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FIRM PERFORMANCE AND EARNINGS MANAGEMENT STRATEGIES: EVIDENCE BEFORE AND DURING THE COVID-19 PANDEMIC

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Abstract:

The COVID-19 pandemic led to significant economic issues that influence companies to change their business operations and financial reporting practices. This study examines the effect of firm performance on the selection of corporate earnings management (EM) strategies among Malaysian public listed companies before (2018–2019) and during (2020–2021) the COVID-19 pandemic. It is focusing on two different EM measurements, which are accrual earnings management (AEM) and real earnings management (REM). Using a sample of 336 firm-year observations from Malaysian public listed companies, AEM was measured using discretionary accruals based on the Modified Jones Model (1991), while REM was measured using Roychowdhury's (2006) model. Firm performance was evaluated using Return on Assets (ROA). The empirical results indicate a significant difference in the impact of firm performance on reporting behaviour between the two periods. ROA had no significant effect on AEM before the pandemic (2018–2019). However, ROA had a significant negative relationship with AEM during the pandemic (2020–2021). It indicates that firms with poor performance were more likely to use accrual manipulation to mask poor financial performance. In contrast, ROA maintained a consistent positive relationship with REM across both timeframes. Further analysis also suggests that poorly performing firms were more

likely to engage in specific REM activities during the pandemic. EM practices were also significantly affected by other control variables, including financial distress, leverage, firm size and liquidity. Overall, these findings reveal macroeconomic shocks fundamentally alter how firm performance influences corporate EM choices. It offers a crucial insight for regulators refining oversight policies, auditors identifying high-risk financial reporting, and investors assessing earnings quality during global macroeconomic shocks.

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Accrual Earnings Management, COVID-19 Pandemic, Earnings Management, Firm Performance, Real Earnings Management, Return on Assets.



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Introduction

Firm performance is one of the most important indicators used by investors, creditors, regulators and other stakeholders in assessing firms' ability to generate value and remain their sustainability in the market. It also reflects how effective the management is in making decisions and their efficiency in utilizing the organizational resources. As a result, managers are often under pressure to report a favourable financial position to satisfy the expectation among stakeholders and maintain market confidence. Such pressure may lead managers to get involved in earnings management activities, with business performance becoming an important factor of earnings management practices (Mostafa & Ibrahim, 2019).

Earnings management refers to managerial interventions in the financial reporting process aimed at influencing reported earnings to achieve specific objectives. While earnings management may be conducted within the boundaries of accounting standards, excessive manipulation can reduce the reliability and transparency of financial reporting. Financial reporting acts as a communication tool that provides quantitative and qualitative information to internal and external users for decision-making and performance measurement (Healy & Wahlen, 1999). However, notable cases like Sime Darby Berhad and Transmile Group Berhad show that financial reports can mask poor underlying performance and portray an artificially healthy picture of a firm (Hamid et al., 2012). This is known as accrual-based earnings management, which Healy and Wahlen (1999) define as the manipulation of financial statements and transaction records to either mislead stakeholders regarding the firm's actual operating performance, or alter contractual outcomes tied to reported accounting data. Conversely, real earnings management (REM) modifies a firm's actual operations rather than just its accounting entries (Roychowdhury, 2006). Roychowdhury (2006) along with Cohen and Zarowin (2010) note that firms managing their earnings upward generally experience one or all the following operational side effects:

- **Abnormally low operating cash flow:** Driven by aggressive discounts or loose credit terms to temporarily increase sales.
- **Abnormally low discretionary spending:** Driven by drastic cuts to research and development (R&D), advertising, and selling and administration (SG&A) expenses to boost current profitability.
- **Abnormally high production costs:** Triggered by overproduction, which disperses fixed administrative costs to reduce the Cost of Goods Sold (COGS) and enhance immediate operating margins.

Besides pressure from stakeholders, the economic situation imposes additional challenges on firms to maintain their performance. In 2020, COVID-19 started to spread over the country. The World Health Organization (WHO) declared the COVID-19 pandemic a public health emergency of worldwide concern because of the disease's potential for spreading (Spina et al., 2020). The pandemic severely disrupted economies worldwide. Government lockdowns, travel bans and social distancing hit businesses and financial markets hard. This put intense pressure on managers to look financially stable and satisfy stakeholders, leading to a rise in earnings management (Ali et al., 2022 & Liu & Sun, 2022). Global studies confirm that the worse the pandemic outbreak was, the more companies altered their financial reports to survive the economic shock.

Although prior studies have extensively examined firm performance and earnings management, limited evidence compares the relationship before and during the COVID-19. The pandemic provides a unique setting to investigate whether economic uncertainty alters the impact of firm performance on earnings management. The study of Yasar and Yalcin (2024) is different from other studies in that it uses accrual-based EM to evaluate the effect of COVID-19 on it. This study expands the current investigation by adding another proxy of EM which is REM. This is because there is literature that businesses do manipulate income-increasing revenues through real activities when they are experiencing severe financial difficulties (Campa, 2019). Understanding these dynamics is important for regulators, investors, and policymakers seeking to enhance financial reporting quality and corporate governance during periods of economic disruption. Therefore, the objectives of this study are:

- to examine the relationship between firm performance and accrual earnings management before the COVID-19 pandemic;
- to examine the relationship between firm performance and accrual earnings management during the COVID-19 pandemic;
- to examine the relationship between firm performance and real earnings management before the COVID-19 pandemic
- to examine the relationship between firm performance and real earnings management during the COVID-19 pandemic.

The rest of this paper is organized as follows. Section 2 presents evidence from earlier studies on firm performance with AEM and REM within the pre-pandemic and pandemic periods. Next, the hypotheses from literature are also developed in this section. Section 3 includes data, sample selection and research methodology. The results are discussed in Section 4. Finally, Section 5 provides conclusions and suggestions for future research.

Literature Review and Hypotheses Development

Firm Performance and Earnings Management

The accounting literature identifies two primary methods of earnings management (EM): accrual-based, which involves discretionary accounting choices within GAAP boundaries and real activities, which alters underlying operational and execution decisions. The relationship between firm performance and earnings management has attracted considerable attention in accounting and finance literature. However, empirical findings remain inconclusive. Some studies suggest that there is a positive significant effect between firm performance and EM. Research by Nguyen and Tran (2026) documents that AEM exerts a positive and statistically significant impact on accounting-based performance, measured via Return on Assets (ROA). However, they observe that its effect on market-based performance (Tobin's Q) is statistically insignificant, indicating that EM primarily alters reported numbers rather than generating fundamental market value. This conditional dynamic is frequently moderated by the efficacy of institutional oversight. Boachie and Mensah (2022) establish that while EM destroys firm value under weak corporate governance, mild income smoothing under stringent internal governance can stabilize and enhance reported accounting performance.

Conversely, another stream of literature examines earnings manipulation through the lens of agency conflicts, identifying a robustly negative relationship between EM and subsequent corporate value. Chakroun and Ben (2021) evaluate the direct impact of EM on performance measured by Return on Equity (ROE) and conclude that aggressive manipulation severely impairs subsequent financial performance. They note, however, that firms with high Corporate Social Responsibility (CSR) profiles experience a weaker performance drop, as stakeholder trust effectively mitigates the reputational and operational damage. This opportunistic destruction of fundamental values is heavily pronounced in real activities manipulation. Unlike AEM, which involves non-cash adjustments, REM requires shifting real operational cash flows. Mellado and Saona (2019) clarify this trade-off by demonstrating that real activities manipulation fundamentally undermines long-term firm value. This is because operational choices executed to meet short-term thresholds such as overproduction or opportunistic cuts in discretionary expenses that will reduce future net cash flows and compromise long-term operational viability.

Firm Performance and Earnings Management During the COVID-19 Pandemic

The COVID-19 pandemic induced severe global economic disruptions and heightened environmental uncertainty. Such conditions will motivate the managerial incentives to manipulate reported earnings. Recent empirical literature documents a marked increase in earnings management activities during this crisis. For instance, European evidence indicates that firms engaged in significantly higher levels of accrual-based earnings management compared to the pre-pandemic era (Yasar & Yalcin, 2024). Concurrently, operational disruptions and macroeconomic instability severely compromised corporate performance worldwide. Cross-country evidence reveals that firms with high pre-pandemic leverage and elevated accounts receivable are particularly vulnerable to these economic shocks, resulting in a pronounced negative impact on their profitability and market value (Athira et al., 2024). The results regarding the effects of firm performance and earnings management are mixed, as prior researches have concluded conflicting results. Based on the previous discussion, the following hypothesis is developed:

H1. There is a significant relationship between firm performance and accrual earnings management before the COVID-19 pandemic.

H2: There is a significant relationship between firm performance and accrual earnings management during the COVID-19 pandemic.

H3. There is a significant relationship between firm performance and real earnings management before the COVID-19 pandemic.

H4. There is a significant relationship between firm performance and real earnings management during the COVID-19 pandemic.

Conceptual Framework

Figure 1 illustrates the proposed conceptual model, which examines the effect of firm performance on EM within the period before and during the pandemic. Agency Theory was the most appropriate for this study. Agency Theory suggests that information asymmetry between managers and shareholders creates opportunities for managers to pursue personal interests through earnings manipulation (Jensen & Meckling, 1976 & Fox, 1984). According to the theory, conflicts of interest arise when managers (agents) possess more information about the firm's operations than shareholders (principals). This information asymmetry creates opportunities for managers to manipulate accounting information to achieve personal objectives, such as obtaining bonuses, maintaining job security or meeting market expectations. This opportunistic view is supported by recent literature which reveals a significant increase in EM during the COVID-19 crisis compared to the pre-pandemic era (Yasar & Yalcin, 2024).

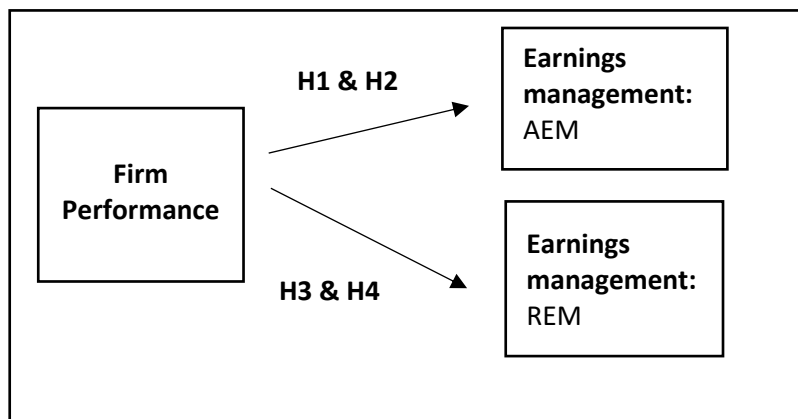


Figure 1: The Conceptual Framework of Firm Performance and EM

Research Methodology

Sample Selection

The initial sample includes all industry firms in Refinitiv Eikon Data Stream, excluding financial and insurance firms listed on Bursa Malaysia from 2018 to 2021. Finally, any missing values and outliers found in the sample firms were eliminated. The final sample of 336 firm-year observations from Malaysian public listed companies are used to test the hypothesis developed in this study. To capture the effect of the global health crisis, the dataset is divided into two distinct sub-periods: the pre-COVID-19 period (2018–2019) and the during-COVID-19 periods (2020–2021).

Measurement of Dependent Variables

The earnings management approach among firms is either AEM or REM. The models used to measure the EM proxies included in this study will be discussed in more detail in the following section.

Accrual Earnings Management

The proxy for AEM in this study is discretionary accruals. This study measures AEM by using the Modified Jones Model (Jones, 1991), which is consistent with many studies of EM, such as Agustia et al. (2020) and Li et al. (2020). Discretionary accruals are the difference between actual accruals and the normal level of accruals. The following is the Modified Jones Model.

$$NDA_{it}/A_{i,t-1} = \alpha_0 + \alpha_1 (1/A_{i,t-1}) + \alpha_2 [\Delta AR_{it}/A_{i,t-1}] + \alpha_3 [PPE_{it}/A_{i,t-1}] + \varepsilon_{it} \quad (1)$$

Where,

NDA_{it}	non-discretionary accruals of firm i in year t;
$A_{i,t-1}$	Total assets of firm i in year t-1;
ΔAR_{it}	Change in account receivables of firm i between year t-1 and t;
PPE_{it}	Gross property plan and equipment of firm I in year t.
ε_{it}	A residual term that captures the level of abnormal cash flow of firm i in year t.

Real Earnings Management

Following Roychowdhury (2006), this study defines REM as when managers act with distinct practices from what normal businesses should do. Consistent with prior research (Campa, 2019 & Campa & Miriano, 2015), this study employs the sum of three proxies to examine REM, namely abnormal cash flow from operating activities (AbCFO), abnormal production costs (AbPROD) and abnormal discretionary expenses (AbDISEXP). The study estimates AbCFO, AbPROD and AbDISEXP as residuals from the following models, respectively.

Model for AbCFO

$$CFO_{it}/A_{it-1} = \beta_1 [1/A_{it-1}] + \beta_2 [Sales_{it}/A_{it-1}] + \beta_3 [\Delta Sales_{it}/A_{it-1}] + \varepsilon_{it} \quad (2)$$

Where,

CFO_{it}	Cash flow from operation of firm i in period t;
$Sales_{it}$	Sales of firm i in year t ;
$\Delta Sales_{it}$	Change in sales of firm i between year t-1 and t.

Model for AbPROD

$$PROD_{it}/A_{it-1} = \beta_1 [1/A_{it-1}] + \beta_2 [Sales_{it}/A_{it-1}] + \beta_3 [\Delta Sales_{it}/A_{it-1}] + \beta_4 [\Delta Sales_{it-1}/A_{it-1}] + \varepsilon_{it} \quad (3)$$

Where,

$PROD_{it}$	The sum of cost of goods sold and change in inventory of firm i in year t;
$\Delta Sales_{it-1}$	Change in sales of firm i from year t-1 to t; and all other variables are as previously defined.

Model for AbDISEXP

$$\text{DISEXPit/Ait-1} = \beta_1 [1/\text{Ait-1}] + \beta_2 [\text{Salesit-1}/\text{Ait-1}] + \varepsilon_{it} \quad (4)$$

Where,

DISEXPit The sum of Research and Development (R&D) expenses and Selling, General & Administrative (SG&A) expenses of firm i in year t ; and all other variables are as previously defined.

Model for REM

Following Li et al. (2020), the three real activity manipulation measures are then added together to form a single proxy, REM, which will be used to test the hypothesis:

$$\text{REMit} = \text{AbCFOit} + \text{AbPRODit} + \text{AbDISEXPit} \quad (5)$$

Where,

REMit The sum of REM of firm i in year t, and all other variables are as previously defined

*Measurement of Independent Variable**Return on Asset*

Following Hamdani et al. (2021), this study uses Return on Assets (ROA) as the primary indicator of firm profitability. ROA is chosen because it is one of the most widely used metrics to evaluate how successfully a company turns its resources into profits. It measures a firm's ability to use its total assets which are funded by both equity (own capital) and debt (outside capital). Furthermore, assessing past ROA helps stakeholders project the firm's future earnings potential. Ultimately, a higher ROA ratio indicates a healthier and more efficient financial condition.

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Measurement of Control Variables

This study includes some of the control variables since they provide a monitoring mechanism with EM. The financial distress (FinDist); leverage (LEV); firm size (SIZE) and liquidity (LIQUIDITY) also have a significant effect on EM (Lidsa & Julisar, 2022 and Rakshit & Paul, 2020). The control variables are measured as follows:

FinDist	the modified Z-score
LEV	the ratio of total liabilities to total assets
SIZE	the log of total assets
LIQDT	the ratio of current assets to current liabilities

Data Analysis

Data was analyzed using SPSS (Statistical Package for Social Science) software. A descriptive statistic is performed comparing the mean, median and standard deviations across the variables.

The multiple regression analysis is utilized to test all the hypotheses, and the regression models are as follows:

$$AEM_{it} = \alpha_0 + \alpha_1 ROA_{it} + \alpha_2 LEV_{it} + \alpha_3 SIZE_{it} + \alpha_4 DISTRESS_{it} + \alpha_5 LIQUIDITY_{it} + \varepsilon_{it} \quad (6)$$

$$REM_{it} = \alpha_0 + \alpha_1 ROA_{it} + \alpha_2 LEV_{it} + \alpha_3 SIZE_{it} + \alpha_4 DISTRESS_{it} + \alpha_5 LIQUIDITY_{it} + \varepsilon_{it} \quad (7)$$

Both models will be used to determine which approach of earnings management that firm choose based on their performance during the observation period. To test H1 and H2, α_1 in Model (6) is used to explain the relationship between firm performance and AEM. Whereas to test H3 and H4), α_1 in Model (7) is used to explain the relationship between firm performance and REM. The sign of the proxies of earnings management indicates whether the earnings management practices are used for income-increasing (positive sign) or income-decreasing (negative sign) purposes.

Results and Discussion

Descriptive Analysis

Table 1 presents the descriptive statistics comparing firms before (Panel A) and during (Panel B) the pandemic, with 336 observations in each panel. The mean for AEM decreased from -0.696 before the pandemic to -0.745 during the pandemic. This negative mean indicates that Malaysian public listed companies relied more on income-decreasing accruals. Similarly, the mean for REM dropped from 1.022 to 0.944. The positive REM values suggest that these firms generally use income-increasing methods to manage their earnings. One-sample t-test results confirm that both figures are significantly different from one another. Overall, the decline in both proxies shows that firms engaged in less earnings management during the pandemic. This aligns with prior studies, such as Ali et al. (2022) and Azizah (2021), which found that companies restrict earnings manipulation during crises.

In addition, a slight decrease in the average performance of Malaysian public listed companies during the crisis period. The mean for firm performance before the pandemic is 7.8%, but decrease during the pandemic to 7.6%. The small drop in average ROA shows that Malaysian companies were surprisingly resilient. This suggests that despite lockdowns and market chaos they kept their performance steady. This may be because of higher levels of leverage during the pandemic (from 39.6% to 39.8%), indicating that businesses count on more leverage to fund their operating and investing activities. Thus, it helped the firm's financial health during the pandemic. The meaning of other control variables, which are FinDist and SIZE decreases during the pandemic, but LIQDT increases if compared to pre-pandemic.

Table 1: Descriptive Statistics

Panel A: Descriptive statistics before the pandemic (2018 - 2019)					Panel B: Descriptive statistics during pandemic (2020 - 2021)					
	N	Mean	Min	Max	Std. Dev	N	Mea n	Min	Max	Std. Dev
AEM	336	-0.696	-2.739	0.068	0.444	336	-	-	0.109	0.457
							0.74	2.76		
REM	336	1.022	-0.070	4.885	0.741	336	5	7	4.070	0.692
							0.94	-		
ROA	336	0.078	-0.321	0.595	0.090	336	4	0.09		
							0	-	1.028	0.113
FinDist	336	0.190	-0.900	1.220	0.390	336	0.07	-		
							6	0.21		
LEV	336	0.396	0.025	0.919	0.192	336	9	-	1.160	0.423
							0.11	-		
SIZE	336	6.287	5.002	8.252	0.667	336	6	1.99		
							0	0.05	0.926	0.199
LIQDT	336	2.674	0.188	31.604	3.003	336	0.39	0.05		
							8	3	8.261	0.658
	336					336	6.32	5.03		
							8	3		
	336					336	2.73	0.21	23.81	2.651
							2	5	1	

Note: Table 1 shows the descriptive analysis of the variables. AEM is an Accruals Earnings Management proxy by Discretionary Accruals figure; REM is Real Earnings Management for real activities of earnings management, ROA is the ratio of EBIT to net assets, FinDist is the proxy for firms' financial health measured by a modified Z-score, LEV is the ratio of total liabilities to total assets, SIZE is the log of total assets, and LIQDT is the ratio of current assets to current liabilities.

Pearson Correlation

The Pearson correlation coefficient is shown in Tables 2 and 3. Table 2 shows the correlation for Model (6). Panel A exhibits the pre-pandemic period, while Panel B exhibits the COVID-19 pandemic. Before the pandemic, there was a non-significant relationship between AEM and ROA, but it turned out to be significant during the pandemic. For the other control variables, only the LEV and LIQDT have significant correlations with AEM. While LEV significantly correlates with AEM before the pandemic, on the other hand, LIQDT has a significant correlation with AEM during the pandemic.

Table 2: Pearson Correlation for Model AEM

Panel A: Correlation matrix before pandemic (2018 - 2019)						
	AEM	ROA	FinDist	LEV	SIZE	LIQDT
AEM	1					
ROA	-0.009	1				
FinDistress	-0.053	-0.227***	1			
LEVERAGE	0.081*	-0.267***	0.316***	1		
SIZE	-0.047	-0.311***	-0.016	0.518***	1	
LIQUIDITY	0.053	0.234***	-0.283***	-0.703***	-0.346***	1

Panel B: Correlation matrix during pandemic (2020 - 2021)						
	AEM	ROA	FinDist	LEV	SIZE	LIQDT
AEM	1					
ROA	-0.088*	1				
FinDistress	-0.052	-0.361***	1			
LEVERAGE	0.054	-0.244***	0.372***	1		
SIZE	-0.041	-0.134***	-0.068	0.54***	1	
LIQUIDITY	0.115**	0.267***	-0.369***	-0.769***	-0.41***	1

Note: This table shows the results of correlation analysis for a sample of 336 firm-year observations. AEM is Accruals Earnings Management proxy by Discretionary Accruals figure; ROA is the ratio of EBIT to net assets; FinDistress is the proxy for firms' financial health measured by a modified Z-score; LEVERAGE is the ratio of total liabilities to total assets; SIZE is the log of total assets and LIQUIDITY is the ratio of current assets to current liabilities.

*, **, *** significant at the 0.1, 0.05 and 0.01 levels, respectively.

The correlation for Model (7) is presented in Table 3. The correlation between REM and ROA is statistically significant and positive at the 1% level before and during the COVID-19 pandemic. Besides, all other control variables significantly associated with REM, except LIQDT and LEV in both the period before and during COVID-19. The correlation coefficients in both tables provide preliminary evidence to support the hypotheses. Then multiple regression analysis can be performed to provide statistical valid evidence on the proposed hypotheses.

Table 3: Pearson Correlation for Model REM

Panel A: Correlation matrix before pandemic (2018 - 2019)						
	REM	ROA	FinDist	LEV	SIZE	LIQDT
REM	1					
ROA	0.355***	1				
FinDistress	0.633***	-0.227***	1			
LEVERAGE	-0.061	-0.267***	0.316***	1		
SIZE	-0.233***	-0.311***	-0.016	0.518***	1	
LIQUIDITY	0.019	0.234***	-0.283***	-0.703***	-0.346***	1

Panel B: Correlation matrix during pandemic (2020 - 2021)						
	REM	ROA	FinDist	LEV	SIZE	LIQDT
REM	1					
ROA	0.355***	1				
FinDistress	0.633***	-0.227***	1			
LEVERAGE	-0.061	-0.267***	0.316***	1		
SIZE	-0.233***	-0.311***	-0.016	0.518***	1	
LIQUIDITY	0.019	0.234***	-0.283***	-0.703***	-0.346***	1

REM	1					
ROA	0.232***	1				
FinDistress	0.612***	-0.361***	1			
LEVERAGE	0.612***	-0.244***	0.372***	1		
SIZE	-0.238***	-0.134***	-0.068	0.54***	1	
LIQUIDITY	0.045	0.267***	-0.369***	-0.769***	-0.41***	1

Note: This table shows the results of correlation analysis for a sample of 336 firm-year observations. REM is Real Earnings Management for real activities of earnings management; ROA is the ratio of EBIT to net assets; FinDistress is the proxy for firms' financial health measured by a modified Z-score; LEVERAGE is the ratio of total liabilities to total assets; SIZE is the log of total assets and LIQUIDITY is the ratio of current assets to current liabilities.

*** significant at the 0.01 levels.

Regression Analysis

All variables are normally distributed, and the analysis met all the assumptions of multiple regression analysis. Table 4 presents the regression results of both AEM and REM with ROA and other control variables. The analysis is split into two different periods which are Panel A and Panel B. Panel A covers the period before the pandemic during a range from 2018 to 2019 and Panel B covers the period during the pandemic for the year 2020 to 2021. The study regressed the variables separately using each estimation model described in the methodology's section before, where each model represents a different proxy for EM, which is AEM and REM.

The empirical findings reveal a pattern in how firm performance influences both the AEM and REM before and during COVID-19. The F-statistics for all four models are highly significant at the 1% level, confirming the joint explanatory power of the independent variables. The R-squared indicated how much the ratio of variance in the dependent variable can be explained by the independent variable. In the first model (Model 6), AEM, the study shows that ROA, FinDist, LEV, SIZE and LIQDT have explained 5.3% and 9.6% of the variance of accrual earnings management, respectively, before and during the pandemic. First, the regression Model (6) is used to test H1 and H2. From Panel A, prior to the COVID-19 pandemic (2018–2019), firm performance had a negative but statistically insignificant relationship with AEM (with a coefficient -0.045). This suggests that under normal economic conditions, variations in accounting profitability did not systematically drive discretionary accrual alterations. Thus, H1 is rejected. Conversely, from Panel B, during the pandemic (2020–2021), the coefficient for ROA became larger and highly significant at the 1% level (with a coefficient -0.154). This strong negative relationship is supported the H2. It indicates that during the pandemic, on the one hand, poorly performing firms (lower ROA) aggressively engaged in upward accrual earnings management to mask declining financial health. This finding is highly consistent with recent literature, specifically Moerman (2023) and Nguyen et al. (2023). Nguyen et al. (2023) had pointed out that weak firms used accounting tricks to boost their reported income and hide their financial troubles. On the other hand, successful firms were protected by their strong profits. They faced very little pressure, so they had no reason to change their numbers. In addition, this gap widened during the pandemic, as Moerman (2023) confirmed that the negative impact of profitability on earnings management became significantly stronger during the COVID-19 crisis. Ultimately, this strong negative relationship supports the opportunistic

view of agency theory, showing that managers engage in manipulation when their jobs and firms are threatened by poor performance.

Second, the regression results for Model (7) show that the independent variable and other control variables (ROA, FinDist, LEV, SIZE, and LIQDT) explain 69.4% of the variance in REM before the pandemic, and 67.2% during the pandemic. This minor change in the R-squared values indicate that the model is highly stable across both timelines. However, the slight drop during the crisis suggests that other variables omitted from this study might also influence REM decisions during economic shocks, providing an outline for future research. Model (7) was used to test hypotheses H3 and H4. The empirical results from Panels A and B reveal that ROA has a positive and highly significant impact on REM at the 1% level both before (with a coefficient 0.497) and during (with a coefficient 0.486) the pandemic. This positive relationship suggests that high-performing firms consistently prefer to manage earnings through actual operational activities such as aggressive sales strategies, overproduction, or cutting discretionary expenses like R&D. Notably, this corporate behavior remained unchanged despite the severe disruptions brought by COVID-19. Therefore, these results provide strong empirical support for both H3 and H4. This finding aligns with Zang (2012), who argued that managers select their earnings management strategies based on a firm's unique economic constraints. Real activities manipulations involve concrete deviations from standard operations (such as overproduction or price discounts), thus requiring an operational cushion.

Table 4: Regression Result of Accrual and Real Earnings Management

Variables	Panel A: Regression Result before the pandemic (2018 - 2019)		Panel B: Regression Result during pandemic (2020 - 2021)	
	Accrual Earnings Management (AEM)	Real Earnings Management (REM)	Accrual Earnings Management (AEM)	Real Earnings Management (REM)
(Constant)	-0.357 (-1.31)	0.431 [*] (1.669)	-0.582 ^{**} (-2.04)	0.447 [*] (1.715)
ROA	-0.045 (-0.775)	0.497 ^{***} (14.969)	-0.154 ^{***} (-2.688)	0.486 ^{***} (14.048)
FinDist	-0.113 [*] (-1.902)	0.813 ^{***} (23.999)	-0.144 ^{**} (-2.248)	0.907 ^{***} (23.505)
LEV	0.341 ^{***} (3.983)	-0.205 ^{***} (-4.207)	0.451 ^{***} (4.865)	-0.2 ^{***} (-3.576)
SIZE	-0.166 ^{**} (-2.488)	0.041 (1.092)	-0.157 ^{**} (-2.346)	0.044 (1.087)
LIQDT	0.214 [*] (2.811)	0.003 (0.075)	0.385 ^{***} (4.62)	0.115 ^{**} (2.293)
R ²	0.053	0.694	0.096	0.672
Adjusted R ²	0.039	0.69	0.082	0.667

F-**statistic**

s	3.682***	148.968***	6.975***	134.101***
N	336	336	336	336

Note: This table shows the model summary of each Earnings Management value for a sample of 336 firm-year observations. AEM is an Accruals Earnings Management proxy by the Discretionary Accruals figure; REM is Real Earnings Management for real activities of earnings management, ROA is the ratio of EBIT to net assets, FinDistress is the proxy for firms' financial health measured by a modified Z-score, LEVERAGE is the ratio of total liabilities to total assets, SIZE is the log of total assets and LIQUIDITY is the ratio of current assets to current liabilities.

, * significant at the 0.05 and 0.01 levels, respectively.

In addition, for the control variables (FinDist, LEV, SIZE and LIQDT), there are some significant relationships with EM. First, FinDist is negatively associated with AEM. This relationship was weakly significant before the pandemic (with a coefficient -0.113) but became statistically stronger during the pandemic (with a coefficient -0.144). This confirms that financially distressed firms experienced heightened pressure to manipulate accruals during the crisis. In contrast, FinDist has a strong positive relationship with REM before (with a coefficient 0.813) and during (with a coefficient 0.907) the pandemic. This suggests that REM requires operational cushion and cash flow flexibility that only financially stable firms possess.

Second, the finding shows a positive and highly significant relationship between LEV and AEM across both periods (a coefficient 0.341, before the pandemic and coefficient 0.451, during pandemic). This result is consistent with Sweeney (1994) and Ghose et al. (2025) who claim the companies with higher debt levels tend to participate in greater EM, consistent with debt-related incentives. However, using the REM model, LEV has a negative and highly significant relationship with REM in both before and during the pandemic with a coefficient of -0.205 and -0.200, respectively. Highly leveraged firms avoid REM because altering real operations could severely harm immediate cash flows required to service debt. Next, SIZE maintains a steady, significant negative relationship with AEM across both periods, showing that larger firms face stricter scrutiny and engage less in AEM. Lastly, LIQDT is significantly and positively correlates with AEM, and its significance increased from the 10% level (with a coefficient 0.214) to the 1% level during the pandemic (with a coefficient of 0.385). While for the REM model, the significant positive association is only for the period during the pandemic with a coefficient of 0.115.

Further analysis was conducted by using each proxy (AbCFO, AbPROD and AbDISEXP) of the REM to identify how firm performance affects each proxy of the REM before and during the pandemic. The result is presented in Table 5 below. It reveals that ROA is positive and highly significant at the 1% level with both AbCFO and AbDISEXP across both periods. This positive relationship indicates that lower-performing firms (low ROA) exhibit significantly lower (abnormal) cash flows and lower (abnormal) discretionary expenses, and vice versa for higher-performing firms. Prior to the pandemic, the coefficient for AbCFO was 0.608, which then increased to 0.753 during the pandemic. The increase in the coefficient during the pandemic demonstrates that underperforming firms faced severe cash flow generation deficits during COVID-19. This was likely made worse because they offered aggressive sales promotions or extended credit cycles to artificially maintain revenue targets during the market slowdown. The increase in coefficient also experiences by AbDISEXP when the coefficient in Panel A is 0.630 and increases to 0.653 in Panel B. This proves that underperforming firms cut

critical future-oriented investments (like marketing and R&D) to meet short-term earnings targets. During the pandemic, this trend got a bit stronger as firms fought to survive.

Meanwhile, ROA has a negative and highly significant relationship with AbPROD at the 1% level before (with a coefficient -0.684) and during (coefficient -0.750) the pandemic. The result indicates that poorly performing firms (lower ROA) generate abnormally high production costs, and vice versa for higher-performing firms. Furthermore, this negative relationship became more pronounced during the pandemic. This shows that during the pandemic, overproduced goods were just to mask their real problems and look profitable.

Table 5: Regression Result of each Component in Real Earnings Management

Variables	Panel A: Regression Result prior to pandemic (2018 - 2019)			Panel B: Regression Result during pandemic (2020 - 2021)		
	AbCFO	AbPROD	AbDISEXP	AbCFO	AbPROD	AbDISEXP
(Constant)	0.541	-0.393	0.297	0.062	1.943	0.323
	(3.171)	(-3.282)	-2.228	-0.284	(0.976)	-2.253
ROA	0.608***	-0.684***	0.63***	0.753***	-0.75***	0.653***
	(18.688)	(-16.375)	(20.667)	(20.155)	(-17.489)	(18.398)
R2	0.706	0.517	0.743	0.616	0.496	0.654
Adjusted R2	0.702	0.51	0.739	0.611	0.488	0.649
F-statistics	157.713	70.192	189.233	105.420	64.433	124.017
N	336	336	336	336	336	336

Note: This table shows the summary of regression for each component of the integrated Real Earnings Management measure for a sample of 336 firm-year observations. AbCFO is abnormal cash flow from operating activities; AbPROD an abnormal production costs; AbDISEXP is abnormal discretionary expenses, and ROA is the ratio of EBIT to net assets.

*, **, *** significant at the 0.1, 0.05 and 0.01 levels, respectively.

Conclusion

This empirical study examines the impact of firm performance on the choice of earnings management approach before and during COVID-19. This study uses a sample of 336 firms year observations from Malaysian public listed firms, evenly covering the pre-COVID-19 (2018–2019) and during-COVID-19 (2020–2021). First, before COVID-19, firm performance did not impact AEM. Thus, the first hypothesis is rejected. However, the second hypothesis is supported when the Model (6) indicated a significant negative association between firm performance and AEM during COVID-19. The result suggests that during the pandemic, underperforming firms shifted toward aggressive AEM to cope with the crisis. Next, both hypotheses 3 and 4 are accepted with Model (7) indicated a significant positive association between performance and REM before and during the pandemic. This implies that REM remained the preferred tool of profitable firms, unaffected by the pandemic timeline. The main finding is that the choice of earnings management approach is influenced by the performance level of the companies. In addition, the significant effects between control variables (FinDist, LEV, SIZE and LIQDT) with earnings management can also be highlighted as they have an

influence on both AEM and REM approaches both before and during the pandemic. Finally, further research has been carried out to determine from the three proxies of REM, which activities that the businesses engaged in since the study discovered that REM behavior remained positively significant with firm performance across time. The result proves that poorly performing firms were more likely to engage in specific REM activities during the pandemic.

These findings provide valuable guidance for regulators and practitioners attempting to address business failures driven by opportunistic earnings management. In particular, the study helps regulators refine oversight policies, enables auditors to identify high-risk financial reporting during economic shocks, and assists investors in evaluating earnings quality. Despite these contributions, several limitations of this study must be noted. First, the study examines firms without considering the variety of industries that could have different characteristics and influence the choice of earnings management approach. Second, the data focuses only on ROA as the proxy for firm performance. Future research may incorporate other measurements such as Tobin's Q and Return on Equity (ROE) to strengthen validity of results. Finally, the study is conducted within a single-country setting. Future cross-country studies are needed to see if these results vary across the countries and comparative studies can be done.

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