

The increasing trend of fraudulent financial reporting and the huge impact on the organizations and global economy have opened the eyes of the scholars on the importance of fraud prediction to detect the early signals of fraud. Malaysia is also involved in the series of corporate scandals that lead into bankruptcy which affects not only the business itself but also Malaysian economy. This study aims to identify the likelihood of fraud using textual analysis among the firms that have high likelihood of fraud and to investigate whether corporate governance and ownership structure can influence the likelihood of fraud. This study aims to achieve four objectives which are; (i) to analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms, (ii) to identify the narrative pattern of likelihood and non-likelihood fraud firms using textual analysis, (iii) to determine the relationship between likelihood of fraud and corporate governance among likelihood and non-likelihood fraud firms, and (iv) to determine the effect of ownership structure on the relationship between the likelihood of fraud and corporate governance among likelihood and non-likelihood fraud firms.

In this study, the main sample of the study is the likelihood of fraud firms and non-likelihood of fraud firms. A total of 150 likelihood of fraud firm observations are matched with

150 non-likelihood of fraud firm observations for the years 2017 to 2022. The matched non-fraud observations are matched based on its industry specific and total assets. Meanwhile, this study also uses the sample of PN17 firms and non-PN17 firms as further analysis in determining the likelihood of fraud. A total of 50 PN17 firm observations are matched with 50 non-PN17 firm observations for the year 2020 to 2022. The data used for this study are secondary data obtained from annual report particularly in MD&As section, board of director's profile, corporate governance section, and financial statement. Meanwhile, the dependent variable for this study is the likelihood of fraud. The dependent variable is measured by polarity scores using SentiWordNet (Esuli & Sebastiani, 2006) and dummy variable of likelihood of fraud firms (Hasnan et al., 2014). The polarity scores are obtained after measuring the MD&As section in annual report. Meanwhile, the independent variables for this study are corporate governance mechanisms including board independence, board tenure, board gender, board meeting, board remuneration, audit committee, risk management committee, and independent risk management committee. Family ownership and institutional ownerships are the moderating variables in this study.

There are few phases that have been used to analyse the likelihood of fraud. Firstly, in order to achieve objective 1, the study uses descriptive statistics to determine the compliance of MCCG 2017 among the selected firms. Secondly, to achieve objective 2, two text analysis approaches are adopted which are Topic Modeling and sentiment analysis. The topic modeling is used to identify the core topics or themes of the text in which it is used to discover the hidden structure of the MD&As. The text clustering and LDA approaches are adopted in this technique. The text clustering is used to organize data into similar groups called clusters. The K-Means clustering algorithm is adopted in this process. Meanwhile, the LDA approach is used to automatically discover the abstract topics in the group of unlabeled documents. In addition, 30 most frequent words mentioned in the MD&As text are identified. These frequent words are categorized according to their similar themes or group and each of the group is renamed by reflecting the financial characteristics of the text. Each of the MD&As text is identified according to their financial characteristics, which show the nature of the text of MD&As.

The sentiment analysis is the analysis of public thought and opinions which represent either the text has positive, negative, or neutral intonation (Chauhan, 2017). To determine the sentiment

of the MD&As text, two dictionary techniques are used which include LM dictionary (Loughran & McDonald, 2011) and SentiWordNet (Esuli & Sebastiani, 2006). The LM dictionary is used to define the frequency of positive, negative, and neutral words that appear in MD&As text. In other words, using LM dictionary determines the frequency of the words in MD&As of all the samples of whether it is positive, negative, or neutral presented in one dataset. The reason of selecting LM dictionary is because the dictionary contains commonly occurring words in financial text (Goel & Uzuner, 2016) that are associated with fraud (Loughran & McDonald, 2011; Purda & Skillicorn, 2015). Meanwhile, the second dictionary technique, SentiWordNet, is a general word list that has degree of positivity, negativity, and objectivity of the text. This dictionary contradicts the LM dictionary because it has lots of words used in the original General Inquirer positive and negative wordlists that have different connotations in the financial domain (Goel & Uzuner, 2016). Even though the dictionary is more general, it is able to generate the frequency or sentiment weight of each of the MD&As text. Unlike LM dictionary which tabulates the frequency of words, this dictionary is scientifically created to determine the sentiment weight of MD&As, whether it is polarity of positive, negative, or neutral sentiment.

Lastly, to achieve objectives 3 and 4, few statistical analyses are adopted. This study uses univariate analysis, correlation analysis, and regression analysis. For the purpose of the study, two statistical tools are employed which are Rapid Miner Studio version 9.10.013 and E-views version 13. To analyse the textual information, the Rapid Miner Studio is used. The textual processes include text pre-preprocessing, text-processing, text visualization, text clustering, and LDA. On the other hand, for univariate analysis, correlation analysis and regression analysis, the E-views are used. The summary of results of the analyses are discussed in section 7.3.

7.3 Summary of the Result of the Study

7.3.1 Likelihood of Fraud vs. Non-likelihood of Fraud Firms

The first objective for this study is to analyse the compliance of MCCG 2017 among the likelihood and non-likelihood fraud firms. This objective aims to identify the compliance of the MCCG 2017 recommendations. Based on the analysis, five out of eight recommendations comply

with MCG 2017 and only three do not comply. The result shows that the firms in Malaysia take into consideration any changes made by the regulator. Nevertheless, the recommendations that are not complied include; (i) the tenure of the board of directors should not exceed nine years of service, (ii) the percentage of female directors do not met the requirement of 30%, and (iii) the majority of risk management committee comprises of independent directors. On average, 37.3% of the total sample remain as the directors on board for more than nine years. The possible reason is that longer directors tenure leads to more expertise and experience in the industry. Meanwhile, the presence of the female directors on board with only 12.7% is still far from the minimum requirement of 30%. This is may be because the firms are in opinion that gender diversity is not necessary to be implemented in the firm as the selection of the directors are based on their competencies, skill, extensive experience, and knowledge in specific areas (Zin et al., 2020). As for independent of RMC, only 49.4% of independent directors are present in the RMC committee, which is lower than the recommendation of MCG 2017. The lower compliance might be due to the reason that the committee is new to Malaysia firms, thus it may take some time to fully comply with the requirement.

The second objective for this study is to identify the narrative pattern of likelihood and non-likelihood of fraud firms using textual analysis. Two textual analysis approaches are LDA topic modeling and sentiment analysis. Firstly, for LDA topic modeling, the findings revealed that the fraud firms use disclosure style which can be termed as “Deceptive Obfuscation”. The key difference is how the likelihood of fraud and non-likelihood of fraud firms structure their narratives. Likelihood of fraud firms exhibit substantially greater thematic complexity by generating 11 topics as compared to only 6 topics in non-likelihood of fraud firms. This indicates the strategy of the management to distract readers’ attention by spreading information across many themes. Consequently, this narrative complexity can be seen as a red flag showing that instead of being clear and transparent, the firm is hiding important issues behind unnecessary information.

Furthermore, a quantitative assessment of topic prevalence also revealed that the likelihood of fraud firms allocates higher proportion of negative financial characteristics (5 out of 11 topics, or 45%) compared to their non-likelihood of fraud counterparts (2 out of 6 topics, or 33%). Accordingly, the topic narratives heavier emphasis on forward-looking themes such as "Business

opportunities" (Topic 2) and "Future activity" (Topic 7). These positive themes are shown together with discussion of "non-performing activities" (Topic 4) and "Loss and regularization" (Topic 8) that create a strategic dissonance, attempting to overshadow financial struggles with promises of future growth. Nevertheless, in non-likelihood of fraud firms, it is characterized by greater thematic consistency and a focus on core operational activities, resulting in a straightforward and transparent narrative that aligns with actual performance.

Secondly, sentiment analysis uses LM dictionary and SentiwordNet. The LM dictionary is used to determine the frequency of positive, negative, and neutral words in MD&As. Meanwhile, SentiwordNet is used to determine the sentiment polarity for each of the MD&As as a whole, whether MD&As text presents positive or negative sentiments. Based on the result of LM dictionary, both likelihood of fraud and non-likelihood of fraud firms use neutral words, followed by negative and positive words. Nevertheless, the likelihood of fraud firms use more negative words than positive words, which supported the previous studies (Loughran & McDonald 2011; Goel & Uzuner 2016; Li et al., 2023) where fraud firms have more negative intonation as compared to non-fraud firms. The large number of neutral words in both groups suggests that the firms employ more neutral language to manipulate the perception or distract readers from inconsistencies. On the other hand, when looking at the specific words, the likelihood of fraud firms frequently use negative terms such as "loss", "risk", "challenges", while also adding positive words such as "strong" and "opportunities". Meanwhile, non-likelihood of fraud firms show similar patterns, with positive words such as "improvement" appear 143 times in non-fraud firms but only appear 49 times in fraud firms. This suggests that non-likelihood of fraud firms genuinely discuss performance improvements, whereas fraud firms use positive words more strategically to mask problems. The negative words serve as a red flag for readers about potential risks or fraud.

Another textual analysis used in this study is SentiWordNet. The SentiWordNet analysis shows that both likelihood of fraud and non-likelihood of fraud firms mostly use positive sentiment in their MD&As (around 80%). However, the pattern over time tells a different story. Non-likelihood of fraud firms shows more decreasing sentiment trends, which suggest they report their real performance, including negative developments. On the other hand, the likelihood of fraud firms show more consistent sentiment patterns, which may indicate an attempt to keep their reports

sounding the same each year to hide problems or irregularities. Even though both groups use mostly positive words, the likelihood of fraud firms tend to push a more positive tone overall, which may be a strategy to distract readers from weaknesses or misleading information.

Overall, when comparing the results of LM dictionary and SentiwordNet, this study concludes that the likelihood of fraud firms use more negative words than positive words, yet their polarity scores are consistently positive. The result further justifies with Tableau analysis where most of the likelihood fraud firms maintain consistent sentiment trend (20 firms), suggesting a stable positive tone with a small number of increasing sentiment trends (2 firms) or decreasing sentiment trends (8 firms). This could suggest that the likelihood of fraud firms may intentionally maintain positive tone to mask underlying issues or irregularities. The result is similar to non-likelihood of fraud firms, but the sentiment is more aligned with the actual performance of the firm rather than deliberate tone management strategies. The result could suggest that the non-likelihood of fraud firms are more transparent in their reporting. This is consistent with the Tableau analysis where non-likelihood fraud firms show 16 firms with consistent sentiment trends, 11 firms decreasing sentiment trends, and 3 firms increasing sentiment trends.

The third objective of this study is to determine the relationship between the likelihood of fraud and corporate governance among the likelihood and non-likelihood fraud firms. In this analysis, two dependent variables are used which include polarity scores and dummy variable of likelihood of fraud. Firstly, the analysis uses polarity scores as the dependent variable. The regression analysis shows the results for corporate governance, ownership structure and the likelihood of fraud which reveal that board independence, board gender, board meetings, board size, and age are associated with higher polarity scores, resulting in lower likelihood of fraud. The results support the role of corporate governance mechanisms in organization in mitigating the likelihood of fraud. Nevertheless, board remuneration, independence of risk management committee, direct family ownership, and firm size are associated with lower polarity scores, thus resulting in higher likelihood of fraud. The other variables of board tenure, independent audit committee, risk management committee, indirect family ownership, indirect institutional ownership, liquidity, and leverage are not significant in this study.

Secondly, for the analysis using dummy variable on the likelihood of fraud, the regression analysis of corporate governance, ownership structures and likelihood of fraud found that board tenure, liquidity, and age significantly reduce the likelihood of fraud. Longer tenure directors give them opportunities to gain more knowledge and experience in the industry and contribute to reduce the possibility of threat or fraudulent activity as well as reducing the likelihood of fraud (Sadique et al., 2019). Nevertheless, board meetings and board remuneration are significantly associated with the likelihood of fraud. Meanwhile the other variables of board independent, board gender, audit independence, risk management committee, independent of risk management, direct family ownership, indirect family ownership, institutional ownership, leverage, board size, and firm size are not statistically significant in this analysis.

Overall, the comparison of two dependent variables of polarity scores and dummy of likelihood of fraud provides complementary evidence into how the corporate governance relates to the likelihood of fraud. In sum, board remuneration is found to be statistically significant in both variables, indicating that higher remuneration is associated with higher likelihood of fraud. The result is robust in using both dependent variables. Nevertheless, board meetings evidenced an increase in polarity scores, resulting in lower likelihood of fraud, yet board meetings increase the likelihood of fraud in the dummy of likelihood of fraud. The different effects of board meetings between the two dependent variables are justified by the nature of these variables. The polarity scores capture the sentiment of text or tone in corporate reporting, reflecting how the firms communicate their business performance and risk profile. Meanwhile, the dummy of likelihood of fraud measures the likelihood of fraud occurrences itself. This implies that the frequency of meetings is not always equal quality of governance. It may even signal attempts to cover up or control narratives. Frequent board meetings may be used to carefully craft or "polish" corporate disclosures, resulting in positively worded reports to please stakeholders, even if underlying issues exist.

The fourth objective for this study is to determine the effect of ownership structure on the relationship between the likelihood of fraud and corporate governance among the likelihood and non-likelihood fraud firms. Firstly, using the dependent variable of polarity scores, when the corporate governance interacts with direct family ownership, the result reveals that the interaction

variable between board gender and direct family ownership exhibits negative significant relationship to the likelihood of fraud. This indicates that direct family ownership moderates the relationship between board gender and polarity scores by weakening its positive effect. Consequently, the influence of board gender is reduced, thus the likelihood of fraud is higher.

The second interaction variable is indirect family ownership. The analysis reveals that the interaction variable between risk management committee (RMC) and indirect family ownership exhibits significant positive relationship. This indicates that indirect family ownership moderates the relationship between RMC and polarity scores, resulting in lower likelihood of fraud. The result further explains that indirect family ownership influences the establishment of RMC in the firm so that it enables the committee to function effectively in assessing risks within the firms as well as reducing likelihood of fraud. Meanwhile, the interaction variables of board remuneration and independent RMC exhibit significant negative relationship with the likelihood of fraud. This indicates that indirect family ownership undermines the roles of board remuneration and independent RMC, leading to lower polarity scores and thus increasing the likelihood of fraud. On the other hand, the interaction variable of indirect institutional ownership found that none of these variables are statistically moderated to the likelihood of fraud. The insignificant result is due to the small sample of institutional ownership in this study.

Moving forward, the analysis involves the interaction variables of the dependent variable dummy. The result reveals that the interaction variable of direct family ownership and board independent as well as the interaction between RMC is statistically significant. The role of board independent and establishment of RMC are mitigated in the presence of direct family ownership because larger family ownership gives them power to control the firms. In addition, since they have power, they have the right to choose accounting policies and procedures by deciding the extent of information that can be disclosed to the stakeholders (Teh et al., 2017). Meanwhile, the interaction variable of indirect family ownership with board remuneration and board meetings is statistically significant with the likelihood of fraud. Indirect family ownership moderates the relationship between board remuneration and the likelihood of fraud by weakening its negative effect. Consequently, the influence of board remuneration is reduced, thus the likelihood of fraud is higher. Meanwhile, indirect family ownership strengthens the positive relationship between board

meetings and increases likelihood of fraud. Lastly, interaction variables of indirect institutional ownership found that none of the interactions are statistically significant to the likelihood of fraud. The result is similar to previous regression using polarity scores in which insignificant relationship resulted from a small sample of institutional ownership.

Overall, family ownership moderates governance mechanisms in both dependent variables, indicating its critical role in shaping disclosure behaviour and actual fraud outcomes. Indirect family ownership tends to exert positive effect, thus enhancing the governance practices, while direct family ownership exerts negative effects that deviate the decision making, thereby increases the likelihood of fraud. The findings reveal that board remuneration weakens indirect family ownership using both variables, resulting in higher likelihood of fraud. This evidence suggests that board remuneration may influence indirect family ownership to serve their personal interests, thereby increasing likelihood of fraud. The impact of ownership structure on the other governance variables differs depending on the dependent variable. For example, indirect family ownership positively influences the establishment of RMC. The result indicates that indirect family ownership may help the firm in assessing risk, resulting in higher polarity and lower likelihood of fraud. This could suggest that indirect family ownership leads to better disclosure practices, resulting in more positive sentiment. It also improves governance structure as well as protecting minority shareholders. Meanwhile, using the dummy variable of the likelihood of fraud, which is direct family ownership, tends to undermine the role of RMC, as they prioritize on their family interests.

7.3.2 PN17 vs. Non-PN17 Firms

This section summarizes the analysis and result for the sample of PN17 vs. non-PN17 firms. Firstly, objective 1 is to analyse the compliance of MCCG 2017 among likelihood and non-likelihood fraud firm which reveals that four recommendations are complied, and the other three recommendations are not complied. The recommendations that are not complied include; (i) the director's tenure should not exceed the nine years of service, (ii) the presence of female directors on board with at least 30%, (iii) the audit committee consists of solely of independent directors, and (iv) the risk management committee comprises of majority independent directors. The

compliance level is similar to fraud firms except for the audit committee composition. The evidence proves that both samples are still in the middle of compliance with the regulations.

Secondly, the aim for objective 2 is to identify the narrative pattern of the likelihood of fraud among likelihood and non-likelihood fraud firms using textual analysis. Using LDA topic modeling, this second narrative style is termed as “Explanatory Distress”. Compared to the earlier ‘Deceptive Obfuscation’ pattern (Section 6.3.1.5), this distinction emerges for distinguishing between financial failure and intentional fraud. The thematic shows that reports openly discuss the firms’ financial problems, such as “Loss and Regularization” and “Sector-Specific Business Collapse”. The strong negative sentiment and frequent use of words such as “restructuring” suggest that these firms are explaining financial difficulties rather than trying to mislead. The complexity of the narrative comes from the seriousness of the situation, not from any attempt to hide information. In contrast, for fraud firms, the narratives style is termed as “Deceptive Obfuscation” where many different topics are included to distract readers and hide negative information. In addition, they also emphasize on “Business opportunities” and “Future activity” to overshadow the negative themes.

On the other hand, SentiWordNet results show that almost all PN17 firms use positive language in their MD&As (93%), with no negative sentiment detected. Non-PN17 firms also show mostly positive sentiment (92%), with only a small amount of negative tone. This indicates that most PN17 firms display an increasing positive trend, suggesting they are trying to show improvement to reassure stakeholders despite facing financial distress and a higher risk of fraud. Furthermore, the PN17 firms have a higher minimum sentiment score (0.006) compared to non-PN17 firms (-0.001) which raises concerns. It suggests that these firms may be intentionally writing their MD&As in a more positive tone or making their reports more complex to influence readers' perceptions and making fraud more difficult to detect.

The third objective of this study is to determine the relationship between likelihood fraud and corporate governance among the likelihood and non-likelihood fraud firms. First and foremost, using dependent variable polarity scores, the analysis of corporate governance, family ownership, and likelihood of fraud found that board independence, board gender, board size, and age increase the likelihood of fraud. Nevertheless, the higher percentage of independent of risk management

can help the firms to reduce the likelihood of fraud. Meanwhile, using dummy variable, the analysis found that the independent of audit committee, risk management committee, liquidity, board size, and firm size help in reducing the likelihood of fraud. The new recommendations by MCCG of audit committee to solely have independent members and establishment of risk management committee are seen as a tool to reduce the likelihood of fraud. However, board meetings, direct family ownership and leverage will increase the likelihood of fraud. The higher frequency of board meetings shows a signal that the firms have unusual situations such as fraudulent activities as the firms need to solve it. Therefore, the directors will hold more meetings to discuss the issues. Large percentage of direct family ownership will increase the likelihood of fraud which is aligned with entrenchment effect as they tend to opportunistically engage in unethical behaviour when they have control of the firms. They tend to be involved in fraud for families' self-interest so that financial reporting is more favorable to them.

Lastly, the fourth objective for this study is to determine the effect of ownership structure on the relationship between the likelihood of fraud and corporate governance among the likelihood and non-likelihood fraud firms. Using the dependent variable polarity scores, the interaction between direct family ownerships with board independent, board remuneration, and RMC is found to be statistically significant with the likelihood of fraud. Meanwhile, direct family ownership shifts the influence of board remuneration and RMC by opportunistically acting according to their own interest, thus resulting to lower polarity scores and higher likelihood of fraud.

7.4 Implications of the Study

This study highlights several implications to the government, regulators, scholars, and other financial statement readers. Firstly, for the theory and future research, this study highlights the importance of combining accounting, machine learning, and computational linguistics to fraud risk assessment. This study provides an idea to expand and integrate machine learning in the accounting field for fraud prediction and fraud risk assessment. Besides, this study provides evidence on how corporate governance interacts with family and institutional ownerships in determining the likelihood of fraud.

Secondly, this study is expected to give implications to practice and corporate management where it offers an idea of the language intonation and sentiment in corporate disclosures particularly in MD&As section. Using topic modeling and sentiment analysis, this study provides an idea to the financial statement readers as to understand the topics or financial characteristics or sentiment of positive, negative, or neutral because overly positive language could trigger fraudulent financial reporting. In addition, this study offers implication to the stakeholders, especially the investors, to build the sentiment-driven indicator derived from corporate disclosure particularly MD&As section. Using textual analysis, it can provide early signals of likelihood fraud or unusual reporting behaviour in the annual report, enabling the investors to better evaluate risks and decision making. Besides, using machine learning techniques may help in identifying the narrative patterns and sentiment trends, offering an additional decision support tool in assessing the risks in the firm.

Lastly, this study is expected to offer implications to the regulators and policy makers by issuing new guidelines on narrative reporting. Since topic modeling and sentiment analysis can provide narrative pattern of fraud in the financial disclosure particularly in MD&As, the regulators can use this insight to improve the disclosure standard. The regulators can introduce clearer rules that require the firm to use balance, factual, and transparent language in annual report so that the preparer of financial statements will be challenging to manipulate the report. Currently, the financial reporting standards do not highlight the pattern of language used in the reporting as more emphasis is given on the matters of recognition, measurement, presentation and items to be disclosed. Besides, the regulators can also invest in AI tool to automatically scan the corporate disclosures so that they are able to detect early signals of fraud using their textual and reduce the reliance on manual audits.

In corporate management, the evidence from this study can provide suggestions to the board to strengthen the governance practices by encouraging stronger incentives or regulatory mechanisms to achieve gender diversity targets. This can be achieved by promoting awareness programs or targeted recruitment by highlighting that involvement of women on board can improve governance and reduce the likelihood of fraud. On the other hand, this study highlighted that board remuneration is associated with the likelihood of fraud. The regulators can use this evidence to review and strengthen remuneration guidelines to ensure that the remuneration is linked to the

duties and responsibilities of the directors as well as their expertise and complexity of the business operation. Apart from that, the study also revealed that family ownership influences board remuneration, resulting in a higher likelihood of fraud. The regulators can consider strengthening the disclosure requirement for board remunerations in family firms. The regulator may include mandatory disclosure requirements for family firms that require the identity of family members as well as remuneration breakdown, so that the excessive remuneration or unjustified pay is difficult to hide. Currently, the remuneration guidelines focus on all the PLCs in general and do not provide specific guidelines for family firms. Furthermore, for the stakeholders, the higher remuneration in family firms show a potential red flag for governance risks, providing valuable insights for risk assessment and investment decisions.

On top of that, the findings also revealed that direct family ownership is associated with higher likelihood of fraud. This creates entrenchment effect on the firms and weakens the board monitoring. The regulator may consider strengthening the oversight for the firms concentrated with higher direct family ownership by introducing stricter disclosure for related-party remuneration. In contrast, indirect family ownership is associated with lower likelihood of fraud. This creates an alignment effect on the firms by strengthening the board monitoring. The regulator may encourage indirect ownership arrangements for remuneration in family firms, by distinguishing direct and indirect ownership.

7.5 Contributions of the Study

This study is expected to contribute to three perspectives which are theoretical perspectives, methodologically, and practical perspectives. First and foremost, theoretically this study bridges the new scope of fraud detection by using textual analysis. This study uses topic modeling and sentiment analysis in determining the narrative pattern and likelihood of fraud in which this technique is relatively underexplored in accounting and finance area. This technique is usually used in linguistics or computer science, so this technique expands a broader scope in corporate accounting analysis. This study also contributes to the literature on corporate governance mechanisms and moderating variables of family and institutional ownership by understanding how

these variables contribute to the likelihood of fraud. Besides, using control variables, this study strengthens the empirical evidence for future research.

Secondly, this study methodologically contributes to the new angle of using textual data in detecting the likelihood of fraud. Traditionally, fraud detection techniques include numeric-based or quantitative in nature such as Altman Z-Score, Beneish M-Score, and Dechow F-Score. This study expands methodologically on textual analysis from annual report, particularly MD&As section that can serve as an early signal of fraud detection. This study uses topic modeling through text clustering and LDA while sentiment analysis is relatively new in accounting areas which provides both quantitative and qualitative insight, so that making the fraud detection more comprehensive. In addition, this study contributes to the practitioners such as auditors on the implementation of textual analysis in auditing to detect the likelihood of fraud.

Thirdly, in practical perspectives, this study contributes to the regulators, auditors, and investors to the early signal of fraud or red flags in financial disclosures particularly in MD&As section in annual report. Thus, the corporate transparency will be improved. Besides, this study provides evidence to the regulators on the most important factors in determining the likelihood of fraud. In addition, using the moderating variables of family and institutional ownership, this study contributes to the regulators on the governance mechanism that strengthens or weakens for fraud prevention. Apart from that, this study also helps the investors for decision making process as the findings of this study enhance the ability to evaluate the credibility of the firms despite relying on the financial numbers only. Other than that, this study also facilitates auditors in fraud risk assessments in detecting fraud in financial statements.

7.6 Limitations of the Study

This study was successfully conducted and the objectives for this study are accomplished. Nevertheless, there are several limitations that should be highlighted from this study. Firstly, the limitations on data and scope of the study. This study relies on the annual report mainly on MD&As section, corporate governance section, and financial statements section which may not properly capture the fraudulent signal as compared to other sources such as press release, analyst briefing or social media. Besides that, the sample of this study uses the firms that have higher likelihood of

fraud which may be involved in other regulatory violations rather than solely using fraudulent financial reporting firms as samples of the study. This is due to the limited number of firms that are involved in fraudulent financial reporting during the period of 2017-2022. Besides, even though this study extends the study samples by including PN17 firms, the sample size of these firms is limited to only 100 observations since the author is unable to run regression analysis for the interaction of moderating variable of institutional and family ownerships using dummy variables.

Secondly, the availability of data for securities commission violation is limited due to the reason that few of the firms have been delisted from Bursa Malaysia. Thus, the author has to remove the firm from the samples of the study, and the dataset becomes smaller. Thirdly, even though the textual sentiment and topic modeling are able to provide insight on the early signal of fraud, it also has constraint in which the different language and culture reporting style may affect the accuracy of the result. For example, using LM dictionary and SentiWordNet dictionaries to determine the polarity sentiment of the text and to test the likelihood of fraud in Malaysia may have different culture or reporting style of business as compared to the U.S.

Fourthly, the LM dictionary represents the words that appear in the form of positive, negative, weak modal, strong modal, litigious, and uncertainty which do not represent that the MD&As have the opinion of positive or negative as a whole. In other words, this dictionary only helps the researcher to determine the frequency of the word sentiment rather than expressing the polarity of positive or negative connotation. Nevertheless, according to Goel and Uzuner (2016), LM dictionary is specific to the accounting areas because the words are in financial context.

7.7 Suggestions for Future Research

This study provides several suggestions for future research. Firstly, since this study is mainly focused on the MD&As in annual report, future study could extend beyond this section such as auditor's report, press releases or analyst report to improve the fraud detection. Besides that, future research could examine the quarterly reports, in which it could provide additional insights into fraud detection. Secondly, this study mainly investigates only Malaysia public listed firms as the sample of the study. It is suggested that future research investigates the likelihood of

fraud by comparing it with other countries which have different regulatory settings. In addition, future research could also investigate industry specific such as construction, banking sectors, etc.

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