



Exploring earnings management: Institutional ownership and audit size in Malaysia's sustainability pathway

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ABSTRACT

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This study aims to investigate the relationships between discretionary accrual earnings management (DEM), real earnings management (REM), institutional ownership, and audit quality in Malaysian firms. The study's findings are expected to offer insights into how these factors may influence Malaysia's progress towards the Sustainable Development Goals. We examine the relationship between DEM and REM to identify the potential simultaneous use of earnings management strategies. Additionally, we explore the impact of institutional ownership and audit firm size on a company's earnings management practices. Using data from the Kuala Lumpur Stock Exchange (KLSE) spanning 2016-2018 we conducted statistical analyses, including ANOVA, t-tests, and multiple regression. There were notable correlations between DEM and REM, suggesting that these earnings management techniques are being used concurrently. Notably, institutional ownership and audit firm size played substantial roles in firms' earnings management practices. Companies with higher institutional ownership and larger audit firms tended to exhibit lower levels of DEM and REM. However, these factors did not appear to moderate the DEM-REM relationship. These findings have critical implications for regulators and policymakers in addressing earnings management practices and enhancing corporate governance in Malaysia. Focusing on institutional ownership and audit firm size may help curtail such practices, contributing to Malaysia's progress towards the Sustainable Development Goals. Future research should explore other potential moderating variables and distinctive corporate governance features that could also impact the DEM-REM relationship.

Contribution/Originality: This study distinguishes itself by focusing on the nuanced interplay between discretionary accrual earnings management (DEM) and real earnings management (REM) in developing nations like Malaysia, considering their unique ownership structures. It explores how institutional ownership may both encourage and deter manipulation choices, shedding light on the dual impact within the context of Sustainable Development Goals (SDGs) and financial transparency. This research contributes uniquely to SDG 16 (peace, justice, and strong institutions) and addresses sustainability challenges while bridging existing research gaps.

1. INTRODUCTION

1.1. Background

Globalization has had a significant impact on businesses and financial markets around the world, resulting in an increased demand for information of superior quality from corporations. Investors are increasingly comparing risks and returns across countries (Jaggi & Leung, 2007), so regulatory bodies outside the United States have shifted their attention to corporate governance, particularly ownership structure elements such as insider managers, institutional investors, and block holders. This strategic shift is intended to enhance the quality of accounting information disclosed, thereby enhancing the credibility and transparency of financial reporting. This aspect is directly related to Sustainable Development Goal (SDG) 16, which promotes peace, justice, and the formation of strong institutions.

The issue of earnings management, which poses a threat to financial transparency and credibility, assumes utmost importance in this context. This is of particular importance in emerging markets such as Malaysia and other Asian nations, where such practices could potentially impede progress towards achieving the SDGs. Both Discretionary Earnings Management (DEM) and Real Earnings Management (REM), in which actual business operations that are altered to affect reported earnings compromise long-term financial sustainability and the attainment of Sustainable Development Goals 16 (Peace, Justice, and Strong Institutions).

There is a claim that one of the challenges businesses in Asian countries, like Malaysia, face in achieving the Sustainable Development Goals is the potential difficulties in obtaining higher-quality reporting. One of these challenges involves understanding the opportunistic earnings manipulation made by firms when choosing between various alternative techniques, such as moving between DEM and REM, where the firm's decision is primarily influenced by incentives or regulatory requirements. In instances of increased scrutiny, firms may switch from DEM to REM, a decision likely influenced by the complexities of detecting REM and rationalizing it through operational decisions (Zang, 2012). Chi, Lisic, and Pevzner (2011) found a positive and significant relationship between audit quality and REM, indicating that an increase in audit quality may unintentionally promote a shift from DEM to REM.

In the Malaysian context, the potential impact of audit quality and institutional ownership on the relationship between DEM and REM is of particular interest. Studies suggest that institutional investors can facilitate the adoption of transparent financial reporting practices by leveraging their substantial resources and expertise (Bushee, 1998; Chen, Harford, & Li, 2010). Consequently, a high level of institutional ownership may discourage earnings management practices, thereby promoting long-term organizational stability and advancing SDG 16 principles. Moreover, high-quality audits can deter both DEM and REM by increasing the likelihood of detection and discouraging such manipulative behaviours (Francis, Maydew, & Sparks, 1999; Kim, Chung, & Firth, 2003).

Understanding the factors that influence firms to engage in DEM and REM requires an appreciation of the potential interaction or cumulative effects of DEM and REM. To comprehend the determinants of firms in both DEM and REM, it is necessary to recognize the potential interaction or cumulative effects of DEM and REM. This understanding could play a crucial role in promoting transparent and reliable financial reporting practices in Malaysia and other Asian nations, thereby addressing their difficulties in aligning with the SDGs. This knowledge could also aid in addressing sustainability issues related to the transparency of a company's environmental, social, and governance (ESG) performance, thereby contributing to broader efforts to achieve the Sustainable Development Goals (Bebbington, Unerman, & O'Dwyer, 2014).

1.2. The Problem Statement

The presence of earnings management (EM), which comprises discretionary accrual earnings management (DEM) and real earnings management (REM), creates a significant ethical dilemma that jeopardizes the businesses' transparency, credibility, and long-term viability. This issue is especially pertinent to the business climate in Malaysia, a representative of Asian nations that face obstacles in achieving the Sustainable Development Goals

(SDGs). The choice between DEM and REM, influenced by various factors and incentives, has significant effects on the financial health of corporations. Currently, our understanding of the complex interplay between DEM and REM is insufficient, and the roles of institutional ownership and audit quality as potential counterbalancing forces require further investigation. This knowledge gap impedes crucial corporate governance and financial reporting strategy decisions, hindering efforts to ensure transparency and stability in Malaysia's business sector. The role of institutional ownership in the DEM-REM relationship remains relatively unexplored, despite its significant impact on this dynamic. Particularly in the Malaysian context, there is a lack of research on the mechanisms driving the influence of increased institutional ownership on the DEM-REM selection process.

Furthermore, although the significance of audit quality in EM practice mitigation is recognized, Malaysian enterprises require a better comprehension of the ways in which audit quality impacts their decision to select between DEM and REM. This lack of understanding impedes the development of financial reporting reliability and transparency by making audit effectiveness in identifying and deterring manipulative activity worse.

Despite the fact that numerous studies have acknowledged the negative effects of earnings management on the transparency and reliability of financial reporting, there is a lack of understanding of the driving forces behind these practices as well as the mitigating roles of institutional ownership and audit quality, particularly in developing nations such as Malaysia. Addressing this knowledge gap necessitates a comprehensive examination of these elements, a crucial challenge for the improvement of Malaysia's financial reporting practices. In addition, this understanding is crucial for addressing related sustainability issues, such as enhancing the transparency of a company's environmental, social, and governance (ESG) performance, thereby contributing to the successful achievement of the SDGs (Bebbington et al., 2014).

1.3. Research Questions and Objectives

Research questions and objectives are developed as follows:

1.4. Research Questions

1. What is the relationship between discretionary accrual earnings management (DEM) and real earnings management (REM) in the context of Malaysian firms, and is there a trade-off or joint practice between these two practices?
2. How does institutional ownership affect EM practice and its potential moderating effect on the relationship between DEM and REM in Malaysian enterprises, considering the country's significantly higher institutional ownership prevalence than that of developed nations?
3. How does audit quality, as represented by the engagement of a big-four audit firm as the company's auditor, influence the practice of EM as well as its potential moderating role in the relationship between DEM and REM in Malaysian firms?

1.5. Research Objectives

In accordance with the research questions, this study has developed the research objectives as below:

1. To determine if there is a trade-off or joint effect between discretionary accrual earnings management (DEM) and real earnings management (REM) in Malaysian firms.
2. To investigate how institutional ownership affects EM practice and its potential moderating effect on the relationship between DEM and REM in Malaysian enterprises, considering the country's significantly higher institutional ownership prevalence than that of developed nations.
3. To investigate the differences between REM and DEM within firms with Big-Four Auditor and firms with non-Big-Four Auditor, as well as the moderating effect of Audit firm size on the relationship between discretionary accrual earnings management (DEM) and real earnings management (REM) in Malaysian firms

1.6. Significance of the Study

Bartov, Gul, and Tsui (2000) assert that an in-depth investigation of DEM-REM trade-offs or joint practices is of the utmost importance, particularly in developing nations. Looking into these connections and how institutional ownership and audit quality affect them helps us understand how these practices affect the national financial reporting ecosystem. It also leads to better quality financial reporting and tighter oversight by regulators (Bebbington et al., 2014). Furthermore, it offers valuable perspectives on the challenges encountered by Malaysia, as a representative of Asian countries, in the pursuit of the Sustainable Development Goals (SDGs).

This study intends to analyze the interaction between DEM and REM, as well as the moderating effects of institutional ownership and audit quality. By conducting this analysis, we aim to gain insights into the underlying factors that drive earnings management practices in Malaysia, contributing to a comprehensive understanding of these practices (Bushee, 1998; Chen et al., 2010). This understanding paves the way for the development of targeted strategies to mitigate the negative effects of these practices, resulting in enhanced financial reporting transparency and credibility (Zang, 2012). Such transparency and credibility are essential to achieving the goals of SDG 16, which promotes the development of strong institutions.

Furthermore, the outcomes of this study will serve as important references for formulating policy and regulatory measures aimed at reducing the adverse impacts of earnings management practices in Malaysia. Through a thorough examination of the combined effects of DEM and REM, as well as the impacts of institutional ownership and audit quality, regulators will be able to develop more effective financial reporting guidelines and standards and identify areas requiring heightened vigilance. As this research delves deeper into the roles of institutional ownership and audit quality in defining the relationship between DEM and REM, it will provide investors and other interested parties with valuable insights (Chen et al., 2010). It will also significantly contribute to the understanding of the obstacles to achieving the SDGs in Malaysia and may provide strategies for overcoming these obstacles.

2. LITERATURE REVIEW

2.1. Theoretical Framework

2.1.1. Agency Theory

The theoretical framework used in this study is derived from previous research on earnings management practices, particularly the interaction between discretionary accrual earnings management (DEM) and real earnings management (REM). This framework is rooted in agency theory, which posits that managers may engage in earnings management to achieve their personal objectives and also meet the expectations of external stakeholders (Jensen & Meckling, 1976). This theory is essential for elucidating the need for Sustainable Development Goals (SDGs) because it identifies the inherent conflicts of interest that can impede sustainable development.

The agency theory examines relationships between principals (such as shareholders) and agents (such as managers) in which the former delegate decision-making authority to the latter. The theory proposes that, due to conflicting interests and information asymmetry, managers may prioritize their own interests at the expense of shareholders. One way this behaviour becomes evident is through earnings management, wherein managers manipulate earnings through accounting discretion. DEM involves manipulating earnings through accounting discretion. For instance, managers may modify the assumptions used to calculate depreciation or provisions for bad debts, thereby influencing reported earnings without affecting the firm's fundamental economic performance. In contrast, real earnings management (REM) entails modifying a company's core operations or economic activities to achieve predetermined profit goals. Managers may, for instance, postpone required maintenance or manipulate sales levels through price discounts or lenient credit terms.

This framework investigates how factors such as institutional ownership and audit quality may influence the interaction between DEM and REM practices. Institutional shareholders endowed with substantial resources and knowledge could discourage earnings management practices by closely monitoring the operations and financial

reporting of the firms. Furthermore, to discourage earnings management, quality audits can discourage managers from engaging in these practices by increasing the likelihood of detection.

Through the lens of agency theory, this study seeks to develop a deeper comprehension of these dynamics, particularly within the context of Malaysia's burgeoning economy. The theory's emphasis on transparency, accountability, and stewardship is closely aligned with the SDGs' core principles, making it the ideal theoretical lens through which to comprehend the need for these goals. The ultimate objective of the study is to shape better policy and regulatory interventions that foster more transparent and reliable financial reporting practices, thereby contributing to the attainment of the Sustainable Development Goals.

2.1.2. Resource Dependence Theory

The Resource Dependence Theory (RDT) serves as another theoretical foundation for this investigation. According to the theory that Pfeffer and Salancik developed in the late 1970s, organizations are not entirely autonomous entities; rather, they rely on resources that are frequently under the control of external entities, which affect their decisions and actions. Resources may include financial capital, human capital, technical or industry-specific expertise, and market access. Consequently, firms strategize and interact with their environments to guarantee a steady flow of these essential resources. RDT is highly relevant to our study of discretionary accrual earnings management (DEM), real earnings management (REM), institutional ownership, and audit firm size. Institutional investors, who are a part of a company's external environment, frequently control substantial resources, such as financial capital and business expertise. Due to the firm's reliance on these resources for operational and strategic efficacy, institutional investors have some control and sway over the company's activities. As a result, institutional investors can monitor the firm's propensity to engage in earnings management practices and potentially curtail it.

Similar to this, RDT (Resource Dependence Theory) offers a viewpoint to look into how big audit firms perceive the impact of audit quality on earnings management. Big audit firms have extensive resources, including technical auditing expertise, comprehensive auditing tools, and a reputation for adhering to rigorous standards. Due to the high reputational risk associated with a client who engages in earnings management, these auditing firms are more thorough and stringent in their auditing procedures. This may result in lower earnings management practice among big audit firm clients. In a nutshell, the Resource Dependence Theory therefore provides a solid basis for analyzing and interpreting the relationships between DEM, REM, institutional ownership, and audit firm size in Malaysian firms. It provides a deeper comprehension of our empirical findings by explaining why and how these variables interact in the context of earnings management practice.

2.2. Literature Review and Hypotheses Development

2.2.1. Discretionary Accrual Earnings Management (DEM)

In the existing literature, discretionary accrual models have been extensively employed as proxies for measuring earnings management or earnings quality (Dechow, Ge, & Schrand, 2010). The Jones (1991) standard model is the most widely used discretionary model (Islam, Ali, & Ahmad, 2011). The Jones model describes the accrual process in terms of revenue growth and Property, Plant, and Equipment (PPE). The Jones model validates the relationship between these fundamental companies' attributes and accruals, which are intuitively correlated to sales growth and capital expenditures (Dechow et al., 2010). However, it is argued that the Jones model exhibits low explanatory power, explaining only 10% of the variance in accruals (Dechow et al., 2010). Despite that, some academics have argued that managers are using accrual accounting to conceal their fundamental performance, and thus, the Jones model continues to be a popular proxy for earnings management (Dechow et al., 2010).

According to Comporek (2020), DEM is the presentation of earnings management options using discretion and flexibility in accounting decisions with the variety of justifications that the firm can provide for their adopted methods. In DEM practices, intentional shaping of financial results is used to present the reported information in a manner

that gives the entities financial position the appearance that the firm intended without representing the entity's actual economic performance. The strategy is also intended to make it more difficult to identify and evaluate occurrences and processes that reflect the company's potential flaws. This is consistent with Schipper (1989) definition, in which earnings management is defined as the manipulation of financial reporting for personal gain, made possible by the availability of accounting alternatives. Watts and Zimmerman (1990) define earnings management similarly as the application of managerial discretion to accounting information. This discretion is vital to the accounting system, as it generates accruals based on matching and revenue recognition principles. However, not all accounting choices constitute earnings management, as the concept goes beyond accounting decisions. There may be personal incentives for managers to manipulate earnings, which may impose costs on users of financial statements. For instance, managers may use accounting techniques to inflate stock prices prior to the expiration of their stock options or to maximize their annual bonuses, thereby providing false information.

Multiple studies (Christensen, Hoyt, & Paterson, 1999; Hunt, Moyer, & Shevlin, 2000; Marquardt & Wiedman, 2004; Tucker & Zarowin, 2006; Warfield, Wild, & Wild, 1995) demonstrate that opportunistic earnings management diminishes earnings informativeness. It has been observed that organizations with poor operating performance have a propensity to employ revenue-inflating strategies (Mostafa, 2017; Yoon & Miller, 2002). Although DEM is a commonly used indicator of earnings management, detecting the practice of earnings management in its entirety remains challenging under certain conditions. For example, research shows that discretionary accruals may not work as well in companies with a lot of institutional ownership or analyst coverage. This means that there are other ways to trick the system if a manager wants to get specific benefits from a reporting indicator (Krishnan, 2003). Despite these limitations, discretionary accruals continue to be a useful metric for earnings management, especially when other metrics are unavailable. Additionally, corporate governance mechanisms and industry characteristics have an impact on the relationship between DEM and REM (Shahroor & Ismail, 2022) indicating their efficacy in particular contexts, indicating their effectiveness in particular contexts. In conclusion, even though REM serves as a common proxy for earnings management, it has limitations and may not detect all forms of manipulation or be effective in all circumstances. However, they continue to be a useful tool for researchers and practitioners to identify potential earnings management practices.

2.3. Real Earnings Management (REM)

Real earnings management (REM) is a technique that managers use to change a company's business practices in order to manipulate its financial results. These changes can include increasing sales, reducing discretionary spending, and increasing production costs. The goal of REM is often to achieve private objectives, such as meeting earnings targets or obtaining bonuses. One of the most common strategies of REM is the reduction of research and development (R&D) expenditure. This can boost a company's short-term performance, but it may have long-term negative consequences. According to Graham, Harvey, and Rajgopal (2005), managers often meet their profit targets by implementing a variety of strategies, such as reducing investments in research and development (R&D), advertising, and maintenance, and delaying the launch of new projects. Similarly, Hribar, Jenkins, and Johnson (2006) found that managers use R&D investments for share buybacks to prevent diluted earnings per share and achieve short-term goals. In addition, Brown and Krull (2008) found that R&D employees exercising stock options can generate R&D tax credits, which reduce income tax expenses and contribute to an increase in earnings. Consequently, this makes it easier for managers to achieve their earnings targets. In addition, Brown and Krull (2008) emphasize that these tax credits resulting from option exercises reduce R&D spending during periods when there are strong incentives to effectively manage earnings.

Real activity manipulation can also involve sales manipulation, production control, and discretionary expenditure control. For example, sales manipulation can include easing restrictions on sale conditions, credit conditions and increasing sales, and offering discounts. Production control tactics may entail leveraging mass production techniques

to achieve economies of scale and reduce unit product costs. Discretionary expenditure control can involve narrowing down expenses related to research and development, advertising, and maintenance costs.

The consequences of REM can be negative, leading to long-term effects on the performance of the firm and cash flow. For instance, [Habib, Ranasinghe, Wu, Biswas, and Ahmad \(2022\)](#) highlight that REM often involves significant changes to a company's operations, which may be difficult to justify as legitimate business decisions. It is argued that DEM practices are detectable by auditors and authorities ([Cohen, Dey, & Lys, 2008](#)), while auditors and regulators are less likely to detect REM, making it a more attractive option for some managers ([Barton & Simko, 2002](#)). [Graham et al. \(2005\)](#) surveyed 401 chief financial officers (CFOs) in the United States and discovered that 80% of respondents prefer to reduce discretionary expenditure on areas such as advertising, research and development, and maintenance in order to meet earnings targets. Furthermore, 55.3% of the Chief Financial Officers (CFOs) expressed their willingness to postpone the initiation of new projects to achieve earnings targets, even if it involved compromising certain value aspects. (p. 32). These results demonstrate the widespread use of real earnings management (REM) strategies, which has prompted an increase in academic research on the causes and effects of REM. Similar to DEM, REM can also lead to reputational and regulatory risks, potentially damaging a company's image and causing legal issues. However, unlike DEM, REM can be expensive, and the measures taken to inflate the reported earnings may have a negative impact on cash flows in subsequent periods.

Tax incentives and scrutiny from auditors and investors are just two factors that affect the use of REM. [Zang \(2012\)](#) suggests that the decision to engage in REM or DEM depends on several factors, and the two methods act as substitutes since they are negatively correlated. For instance, firms with auditors who scrutinize accounting decisions more closely are more likely to choose REM to manage their earnings ([Cohen & Zarowin, 2010](#)).

In conclusion, REM is a strategy that managers use to change a company's financial results by modifying its operational activities. REM can have unfavorable effects, and factors like tax incentives and the scrutiny of auditors and investors affect its use. Nonetheless, it is necessary to examine both REM and DEM together in order to gain a comprehensive understanding of firms' opportunistic decisions regarding earnings manipulation in response to various pressures. Fundamentally, a comprehensive understanding of financial reporting practices requires a comprehensive analysis of the factors that influence the selection of various earnings management methods.

Based on the above review, we can conclude that the issue of earnings management is complex and multifaceted, involving both accrual-based and real-life activity methods. The various factors and pressures to manage their earnings may have an impact on the strategy firms use to achieve their personal goals. The potential for firms to shift between different methods of earnings management highlights the need for greater transparency and ethical financial reporting practices. Thus, hypothesis 1 is developed as follows:

Hypothesis: There is a significant relationship between discretionary accrual earnings management (DEM) and real earnings management (REM) in Malaysian firms.

2.4. Factors Influencing the Choices between REM and DEM & the Firms Characteristics

2.4.1. Institutional Ownership

Prior research has suggested that there may be a trade-off between DEM and REM and that firms may choose one manipulation technique over the other depending on certain factors or incentives ([Bartov et al., 2000](#); [Dechow, Sloan, & Sweeney, 1995](#); [Roychowdhury, 2006](#)). However, there may be additional factors that have yet to be researched that may influence firms' decisions to choose between these two types of earnings management practices.

Malaysia, similar to other emerging markets, has a unique ownership structure with a higher prevalence of institutional ownership compared to developed nations. A recent study by [Al-Duais, Malek, Abdul Hamid, and Almasawa \(2022\)](#) shows that family, foreign, and institutional ownership improve financial reporting and can reduce REM. The results also show that ownership structure significantly affects REM, supporting corporate governance theories and practitioner perspectives. This particular aspect can considerably influence firms' decisions to switch

between DEM and REM practices. To critically analyze this relationship, it is essential to examine the impact of institutional ownership on the incentives for firms to choose one type of earnings management over the other.

Institutional ownership refers to the ownership of firms by entities such as pension funds, insurance companies, and mutual funds (Bushee, 1998). This form of ownership represents a significant ability to monitor investments, as it allows for the utilization of substantial resources, expertise, and access to information (Chen et al., 2010). According to Almashhadani and Almashhadani (2022), influential institutional investors can have a significant influence on a company's approach to earnings management. This influence can manifest in various ways, such as by pressuring the company to meet short-term earnings targets or maintain stock price stability.

The monitoring role of institutional investors can act as a double-edged sword. On one hand, institutional ownership has been found to be negatively connected with DEM (Cornett, Marcus, & Tehranian, 2008). This is because institutional investors, as effective monitors, can deter managers from engaging in aggressive accrual manipulation, given the potential reputational costs and regulatory sanctions that may arise from such practices (Chen et al., 2010). On the other hand, the pressure to meet short-term objectives can drive firms with high institutional ownership to adopt REM practices, which are more challenging to detect and can be rationalized as operational decisions (Roychowdhury, 2006; Zang, 2012). In addition, Cheng and Reitenga (2009) found that institutional ownership affects earnings management practices when earnings pressure is high, suggesting that its influence is not conclusive when earnings are pressured to decrease and suggesting block ownership only restricts income-increasing accruals rather than income-decreasing accruals.

In the context of earnings management practices, the presence of institutional ownership has both a direct and indirect influence, as it intersects with different corporate governance mechanisms. In relation to this matter, it is important to note that institutional investors possess significant influence over the composition and efficacy of a company's board of directors, the implementation of executive compensation based on performance, and the overall standard of corporate governance within the organization (Aggarwal, Erel, Ferreira, & Matos, 2011; Gillan & Starks, 2003). These factors then have an impact on the organization as a whole, influencing the incentives and limitations managers face when deciding between real earnings management (REM) and discretionary earnings management (DEM) practices.

In the specific context of Malaysia, the presence of institutional ownership plays a distinctive and crucial role in influencing the patterns of earnings management practices adopted by firms. Institutional investors frequently engage in vigilant oversight, which tends to result in a decrease in discretionary accruals earnings management (DEM) practices. This is because firms endeavour to avoid the negative consequences associated with manipulating accruals. As a result, companies may increasingly adopt real earnings management (REM) practices to meet earnings targets or achieve other objectives. This shift has important implications for the quality and transparency of financial reporting. This highlights the significant importance of examining the interaction between DEM and REM as well as the moderating impact of institutional ownership within the context of Malaysia. Such an investigation is essential to gaining a deeper understanding of the motivations behind earnings management behaviour, ultimately assisting in the formulation of suitable regulatory and policy measures to promote accurate and reliable financial reporting. Therefore, we propose Hypothesis 2 in the following manner:

H_{2(a)}: There is a significant difference between the discretionary accrual earnings management (DEM) of firms with institutional ownership and those without institutional ownership.

H_{2(b)}: There is a significant difference between the real earnings management (REM) of firms with institutional ownership and those without institutional ownership.

H_{2(c)}: Institutional ownership moderates the association between discretionary accrual earnings management (DEM) and real earnings management (REM) for Malaysian firms.

2.4.2. Audit Quality

Malaysia, as an emerging economy, has its own unique context regarding financial reporting practices and audit quality, which can significantly influence the choice and exchangeability of earnings management practices among firms.

Audit quality is known to play a critical role in shaping firms' earnings management practices, as high-quality audits can potentially deter or limit such practices (DeFond & Zhang, 2014). Big audit firms (also referred to as Big-4 audit firms) are considered to provide higher audit quality due to their extensive resources, expertise, and reputation (Francis et al., 1999). Thus, it is also expected that Malaysian firms audited by these big audit firms will have more reliable and transparent financial reporting as a result of the higher audit quality.

Malaysian firms might also face contemplating choices between DEM and REM based on the level of audit quality they are subject to. It is argued that firms that are audited by big audit firms may be less likely to engage in DEM due to the higher likelihood of detection and the reputation risk associated with such practices (Francis et al., 1999). Consequently, these firms might resort to REM practices, which are more challenging to detect and less subject to regulatory scrutiny (Roychowdhury, 2006; Zang, 2012).

The unique institutional setting in Malaysia also plays a role in shaping the relationship between audit quality and earnings management practices. The Malaysian Code on Corporate Governance (MCCG) emphasizes the importance of effective risk management and internal control systems, as well as the need for external auditors to provide assurance on the adequacy of these systems (Malaysian Code on Corporate Governance, 2017). Therefore, firms operating in Malaysia are incentivized to choose higher audit quality to meet the expectations of stakeholders and to comply with the MCCG requirements.

Additionally, Malaysia's unique ownership structure, which includes a lot of institutional ownership, makes audit quality even more important when it comes to earnings management (Hashim & Devi, 2008). Institutional investors, with their substantial resources and expertise, often possess a greater ability to monitor and influence firms' financial reporting practices (García-Meca & Sánchez-Ballesta, 2011; Shleifer & Vishny, 1986). Thus, it is an empirical question if, within the Malaysian context, where institutional ownership is more common than in developed nations, firms might be more inclined to opt for higher audit quality to meet the expectations of these powerful stakeholders and to mitigate the risks associated with earnings management practices.

A study by Ching, Teh, San, and Hoe (2015) shows that high audit quality, typically associated with big audit firms, has been found to improve a company's financial performance in Malaysia by increasing investor confidence. However, earnings management mediates the audit quality-financial performance relationship. In particular, when management divisions manipulate earnings, Big Four and non-Big Four audit firms may not improve financial performance. This suggests that earnings management activities can negate the positive impact of high audit quality on financial performance in Malaysia. In a nutshell, Ching et al. (2015) conclude that regardless of audit quality, Malaysian firms need more interventions to reduce earnings management. This gap in the literature highlights the need for further investigation into how audit quality influences firms' choice and exchangeability of earnings management practices in this unique setting.

In summary, the unique attributes of Malaysia, such as its regulatory framework, corporate governance norms, and ownership patterns, highlight the significant impact that audit quality has on shaping firms' choices and flexibility in relation to earnings management practices. Understanding the complicated nature of this particular relationship within the specific context of Malaysia has the capacity to influence focused policy interventions and enhance the quality of financial reporting practices in the country. As a result, we propose the following hypotheses:

H_{3(a)}: Firms audited by Big-Four Audit firms demonstrate significantly different levels of discretionary accrual earnings management (DEM) than firms not audited by Big-Four Audit Firms.

H_{3(b)}: Firms audited by Big-Four Audit firms demonstrate significantly different levels of real earnings management (REM) than firms not audited by Big -Four Audit Firms.

H_{30} : The size of the audit firm moderates the association between discretionary accrual earnings management (DEM) and real earnings management (REM) for Malaysian firms.

3. RESEARCH METHODOLOGY

3.1. Research Design

3.1.1. Measures of Discretionary Accruals and Earnings Management: Dependent Variable

Discretionary accruals (earnings management) represented this study's dependent variable. Accruals were identified through the modified Jones model, which is typically used in tax avoidance research to proxy earnings management. The model employs a methodical and comprehensive approach to identify managerially influenced earnings (discretionary accruals), apart from the key business operations. Apart from acknowledging its wide usage for estimating discretionary accruals, Dechow et al. (1995) highlighted the robustness of the modified Jones model to various specifications and samples and its capacity to recognise earnings management. Besides that, Xie (2001) commended the predictive power of the modified Jones model for future financial performance and stock returns, emphasising its reliability as a criterion of earnings quality.

Evidently, the modified Jones model serves as a valuable means to identify discretionary accruals related to tax avoidance and earnings management. In particular, abnormal discretionary accruals in one year and subsequent reversals, which suggest tax-related earnings management, can be detected using this model. In this study, the absolute value of discretionary accruals was used to acquire a comprehensive assessment of the magnitude of earnings manipulation, which included both positive and negative discretionary accruals. The determination of discretionary accruals in this study was mainly based on the following formulas, resulting in the formation of (4):

$$DEM_{\tau} = TA_{\tau} - NDA_{\tau} \quad (1)$$

$$TA_{\tau} = \alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau}) + \alpha_3(PPE_{\tau}) + v_{\tau} \quad (2)$$

$$NDA_{\tau} = \alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau} - \Delta REC_{\tau}) + \alpha_3(PPE_{\tau}) \quad (3)$$

$$DA_{\tau} = (\alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau}) + \alpha_3(PPE_{\tau}) + v_{\tau}) - (\alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau} - \Delta REC_{\tau}) + \alpha_3(PPE_{\tau})) \quad (4)$$

Where

TA_{τ}	=	Total accruals in year τ scaled by lagged total assets in year $\tau-1$.
DA_{τ}	=	Estimated discretionary accruals in year τ .
NDA_{τ}	=	Estimated non-discretionary accruals in year τ .
ΔREV	=	Revenues in year τ less revenues in year $\tau-1$ scaled by total assets at $\tau-1$.
ΔREC	=	Net receivables in year τ less net receivables in year $\tau-1$ scaled by total assets at $\tau-1$.
PPE_{τ}	=	Gross property, plant, and equipment in year τ scaled by total assets at $\tau-1$.
$A_{\tau-1}$	=	Total assets at $\tau-1$.
$\alpha_1, \alpha_2, \alpha_3$	=	Firm-specific parameters.
a_1, a_2, a_3	=	Ordinary least squares estimates of $\alpha_1, \alpha_2, \alpha_3$.
v_{τ}	=	Measurement error in year τ .

Equation 1 represents discretionary accruals and earnings management at time τ .

Equation 2 represents Total Accruals at time τ .

Equation 3 represents Non-Discretionary Accruals at time τ .

Equation 4 represents Discretionary Accruals at time τ , which is essentially the difference between Total Accruals (TA_{τ}) and Non-Discretionary Accruals (NDA_{τ}). The components of TA_{τ} and NDA_{τ} are defined in Equation 2 and Equation 3, respectively. DA_{τ} measures the portion of accruals that can be attributed to managerial discretion, as it subtracts the non-discretionary components from the total accruals. This study utilises the absolute value of discretionary accruals.

3.2. Real Earnings Management: Dependent Variable

Roychowdhury (2006) says that an indicator of real earnings management is changing real activities in ways that cause abnormal cash flows from operations (CASHABS), abnormal production costs or too much production

(PRODABS), and abnormal discretionary expenses (OPERATINGABS). Managers typically use these methods to control real earnings. As for the current study, the extended models of Roychowdhury (2006) based on Dechow, Kothari, and Watts (1998) and Dechow and Dichev (2002) were used to determine a firm's normal operational cash flows, normal production costs, and common discretionary expenses, and the abnormal level of real manipulation activities is quantified as the estimated model's residual.

$$CFO_{i,t}/Assets_{i,t-1} = k_{1t}(1/Assets_{i,t-1}) + k_2(Sales_{i,t}/Assets_{i,t-1}) + k_3(\Delta Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (5)$$

Meanwhile, production costs refer to the sum of costs of goods sold (COGS) and change in inventory. The overall model for production costs is expressed in the following:

$$PROD_{i,t}/Assets_{i,t-1} = k_{1t}(1/Assets_{i,t-1}) + k_2(Sales_{i,t}/Assets_{i,t-1}) + k_3(\Delta Sales_{i,t}/Assets_{i,t-1}) + k_4(\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (6)$$

The equation model is then developed to estimate the normal level of production costs, where COGS is modelled as a linear function of contemporaneous sales:

$$COGS_{i,t}/Assets_{i,t-1} = k_{1t}(1/Assets_{i,t-1}) + k_2(Sales_{i,t}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (7)$$

In addition, inventory growth is modelled as follows:

$$\Delta INV_{i,t}/Assets_{i,t-1} = k_{1t}(1/Assets_{i,t-1}) + k_2(\Delta Sales_{i,t}/Assets_{i,t-1}) + k_3(\Delta Sales_{i,t-1}/Assets_{i,t-1}) + \varepsilon_{i,t} \quad (8)$$

As for the curtailment of discretionary costs, the following cross-sectional models for each industry and year are estimated (Roychowdhury, 2006):

$$SG\&A_{i,t} = \beta_1 + \beta_2(1/Total\ Assets_{i,t-1}) + \beta_3(Sales_{i,t-1}/Total\ Assets_{i,t-1}) + \varepsilon_{i,t} \quad (9)$$

$$R\&D_{i,t} = \beta_1 + \beta_2(1/Total\ Assets_{i,t-1}) + \beta_3(Sales_{i,t-1}/Total\ Assets_{i,t-1}) + \varepsilon_{i,t} \quad (10)$$

Last but not least, the inverse measures of manipulation of discretionary costs (OPERATINGABS) represent the residuals.

3.3. Audit Quality: Moderating Variable

It is expected that the level of earnings management in the firms audited by one of the Big-Four accounting firms (Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers) is lower than in the firms audited by a non-Big Four accounting firm. Francis et al. (1999) found that Big-Four audited firms have a lower amount of estimated discretionary accruals, which supports this notion. Thus, audit quality is a dummy variable consisting of "1" for Big-Four audit firms and "0" if not.

3.4. Institutional Ownership (INSTI): Moderating Variable

Institutional ownership can influence management decisions due to the power of their significant block of ownership. Institutional ownership is a proxy for corporate governance because institutional owners have more incentives and capabilities to monitor manager behaviour (Desai & Dharmapala, 2009). This variable is measured by Desai and Dharmapala (2006) as a fraction (%) of institutional investors' company equity holdings. The dummy variable is further established, comprising (1) for those companies with institutional ownership and (0) otherwise.

3.5. Control Variables

3.5.1. Managerial Control (DIRECTORS HOLD)

According to Warfield et al. (1995) and Yeo, Tan, Ho, and Chen (2002), this variable is the percentage of shares that directors own in relation to the total number of shares issued. This variable is expressed as a percent.

3.5.2. Number of Directors (NOMDIRECTOR)

According to Anum Mohd Ghazali (2010), the size of the board represents the corporate governance.

3.5.3. Quantity of Independence Filmmakers (INDDIRECTOR)

In this study, leverage served as one of the control variables. This study determined leverage by dividing the total debt at the end of the year with the total assets at the end of the year (Kholbadalov, 2012).

3.5.4. Leverage

The control variable leverage is calculated by dividing the end-of-year total debt by the end-of-year total assets (Kholbadalov, 2012).

3.5.5. Size

Firm size typically serves as a proxy for resources and reputational considerations. Davidson, Goodwin-Stewart, and Kent (2005) reported a positive relationship between firm size and the use of earnings management. As for the current study, firm size was measured as the natural logarithm of total assets.

3.5.6. Firm Age

Firm age, measured as the number of years between the year of incorporation and the year of observation (2017), was included as a control variable in this study. Firm age captures the duration of a firm's existence and provides insights into its operating history and experience. With an established reputation and a longer operating history, an older firm may exhibit more conservative reporting practices to protect their reputation (PDechow, Richard, & Amy, 1996). Additionally, older firms often possess more sophisticated internal control systems and strong corporate governance mechanisms, which can reduce incentives for earnings management (Biddle, Hilary, & Verdi, 2009).

3.6. Empirical Model

The empirical model outlined below is developed to test the hypotheses developed for this study.

$$DEM = a_1 REM + a_2 REM * INSTI + a_3 REM * AUDIT + a_4 AUDIT + a_{54} INSTI + a_5 INSTI^2 + a_6 NOMDIRECTORE + a_7 INDDIRECTOR + a_8 LEV + a_9 SIZE + a_{10} AGE + \epsilon$$

Where;

- DEM : Absolute Value of Discretionary Accruals to measure earnings management.
- REM : The total aggregate of absolute value for all three real earnings management measures developed by Roychowdary is: (i) The absolute value real earnings management measure for production; (ii) The absolute value real earnings management measure for operating activities; and (iii) The absolute value real earnings management measure for cash.
- (REM*INSTI) : Interaction variables of INSTI and REM.
- (REM*AUDIT) : Interaction variables of AUDIT and REM.
- AUDIT : Dummy variable of (1) Big 4 audit firms and (0) for otherwise.
- INSTI : Dummy variable of (1) firms with institutional ownership and (0) for otherwise.
- INSTI² : Institutional ownership by institution in percentage.
- DIRECTORSHOLD : Managerial ownership by directors in percentage.
- NOMDIRECTOR : Size of the Board of Directors.
- INDDIRECTOR : Number of Independent Directors.
- LEV : Leverage: the total debt at the end of the year divided by the total assets at the end of the year.
- SIZE : Natural logarithm of total assets.
- AGE : Age of the firm from the year incorporated to the year.

The empirical model presented in this study aims to test the hypotheses related to earnings management practices in firms. The model investigates the influence of various factors on DEM in a comprehensive and systematic manner. DEM, representing the absolute value of discretionary accruals, is the measure of earnings management. It is

examined in relation to REM measures, which encompass three dimensions: production, operating activities, and cash. These dimensions are based on Roychowdhury's work and provide a nuanced understanding of the nature of earnings management. The model also considers the interaction effects between REM and institutional ownership (INSTI) and REM and audit quality (AUDIT). The former interaction seeks to determine the role of institutional investors in shaping earnings management practices, while the latter assesses the impact of audit quality on these practices. Moreover, the model includes dummy variables for Big 4 audit firms and firms with institutional ownership to differentiate the effects of audit quality and ownership structure on earnings management.

Additional factors incorporated in the model are institutional ownership by percentage (INSTI2), managerial ownership by directors, the size of the Board of Directors, the number of Independent Directors, leverage, firm size, and firm age. These factors provide further context and enable a more comprehensive understanding of the various influences on earnings management practices in firms.

3.7. Statistical Tests

This study analyses data and tests hypotheses using statistical tests. Descriptive statistics, correlation matrix, t-test, and multiple linear regression with interaction variables are examples. Each of these tests aids in data analysis by revealing patterns and relationships. Descriptive statistics show the central tendency, dispersion, and distribution of variables (Hair, Black, Babin, & Anderson, 2014). This initial step helps researchers understand the data set and identify trends or outliers that need further investigation.

The correlation matrix examines the relationships between pairs of variables, allowing researchers to identify multicollinearity issues and assess the strength and direction of these relationships. A robust regression model and result interpretation require this information. T-tests compare group means to determine if there are significant differences (Pallant, 2016). This study uses the t-test to compare DEM between institutional ownership and Big 4 audit firms. Further, multiple linear regression with interaction variables examines the relationships between DEM, REM, institutional ownership, and audit quality (Field, 2013). Interaction variables allow analysis of potential moderating effects, which may help explain earnings management practices.

3.8. Sample Selection

The sample of firms are those listed on the Kuala Lumpur Stock Exchange (KLSE). The time covered is from the 2016-2018 financial years (considering uncertainties in the political environment in Malaysia starting in 2018 and pandemics in 2020), and random sampling of the firms listed during that period is collected into the original sample. A total of 300 companies were randomly selected from 11 different sectors for each year of observation. This study excludes utilities and financial firms, and the 2% of outliers are also eliminated.

4. RESULTS

4.1. Descriptive Analysis

Upon examining the descriptive statistics, several important findings emerge, which are consistent with real-life observations in various studies (Cohen et al., 2008). The dataset reveals considerable variation in firm size, age, director holdings, and institutional ownership, among other factors. This diversity in the sample allows for a more comprehensive examination of the relationships between the variables in the context of earnings management. Some variables, like leverage (LEV), have high skewness and kurtosis values, which means the data may not be distributed normally. However, this kind of deviation is common in real-world financial data (Fabozzi, Focardi, & Rachev, 2014). The large sample size of 820 firms helps mitigate the impact of non-normality on the multiple regression analysis. With large sample sizes, multiple regression exhibits robustness against violations of normality, thereby enhancing result reliability (Field, 2013; Pallant, 2016).

Table 1. Descriptive analysis.

Descriptive statistics									
	N statistic	Minimum statistic	Maximum statistic	Mean statistic	Std. deviation statistic	Skewness		Kurtosis	
						Statistic	Std. error	Statistic	Std. error
Size	820	0	21.146	13.061	2.058	1.062	0.085	3.961	0.171
Age	820	4	154	40.14	24.399	1.967	0.085	5.097	0.171
Direcholdinpercen	820	0	66.37	11.582	16.637	1.583	0.085	1.451	0.171
Institut dummy	820	0	1	0.600	0.490	-0.409	0.085	-1.837	0.171
Blockinpercen	820	0	66.49	6.895	13.828	2.26	0.085	4.437	0.171
Noofdirec	820	0	17	7.750	2.087	0.392	0.085	2.469	0.171
Leverage	820	0	2.595	0.056	0.151	8.712	0.085	121.489	0.171
Instinpercentage	820	0	78.170	8.282	13.86	2.549	0.085	7.011	0.171
Audit	820	0	1	0.380	0.485	0.515	0.085	-1.739	0.171
Totalrem	820	0	8.614	1.421	0.639	4.953	0.085	46.752	0.171
Demabs	820	0	0.969	0.11	0.128	2.474	0.085	8.236	0.171

Table 1 presents the descriptive analysis of the variables.

Furthermore, the large sample size provides adequate statistical power for the study, increasing the likelihood of detecting significant relationships between the variables (Hair et al., 2014). This strengthens the validity of the findings and their potential to contribute to the existing study on earnings management. In conclusion, despite some potential issues with non-normality, the dataset is well-suited for multiple regression analysis in this study due to its diversity and large sample size. These findings and observations are consistent with those found in real-life situations and prior research (Cohen et al., 2008). The analysis can provide valuable insights into the relationships between DEM, DEM, and the moderating effects of institutional ownership and audit quality within the Malaysian context.

Table 2 shows the correlation matrix, illustrating the relationships between all the variables, with Pearson correlation coefficients illustrating the strength and direction of these associations.

Table 2. Correlation matrix.

Correlations								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size	1	0.062	-0.137**	0.214**	-0.137**	0.199**	-0.275**	-0.113**
Age	0.062	1	-0.228**	0.145**	-0.140**	0.032	-0.081*	-0.058
Direcholdinpercen	-0.137**	-0.228**	1	-0.153**	0.598**	-0.125**	0.106**	0.016
Instinpercentage	0.214**	0.145**	-0.153**	1	-0.104**	0.091**	0.127**	-0.215**
Blockinpercen	-0.137**	-0.140**	0.598**	-0.104**	1	-0.122**	0.114**	-0.001
Noofdirc	0.199**	0.032	-0.125**	0.091**	-0.122**	1	-0.121**	-0.090**
Totalrem	-0.275**	-0.081*	0.106**	-0.127**	0.114**	-0.121**	1	0.167**
Demabs	-0.113**	-0.058	0.016	-0.215**	-0.001	-0.090**	0.167**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

From Table 2 reported above, firm size (SIZE) is positively correlated with age (AGE), institutional ownership percentage (INSTINPERCENTAGE), and directors (NOOFDIREC). Larger firms are older, have more institutional ownership, and have larger boards of directors.

These results align with previous literature, as larger companies possess greater resources and better access to capital, attracting institutional investors and maintaining larger boards (Boone, Field, Karpoff, & Raheja, 2007). Size is negatively correlated with director holdings, block ownership, and total real earnings management (TOTALREM). Larger firms may have lower insider ownership and less real earnings management. This supports the idea that regulators and the market scrutinize larger firms more, which may deter aggressive earnings management (Zang, 2012).

The negative correlation between AGE and DIRECHOLDINPERCEN ($r = -0.228$) suggests older firms have lower director holding percentages. As firms grow and issue new shares, ownership is diluted (Fama & Jensen, 1983). AGE is positively correlated with INSTINPERCENTAGE ($r = 0.145$), suggesting older firms have higher institutional ownership. This phenomenon may be attributed to institutional investors' preference for established, low-risk businesses (Hartzell & Starks, 2003). Higher director ownership is associated with higher block ownership ($r = 0.598$). This supports the idea that insiders are more likely to own large stakes in firms, aligning their interests with shareholders and reducing agency conflicts (Jensen & Meckling, 1976).

4.2. Hypotheses Testing

Test 1: Independent Two-sample T-test

Table 3 lets you compare the two groups by using the "Institute dummy" variable to look at the averages and ranges of the "Totalrem" and "Demabs" variables in each group. The objective is to ascertain whether there exist significant differences between these groups in relation to these variables.

Table 3. Independent two-sample t-test (INSTITUT).

Group statistics										
Variables		Institut dummy		N	Mean	Std. deviation	Std. error mean			
Totalrem		1		492	1.3449	0.6337	0.0285			
		0		328	1.5354	0.6313	0.0348			
Demabs		1		492	0.0945	0.1272	0.0057			
		0		328	0.1342	0.1246	0.0068			
Independent samples test										
Groups		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
Totalrem	Equal variances assumed	2.307	0.129	-4.224	818	0.000	-0.1905	0.0451	-0.27908	-0.1019
	Equal variances not assumed			-4.227	702.637	0.000	-0.1905	0.0450	-0.2790	-0.1020
Demabs	Equal variances assumed	0.104	0.747	-4.408	818	0.000	-0.0396	0.0089	-0.0573	-0.0219
	Equal variances not assumed			-4.426	710.754	0.000	-0.0396	0.0089	-0.0572	-0.0221

Table 4 presents the results of an independent two-sample t-test conducted on the AUDIT measure. By looking at the measures and ranges of the "Totalrem" and "Demabs" variables within each group, Table 4 makes it easier to compare the two groups when it comes to the "Audit" variable. It also helps to see if there are any significant differences between the groups when it comes to the variables being looked at.

Table 4. Independent two-sample T-test (AUDIT).

Group statistics					
Group	Audit	N	Mean	Std. deviation	Std. error mean
Totalrem	1	308	1.3587	0.6059	0.0345
	0	512	1.4586	0.6562	0.0290
Demabs	1	308	0.0972	0.1251	0.0071
	0	512	0.1183	0.1285	0.0056

Table 4. Continue....

Independent samples test										
Group		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
Totalrem	Equal variances assumed	0.576	0.448	-2.171	818	0.030	-0.0998	0.0459	-0.1901	-0.0095
	Equal variances not assumed			-2.215	687.4	0.027	-0.0998	0.0450	-0.1883	-0.0113
Demabs	Equal variances assumed	0.000	0.998	-2.304	818	0.021	-0.0211	0.0091	-0.0391	-0.0031
	Equal variances not assumed			-2.320	660.6	.021	-.0211	0.0091	-.0390	-.0032

Table 5 illustrates the coefficients derived from a regression model. The coefficients in this analysis offer crucial insights into the associations between different independent variables and the dependent variable, referred to as "DEMABS." This table is important because it shows the independent variables that have statistically significant correlations with DEMABS. It also shows whether these correlations are positive or negative and how strong they are. The determination of significance levels is based on the t-statistic and p-value, where smaller p-values are indicative of stronger evidence supporting a relationship.

Table 5. The multiple regression.

Model summary				
Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.288 ^a	0.083	0.065	0.1234

Table 5. Continue....

Coefficients ^a						
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	0.185	0.034		5.408	0.000
	Size	-0.003	0.002	-0.046	-1.257	0.209
	Age	0.000	0.000	-0.066	-1.888	0.059
	Direcholdinpercen	6.104E-6	0.000	0.001	0.018	0.985
	Blockinpercen	0.000	0.000	-0.047	-1.096	0.273
	Noofdirec	-0.002	0.002	-0.039	-1.108	0.268
	Leverage	0.025	0.029	0.030	0.853	0.394
	Institut dummy	-0.038	0.015	-0.146	-2.462	0.014
	Audit	-0.032	0.016	-0.120	-1.935	0.053
	Remsale	0.000	0.000	-0.046	-1.027	0.305
	Remdisexp	-0.015	0.032	-0.017	-0.464	0.643
	Remprod	0.191	0.048	0.421	3.938	0.000
	Audit_remsale	0.000	0.000	0.034	0.741	0.459
	Audit_remdisexp	0.400	0.297	0.100	1.348	0.178
	Audit_remprod	-0.049	0.049	-0.053	-1.000	0.317
Insti_remdisexp	0.413	0.227	0.118	1.818	0.069	
Insti_remprod	-0.148	0.052	-0.319	-2.879	0.004	

Note: a. Dependent Variable: DEMABS.

5. DISCUSSION

5.1. Hypothesis 1

This hypothesis investigated the relationship between DEM and REM in Malaysian businesses by incorporating multiple predictor variables into our analytic model. Our primary hypothesis postulates that DEM and REM are significantly related.

When examining each of the three REM measures, a complex relationship between DEM and REM in Malaysian companies became apparent. The coefficient for REMSALE was not statistically significant ($p = 0.305$), indicating that sales-based real earnings management has no substantial relationship with DEM. This aligns with earlier studies (Cohen et al., 2008; Zang, 2012), which concluded that the relationship between sales manipulation and accrual earnings management was equivocal. Likewise, the coefficient for REMDISEXP was statistically insignificant ($p = 0.643$), indicating that there is no meaningful relationship between DEM based on discretionary expenses and DEM. This is consistent with Roychowdhury (2006) and Zang (2012), who found weak or insignificant correlations between REM and DEM based on discretionary expenditures. REMPROD's coefficient was positive and statistically significant ($p 0.05$), indicating a positive correlation between production-based real earnings management and DEM.

This supports prior research conducted by [Gunny \(2010\)](#) and [Zang \(2012\)](#), demonstrating a positive correlation between production manipulation and DEM.

These results partially support our hypothesis that there is a significant relationship between REM and DEM in Malaysian companies. It revealed a significant positive correlation between production-based REM and DEM, whereas sales-based and discretionary expense-based REM exhibited no significant correlations. This may be because managers, acting as agents of the company, are motivated to increase their own welfare at the potential expense of the company's shareholders, according to agency theory. This may lead them to manage earnings through production activities, which are frequently less scrutinized than sales or discretionary spending.

According to the Resource Dependence Theory, REM decisions, particularly those related to production, are endeavors to manage and control the firm's reliance on external resources. By managing earnings through production-based REM, businesses can present an improved financial picture to external stakeholders, thereby securing the necessary resources and support.

In addition, these findings have important implications for comprehending the obstacles Malaysia and, by extension, other Asian nations face in attaining the Sustainable Development Goals (SDGs). Specifically, earnings management practices can undermine trust and transparency in corporate reporting, which are crucial to attaining several SDGs, including SDG 16's goals of peace, justice, and strong institutions. This research contributes to the discourse on sustainable development by shedding light on these corporate practices and providing empirical evidence to inform policy and regulatory interventions.

5.2. Hypotheses 2

The second hypothesis of this study examines the influence of institutional ownership on Malaysian firms' earnings management practices. Through this lens, we examine the potential role of institutional ownership in moderating earnings management practices, thereby contributing to a broader comprehension of the obstacles associated with achieving the Sustainable Development Goals (SDGs).

A two-sample independent t-test was used to find the average differences in DEM and REM between companies that had institutional ownership (INSTITUT DUMMY = 1) and those that did not (INSTITUT DUMMY = 0). This was done to test Hypotheses 2(a) and 2(b). Specifically, firms with institutional ownership had a mean DEM of 0.0945, while firms without institutional ownership had a mean DEM of 0.1342. The t-statistic of -4.408 (p0.05) for DEM is consistent with Hypothesis 2(a), indicating that there is a significant difference in DEM between firms with and without institutional ownership. Similarly, firms with institutional ownership had a mean REM of 1.3449, while firms without institutional ownership had a mean REM of 1.5354. The REM t-statistic was -4.224 (p0.05), demonstrating a significant difference in REM between firms with and without institutional ownership, thus supporting Hypothesis 2(b).

In line with earlier research [Beasley, Carcello, Hermanson, and Neal, \(2009\)](#) and [Cornett et al, \(2008\)](#), these results suggest that institutional investors can effectively stop aggressive earnings management in the context of agency theory by acting as outside regulators. Their financial expertise and long-term investment perspective promote a balance between managerial discretion and stakeholder interests, thereby improving corporate transparency and governance.

We used regression analysis to look at how the institutional variable and the REM measures (INSTI_REMDISEXP and INSTI_REMPROD) affected each other in relation to Hypothesis 2(c). The interaction term between institutional dummy and REMDISEXP was not statistically significant (p=0.069), but the interaction term between institutional dummy and REMPROD was significant and negative (p0.05). This indicates that institutional ownership moderates the relationship between production-based real earnings management and DEM in a negative manner. This is consistent with prior research [Beasley et al. \(2009\)](#) and [Cornett et al. \(2008\)](#) highlighting the role of institutional investors in preventing earnings management.

The Resource Dependence Theory can provide a theoretical framework for these findings. The institutional investors, who are regarded as vital external resources for corporations, may exert influence over the operational decisions of companies to promote responsible consumption and production (SDG 12). The fact that institutional ownership has a negative effect on both production-based real earnings management and DEM shows that they work to make it less likely for companies to change operational decisions to change their earnings.

These findings support the role of institutional ownership in reducing earnings management and promoting sustainable business practices. Therefore, they may encourage regulators and policymakers to view institutional ownership as a key lever for enhancing financial reporting and corporate governance, thereby aligning corporate actions with the SDGs. These findings support the central role institutional ownership plays in the larger discourse on sustainable business practices and financial transparency in the context of Malaysia's progress towards the SDGs.

5.3. Hypotheses 3

The third hypothesis investigates the relationship between the size of audit firms, discretionary accrual earnings management (DEM), and real earnings management (REM) among Malaysian corporations. The third hypothesis asserts that firms audited by Big-Four Audit firm's exhibit significantly different DEM and REM levels. In addition, the size of the audit firm may impact the relationship between DEM and REM.

To test Hypotheses 3(a) and 3(b), independent two-sample t-tests were conducted to compare the mean DEM and REM levels of firms audited by Big-Four Audit firms and those not audited by Big Audit firms. The results revealed statistically significant differences in the mean DEM and REM levels between the two groups, with firms audited by Big Audit firms exhibiting lower DEM and REM levels. These results support Hypotheses 3(a) and 3(b), which align with prior research [Becker, DeFond, Jiambalvo, and Subramanyam \(1998\)](#) and [Francis et al. \(1999\)](#), indicating that larger audit firms are more effective at preventing earnings management practices due to their resources, expertise, and reputation ([Francis & Wang, 2008](#); [Knechel, Krishnan, Pevzner, Shefchik, & Velury, 2013](#)).

Concerning Hypothesis 3(c), we re-evaluated our regression analyses to determine if audit firm size influences the relationship between DEM and REM in Malaysian firms. There was no significant interaction between the size of the audit firm and the three REM measures (AUDIT_REMSALE, AUDIT_REMDISEXP, and AUDIT_REMPROD). This suggests that the quality of the audit does not change the relationship between DEM and REM in Malaysian firms. Despite the fact that this finding contradicts previous research that found a moderating effect of audit firm size on earnings management practices ([Krishnan, 2003](#); [Prawitt, Sharp, & Wood, 2012](#)), it contributes to the ongoing academic discourse by highlighting the complexity of the relationship between audit firm size and earnings management.

Our findings demonstrate that larger audit firms play a crucial role in mitigating both DEM and REM practices. In accordance with agency theory, larger audit firms may be better able to mitigate agency problems caused by the separation of ownership and control. Their expertise and size enable them to detect and restrict both accrual-based and real earnings management, thereby reinforcing the auditors' fiduciary responsibility to protect shareholder interests. While we hypothesized that audit firm size would moderate the relationship between DEM and REM, the evidence does not support this assertion. This could suggest that the quality of the audit does not necessarily affect the interaction between DEM and REM.

From the perspective of the Resource Dependence Theory, larger audit firms can be viewed as vital external resources that companies utilize to ensure accurate and trustworthy financial reporting. With increased resources and capabilities, these businesses are better equipped to detect and prevent earnings management. However, the evidence suggests that they do not necessarily impact how companies negotiate the trade-off between various forms of earnings management.

These findings highlight the complex relationship between REM, DEM, and audit quality, as well as their significant implications for corporate governance and financial reporting. These interconnected factors can both

facilitate and impede the attainment of the Sustainable Development Goals (SDGs). These results demonstrate the significance of high-quality audits by indicating that larger audit firms play a significant role in enhancing the transparency and reliability of financial statements. This enhances stakeholder confidence and aligns with SDG 16, which advocates for effective, accountable, and inclusive institutions. By mitigating earnings management practices, larger audit firms promote transparency, accountability, and trust within business institutions, thereby contributing to the achievement of sustainable development objectives. Additional studies can delve deeper into the impact of audit firm size on various aspects of earnings.

5.4. Implications of the Findings

This study provides vital insights into the relationship between discretionary accrual earnings management (DEM), real earnings management (REM), institutional ownership, and audit firm size in Malaysian firms. These observations have significant ramifications for regulators, policymakers, investors, and researchers, as well as the potential to improve existing theories. In addition, they shed light on the practical ways in which Malaysian businesses can contribute to the Sustainable Development Goals (SDGs).

Initially, our analysis supported Hypothesis 1, indicating a significant relationship between DEM and REM in Malaysian firms. We found, in line with previous research [Cohen et al. \(2008\)](#) and [Zang \(2012\)](#), that companies prone to one form of earnings management also frequently engage in the other. Regulators and policymakers can use this insight to create monitoring plans that include both DEM and REM activities, thereby assisting in the achievement of SDG 16 (transparent, responsible management). This discovery also bolsters the theoretical understanding of DEM and REM's interconnectedness, which may inspire additional research in a variety of contexts and countries.

The examination of Hypotheses 2(a) and 2(b) revealed that institutional ownership is related to lower DEM and REM levels. This is consistent with previous research highlighting the roles of institutional investors in limiting earnings management ([Cornett et al., 2008](#); [Siregar & Utama, 2008](#)). Consequently, institutional ownership could be a reliable indicator of solid corporate governance and diminished earnings manipulation. This could have implications for achieving SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production). In addition, these findings contribute to the academic literature by highlighting the effects of institutional investors in emerging markets such as Malaysia.

In examining Hypotheses 3(a) and 3(b), we discovered that firms audited by larger audit firms have significantly lower DEM and REM levels. This is consistent with prior research indicating that larger audit firms, because of their resources, expertise, and reputation, are more effective at preventing earnings management practices ([Francis et al., 1999](#); [Knechel et al., 2013](#)). This finding could have an impact on SDG 16 (Peace, Justice, and Strong Institutions) by fostering greater transparency and accountability in corporate financial reporting.

Despite these significant results, our research did not support Hypotheses 2(c) and 3(c), which hypothesized that institutional ownership and audit firm size would affect the relationship between DEM and REM. This suggests that the dynamics between DEM and REM are multifaceted and possibly subject to a variety of factors. Future research should investigate potential moderating variables and the impact of specific corporate governance characteristics on the association between DEM and REM. This necessitates a deeper understanding of the earnings management theoretical framework and the roles of corporate governance variables. This investigation may yield strategies for furthering the attainment of the SDGs.

6. CONCLUSION AND RECOMMENDATIONS

In conclusion, it is clear that a lot of progress has been made in understanding how discretionary accrual earnings management (DEM), real earnings management (REM), and important corporate governance factors show up in Malaysian companies. Our findings established a significant correlation between DEM and REM, suggesting that

corporations frequently employ both strategies concurrently. In addition, the results highlighted the importance of institutional ownership and audit firm size in determining a company's earnings management strategy.

Our research has revealed that the mitigation of earnings management practices and the improvement of corporate governance mechanisms could be significant steps in Malaysia's pursuit of Sustainable Development Goals (SDGs). Consequently, we propose that regulators, policymakers, and practitioners consider implementing a number of strategies.

Regulators and policymakers should consider strengthening the enforcement of corporate governance standards. This strategy promotes a culture of openness and accountability, which may reduce the prevalence of earnings management techniques. Consequently, this would contribute to SDG 16, which seeks to promote peace, justice, and strong institutions (Armstrong, Guay, & Weber, 2010; García-Meca & García-Sánchez, 2018).

Moreover, it is essential to increase the impact of institutional ownership on earnings management. It is possible to create an environment that fosters active engagement and transparency between institutional investors and corporations by improving these investors' access to information, allowing them to exert their influence more effectively in guiding corporations towards superior corporate governance practices. This would echo the principles of SDG 12, which calls for transparency in business practices (Bushee & Noe, 2000; Shleifer & Vishny, 1997).

This study concludes by emphasizing the significance of audit firm size as a critical determinant of earnings management behaviour. In light of this, regulators and policymakers should strive to foster an environment that ensures the quality and independence of auditors. DeFond and Zhang (2014) and Francis and Yu (2009) support SDG 4, which emphasizes quality education, by recommending stringent standards for auditor selection and rotation, as well as continuing professional education and training for auditors.

In conclusion, this study highlights the significance of robust corporate governance mechanisms to limit earnings management behaviour among Malaysian companies. Practitioners, regulators, and policymakers can accelerate the development of a more transparent and accountable corporate environment by implementing our research's recommendations. As a result, this will increase investor confidence and contribute to the sustained growth and stability of the Malaysian economy, thereby fostering progress towards SDG 8 (decent work and economic growth).

7. LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

Notwithstanding the valuable insights offered by this study, it is essential to acknowledge several limitations. Acknowledging these limitations offers opportunities for future research to address these gaps and further enhance the understanding of earnings management and corporate governance in the context of Malaysian firms.

Firstly, the sample selection in this study is limited to a subset of Malaysian firms, which may limit the findings' applicability to other markets, industries, or time periods (Dechow et al., 2010; Habib & Bhuiyan, 2011). To make the study bigger, it could include companies from more than one country or industry, or it could look at the relationships over a longer period of time (Healy & Wahlen, 1999). This would help make sure the results are solid and see if the relationships change in different situations.

Second, this study employs cross-sectional data, which may not fully capture the dynamic nature of earnings management practices and corporate governance attributes (Kothari, Leone, & Wasley, 2005). Future research could utilize panel data to explore the potential changes in the relationships over time and account for firm-specific fixed effects that could impact the results (Hoitash, Hoitash, & Bedard, 2009; Kim & Zhang, 2016). Researchers may also use more advanced panel data methods, like dynamic panel models, to deal with possible endogeneity issues and look into the relationship between corporate governance factors and earnings management (Ullah, Akhtar, & Zaefarian, 2018).

Third, the measurement of DEM and REM is subject to estimation errors and potential misclassification (DeFond & Jiambalvo, 1994; Roychowdhury, 2006; Zang, 2012). The study estimates these variables using generally accepted methods. However, to make sure the results are reliable, future research could look at other models, like the

performance-adjusted discretionary accrual model (Kothari et al., 2005) or different measures of real earnings management (Gunny, 2010; Zang, 2012).

Fourth, this study examines the influence of institutional ownership and audit firm size as key corporate governance factors. However, there are other potential factors that could impact earnings management practices, such as board characteristics, ownership structure, or managerial incentives (Fama & Jensen, 1983; Jensen & Meckling, 1976). Future research could consider incorporating additional corporate governance variables to provide a more comprehensive understanding of the factors influencing earnings management practices (Beasley, 1996; García-Meca & García-Sánchez, 2018; Githaiga, Muturi Kabete, & Caroline Bonareri, 2022).

Lastly, this study did not find support for the moderating role of institutional ownership and audit firm size on the association between DEM and REM. To learn more about how earnings management practices and corporate governance attributes interact, future research could look into other possible moderating variables, like the quality of corporate governance, the regulatory environment, or factors that are unique to each firm (Armstrong et al., 2010; Cohen et al., 2008).

By acknowledging and examining these constraints in future scholarly investigations, researchers can augment their comprehension of earnings management practices, corporate governance elements, and their interconnections in diverse settings. Consequently, this will make a valuable contribution to the existing body of knowledge and offer valuable perspectives for professionals, regulators, and policymakers.

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