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Key Audit Matters and earnings management practice pre and during COVID-19: evidence from Jordan

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Abstract

Purpose – This study examines the association between ISA 701 of Key Audit Matters (KAM) with accrual and real earning management practices pre and during the COVID-19 pandemic in Jordanian Industrial listed firms.
Design/methodology/approach – The content analysis method was utilized with longitudinal data derived from the annual reports of industrial firms listed on the Amman Stock Exchange with 240 firm-year observations for the period of pre and during COVID-19 (2017–2021).
Findings – The inability of auditors to detect earnings management through KAM is evident in the results, as they reveal a positive association between KAM and real earnings management through abnormal cash flows from operations pre COVID-19 period. Additionally, during the COVID-19 pandemic, earnings manipulation is observed to increase, particularly through abnormal levels of production costs. This result highlight that managers may participate in earning management in areas not covered by the auditor in KAM report to meet their target.
Practical implications – The findings assist regulatory bodies in their oversight and management of the auditing. In addition, the findings may help standard setters, regulators and the auditing profession as they evaluate the challenges within an unpredictable economic environment.
Originality/value – This is the first comparative study that evaluates the association between KAM and earnings management in the period of pre and during COVID-19. In the context of emerging economies, characterized by distinct corporate governance frameworks, this study enables the establishment of initial assumptions regarding the KAM reporting status of pre and during COVID-19.

Keywords Key audit matters, Earnings management, COVID-19, Agency theory, Jordan
Paper type Research paper

1. Introduction

The practice of earnings management has sparked worldwide concern, due to its negative impact on financial reporting and subsequent effects on financial markets (Amara *et al.*,

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2025a). According to Barghathi *et al.* (2021), earnings management is a matter of great importance that garners considerable interest from various corporate stakeholders since it serves as a useful indicator of a company's performance. Some argue that earning management enables businesses to improve their financial performance or gain a competitive edge (Gajdosikova *et al.*, 2022). However, it is impossible to overlook the reality that earnings management enables businesses to manipulate their financial results to reach specific goals (Li *et al.*, 2019). Contemporarily, there are two main approaches to managing earnings, either by adjusting accounting accruals or by real activities, to achieve desired outcomes for reported earnings (Abu Afifa *et al.*, 2021).

The conventional audit report has been subject to criticism for its limited utility, as it primarily offers a binary assessment of pass or fail, with little additional information provided (Alshdaifat *et al.*, 2024a). In response to this concern, Key Audit Matters (KAM) was introduced by Public Company Accounting Oversight Board (PCAOB) and International Auditing and Assurance Standards Board (IAASB)) to enhance the informative value of audit reports by showing significant risk matters in the financial statement of the company which are identified by auditors based on their professional judgement intended to those in charge of governance (IAASB, 2016). In the case of Jordan, companies are required to adopt the IAASB's new auditor reporting (KAM) for audits of financial statements for the financial year ending on or after December 15, 2016. With the introduction of KAM in the audit report, there is a perception that stakeholders now pay closer attention to management practices, including earnings management (Bepari *et al.*, 2023; Gold *et al.*, 2020).

On March 11, 2020, The World Health Organization officially announced COVID-19 as a pandemic that caused significant effects on economies worldwide (WHO, 2020). Businesses faced uncertainties and faced big losses due to the lockdown and rising inflation (Yan *et al.*, 2022). This pandemic situation creates pressure on the firm to engage in increased income earnings management or report big losses (Liu and Sun, 2022). The increased uncertainty in the pandemic period has also widened the extent of risky matters in companies. The COVID-19 pandemic has significantly affected several auditing-related factors, such as audit procedures, audit fees and upcoming evaluations (Alharasis, 2023). These consequences have sparked worries about the potential reduction in audit quality (Albitar *et al.*, 2021; Alharasis *et al.*, 2023). In addition, the pandemic situation affected the work of auditors by necessitating the adoption of stringent reporting and auditing standards, which may weaken the role of KAM in identifying high-risk matters in financial statements (PWC, 2021). As a result, it is anticipated that auditors may fail to detect high-risk matters and produce high-quality audit in an uncertain environment like COVID where companies are prone to practice earnings management.

Examining Jordan as a sample holds significant importance, particularly in light of the country's ongoing initiatives to strengthen corporate governance practices as a means of bolstering financial performance (Aburisheh *et al.*, 2022). The current corporate governance framework in Jordan is still in its embryonic stages, marked by a lack of clarity regarding the entities responsible for specific governance functions (Alodat *et al.*, 2022). This unique context makes Jordan an intriguing subject for investigation. Additionally, Jordan was an early adopter of the International Accounting and Auditing Standards (IAS) which adds another point of interest to the study. This proactive stance towards international standards sets the stage for exploring how such standards are implemented and their impact on corporate governance practices in the country.

Furthermore, the insufficient level of auditing systems in the Middle East and North Africa (MENA) region, including Jordan, raises concerns about the likelihood of engaging in earnings management (Almarayeh *et al.*, 2020; Ab Aziz *et al.*, 2025). Factors such as lower demand from closely held clients for high-quality external audits and the limited effectiveness of the legal system in penalizing auditors for non-compliance with International Standards on Auditing (ISA) contribute to the complexity of the situation. Moreover, it is essential to consider the unique economic challenges faced by Jordan, particularly the severe impact of the COVID-19 pandemic on its small economy. The aftermath of the pandemic has heightened the potential for firms to resort to earnings management as a coping mechanism. In light of these multifaceted factors, this study aims to investigate the influence of KAM on earnings management in Jordanian industrial listed firms, examining both pre and during COVID-19 pandemic.

Our research contributes to the advancement of auditing research in various dimensions. First, this study represents the first attempt to investigate the relationship between KAM and earnings management in contrast with prior studies which primarily focused on highlighting the advantages of integrating KAM into audit reports and their implications for audit quality, audit report lag and investor reactions (Abdullatif *et al.*, 2023; Abu *et al.*, 2021; Gambetta *et al.*, 2023). Second, our work stands out by conducting this investigation during the global COVID-19 pandemic, providing unique insights into the challenges of this exceptional period. Third, unlike other research, our analysis considers both accrual-based and real-based earnings management, recognizing the diverse practices employed by industrial firms (Alhadab *et al.*, 2020). Fourth, our research specifically targets emerging countries like Jordan, known for their unique corporate governance settings. Finally, the research findings hold significance for regulatory bodies overseeing auditing practices to enhance strategies for ensuring financial reporting integrity, particularly during economic uncertainty.

The structure of this article is as follows. The empirical literature review and hypotheses development are documented in Section 2. The data and methodology are presented in Section 3. The findings and discussion are outlined in Section 4. Section 5 concludes the paper.

2. Literature review and hypotheses development

The agency theory postulates that information asymmetries give rise to a conflict of interest between management and shareholders (Jensen and Meckling, 1976). Earnings management is linked to an increase in information asymmetry, which results in managers engaging in opportunistic manipulation of earnings to further their own interests, potentially at the cost of other stakeholders' interests (Liu and Sun, 2022). Jordan's governance structure is considered inadequate because the owners and managers have a close relationship. As a result, it limits the type 1 agency cost problem, in which the management is expected to act best on behalf of the owner. However, because of the significant concentration of ownership, the interests of minority shareholders would be jeopardized. This will result in agency costs of type 2, in which managers tend to use their position for the benefit of themselves and the majority shareholder by ignoring the rights of minority shareholders (Alhadab *et al.*, 2020).

Underpinned by agency theory, it is anticipated that monitoring processes including external audits will align with the interests of managers and all groups of shareholders, thereby mitigating any potential conflicts of interest and opportunistic conduct, while the primary objective of external audits is to enhance the confidence of stakeholders in financial statements (Velte and Issa, 2019). Thus, it is expected that KAM reporting as part of an external audit mechanism can serve as a means for auditors to report on earnings management practices, thereby contributing to the reduction of managers' opportunistic behaviour (Hegazy and Kamareldawla, 2021). However, KAM also offers management with information regarding the areas in which auditors focus their efforts. As a result, managers may participate in earning management in areas not covered by the auditor to meet the target.

Earnings management is the process of increasing or decreasing earnings to present a favourable image to shareholders and other stakeholders (Abu Afifa *et al.*, 2021). This behaviour is frequently motivated by a desire to achieve specific objectives, such as securing loan approval and tax evasion (Dyreng *et al.*, 2022). Moreover, due to financial difficulties, some companies may be incentivized to engage in earnings management strategies that seek to increase stock prices, salaries and other forms of compensation (Alhasnawi *et al.*, 2024; Nikbakht *et al.*, 2021). Managers engage in earnings management and are willing to incur losses to demonstrate outstanding company performance (Guluma, 2021). However, the earnings management will diminish the quality of financial reporting provided to stakeholders due to the dissemination of misleading information (Almarayeh *et al.*, 2020). Managers usually manage earnings at the end of the year when they understand they missed their profit by utilizing accrual and real earnings management strategies (Liu and Sun, 2022). Accrual earnings management involves discretionary modifications to estimations and accounting procedures that affect a company's net income and cash flows (Dechow *et al.*, 1995). Real earnings management involves manipulating advertising, discounts to boost sales, and operational, investing, financing activities affecting firm value (Roychowdhury, 2006).

The COVID-19 pandemic has caused major changes in the business environments. As a result, firms have been compelled to engage in earnings management practices. Firms experienced pressure during the pandemic to mitigate their revenue fluctuations due to the decline in profits during this period. Therefore, firms take advantage of this circumstance to disclose significant losses and substantial gains in the future. Besides, evidence from the past indicates that financial crises in this current situation, referring to the COVID-19 pandemic, may result in degraded financial reporting quality due to the high risk and uncertainty that motivates companies to engage in earnings management (Hsu and Liao, 2021). It is anticipated that more businesses will engage in earnings management during this pandemic period to influence their stakeholders to minimize the effect of COVID-19 (Yan *et al.*, 2022).

KAM is one of the most significant changes brought about by the adoption of the new audit standards (Mihret *et al.*, 2022). KAM elevates audit quality by increasing auditors' accountability and granting them greater authority over management (Reid *et al.*, 2019). KAM allows auditors to exercise their professional judgement to identify significant matters and at the same time encourage managers to disclose those information (Sierra-Garca *et al.*, 2019). Besides, KAM will increase auditors' sensitivity when examining risk issues such as fair value estimations and impairments of goodwill and intangibles (Elmarzouky *et al.*, 2022). Due to these additional explanations, users can better understand financial statements and high-risk matters (Rahaman and Karim, 2023; Al Lawati and Hussainey, 2022). However, auditors may face a dilemma while disclosing KAM as they may be uncertain about whether to declare them or postpone their disclosure if they perceive a lower degree of vulnerability to the negative consequences of such disclosure (Pinto and Morais, 2019). Previous research indicates that KAM has the potential to focus the user's attention on the financial statement because of substantial issues raised by auditors (Sirois *et al.*, 2018). Some data from the United Kingdom and New Zealand suggest that financial reporting quality improves after the implementation of KAM (Li *et al.*, 2019; Reid *et al.*, 2019). Furthermore, Kitiwong and Sarapaivanich (2020) discovered evidence that KAMs associated with acquisitions enhanced audit quality as measured by discretionary accruals in Thailand. In contrast, a study conducted in Finland by Rautiainen *et al.* (2021) revealed that there is not a significant relationship between KAM and the quality of audits. Thus, there is limited knowledge of how KAM affects earnings management practice. According to Gold *et al.* (2020) and Klueber *et al.* (2018), KAM will enhance transparency and managerial accountability leading to financial statements and reducing motivation for managers to participate in earnings management.

The COVID-19 pandemic has increased the demand for high-quality audits as a consequence of the uncertainties that may affect the financial information of businesses (Gould and Arnold, 2020). The IAASB also indicated that COVID-19 could potentially affect audit procedures (IAASB, 2020). Furthermore, the Association of Chartered Accountants in 2020 has advised that auditors should undertake supplementary audit measures in response to the effects of COVID-19. This scenario warrants the attention of regulatory entities and researchers to investigate the effects of COVID-19 on audit outcomes referring to KAM (Alharasis *et al.*, 2023).

According to agency theory, auditors are expected to enhance their scrutiny and thoroughly assess KAM to identify and prevent potential earnings management, as companies may attempt to mitigate adverse impacts on their financial statements (Barghathi *et al.*, 2021). However, despite the benefits of KAM, Xiao *et al.* (2020) suggests unintended consequences on managerial behaviour and financial reporting practices, potentially leading to managers resorting to real earnings management. Additionally, amid the uncertainties brought by the

COVID-19 pandemic, auditors face substantial challenges, while companies are likely to experience decreased revenues and incurred losses. Consequently, companies may turn to earnings management as a strategic measure for survival, seeking to achieve income smoothing and demonstrate favourable performance to stakeholders (Hsu and Yang, 2022). This aligns with prior research in the US and China, which found increased earnings management practices during COVID-19 (Xiao and Xi, 2021). Therefore, the subsequent hypotheses are formulated in line with existing theories and empirical evidence where it is expected that KAM reporting will impact earnings management both before and during the COVID-19 period:

H1. KAM is positively associated with the level of accrual and/or real earning management practice before the COVID-19 pandemic among Jordanian industrial listed firms.

H2. KAM is positively associated with the level of accrual and/or real earning management practice during the COVID-19 pandemic among Jordanian industrial listed firms.

3. Data and methodology

3.1 Study population and sample

This investigation focused on a population of 63 Jordanian industrial firms listed on the Amman Stock Exchange (ASE). The choice to concentrate on industrial firms was deliberate, as service firms often exhibit characteristics that preclude their inclusion in similar studies. This exclusion is primarily attributed to financial reporting inconsistencies, specifically the absence of crucial data such as inventory and cost of goods sold, vital for estimating abnormal production costs. Additionally, a significant divergence exists between the industrial sector and the highly regulated financial sector. After eliminating firms with unavailable data, the final sample size comprised 48 companies, resulting in 240 observations. The sample selection process is detailed in Table 1. The comparative analysis spans two distinct periods: the pre-COVID-19 period from 2017 to 2019 and the during-COVID-19 period from 2020 to 2021. Our examination commences in 2017 since it marks the initial year in which Jordanian businesses sought KAM disclosures from external auditors through the application of ISA-701.

3.2 Empirical model

The empirical model is therefore as follows:

$$EM_{it} = \beta_0 + \beta_1\, KAM_{it} + \beta_2\, SIZE_{it} + \beta_3\, LEV_{it} + \beta_4\, BIG4it + \beta_5\, COVID_{+} Year\ effect + Industry\ effect + \varepsilon.$$

Table 1. Sample selection

Study's sample	Total firms	Pooled
Preliminary sample	63	315
(−) Firms with missing data	(15)	(75)
Total sample	*48*	*240*

Source(s): Authors' own creation

where EM_{it} is the dependent variable "Earning Management" for Firm (i) in period (t), and KAM_{it} is the independent variable "Key Audit Matter" for Firm (i) in period (t). Furthermore, the control variables size, leverage, Big Four Audit Firms and Covid-dummy year are $SIZE_{it}$ and LEV_{it} and BIG-4_{it} and Year, for Firm (i) in period (t) and ε is the error term.

3.3 Measurement of variables

The study's dependent variable is Earning Management, which encompasses both accrual and real components. Meanwhile, the independent variable is KAM. In addition, the employed control variables consist of Size, Big4 and Leverage.

3.3.1 Earnings management. The present investigation examines two distinct forms of earnings management, namely accrual and real earnings management. The Modified Jones model, as proposed by Dechow *et al*. (1995), was utilized in this study to measure accrual earnings management. It is widely regarded as the most potent tool for testing earnings management. Cohen and Zarowin (2010) agree that this model is deemed superior owing to its capacity to manage changes in economic circumstances that could potentially impact overall accruals, while simultaneously permitting fluctuations in coefficients. The formula presented below is utilized for the calculation of accrual earnings management:

$$\frac{TA_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 + \beta_1\frac{1}{ASSETS_{i,t-1}} + \beta_2\frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_3\frac{PPE_{i,t}}{ASSETS_{i,t-1}} + \varepsilon_{\text{DA-MDJONES}} \quad (1)$$

where TA is total accruals, calculated as earnings minus operating cash flows. ASSETSt-1 is the total assets at the beginning of the year. Δ SALES is the difference in sales between two periods, and PPE is the gross value of property, plant and equipment.

On the other hand, Roychowdhury (2006) formulated the REM measures that are commonly employed in the current literature. Real earnings management is calculated using three indicators, namely abnormal cash flows from operations, abnormal discretionary expenses and abnormal production costs. Therefore, real earnings management is computed using the following three formulas:

$$\frac{CFO_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 + \beta_1\frac{1}{ASSETS_{i,t-1}} + \beta_2\frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_2\frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon_{\text{ABNCFO}} \quad (2)$$

$$\frac{DISX_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 + \beta_1\frac{1}{ASSETS_{i,t-1}} + \beta_2\frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon_{\text{ABNDISX}} \quad (3)$$

$$\frac{PRODCST_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 + \beta_1\frac{1}{ASSETS_{i,t-1}} + \beta_2\frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_3\frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \beta_4\frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon_{\text{ABNPROD}} \quad (4)$$

where $CFO_{i,t}$ is cash flows from operations. $SALES_{i,t}$ is sales in the current year and $SALES_{i,t-1}$ is sales in the previous year. $DISX_{it}$ is Discretionary expenses as the sum of Research and Development expenses, Selling, General and Administrative expenses, and advertising expenses for firm i at period t. $PRODCST_{i,t}$ is the sum of the cost of goods sold and the change in inventories for firm i in year t. In the final step, a calculation is made to determine the aggregate amount of real earnings management, which includes an abnormal level of cash flows from operations, an abnormal level of discretionary expenses, and an abnormal level of production costs. The purpose of this calculation is to investigate the comprehensive effects of real earnings management practices.

3.3.2 Key Audit Matters (KAM). The present study examines the extent of KAM reporting by analysing the number of KAM disclosed in the audit report of each respective company (Al Lawati and Hussainey, 2022; Alharasis, 2024, 2025; Alshdaifat *et al.*, 2024c; Lennox *et al.*, 2021; Rahaman and Karim, 2023).

3.3.3 Control variables. This research utilized four control variables, namely Size, Big-4 Audit firm, Leverage and Covid-dummy year (Aziz *et al.*, 2024; Al Rob *et al.*, 2025; Alharasis *et al.*, 2024; Alshdaifat *et al.*, 2024b; Amara *et al.*, 2025a,b). The size of an asset is its natural logarithm, while Big-4 is defined as a dummy variable equal to 1 if the company was audited by PWC, EY, Deloitte, or KPMG and 0 otherwise. Calculating leverage involves dividing total debt by total assets. Lastly, for Covid-dummy year, 2020 and 2021 are the years following the COVID-19 outbreak equal to one; 2017 to 2019 are the years preceding the outbreak, so equal to zero (Yan *et al.*, 2022). Table 2 below presents the list of variables with the definitions.

4. Findings

4.1 Descriptive analysis

Table 3 displays the descriptive statistics for all variables incorporated in the present investigation. The table illustrates that the mean values of KAM amount to 1.637, indicating that, on average, the studied firms disclosed at least one to two KAMs. It is seen that the mean and median values for the proxies of accrual and real earnings management are notably modest. This can be attributed to the calculation of these measurements as residual values which is in line with Alhadab *et al*. (2020).

Table 4 presents a correlation matrix between variables in this study, and shows that Accrual earning management is positively associated with real earnings management and its proxies (ABNCFO, ABNDEXP and ABNPROD) and negatively with size and leverage. While real earning management is positively associated with ABNCFO, ABNDEXP and ABNPROD, these positive correlations among earning management proxies suggest that Jordanian industrial-listed firms engage in both accrual and real earnings management (Alhadab, 2018). Lastly, KAM is positively associated with size and negatively with leverage.

Table 5 below shows the ranking based on the type of KAM issued by Jordanian industrial listed firms divided into two periods pre and during COVID-19. From the table it is depicted that the top two KAM issued by the firms are accounts receivable (33.59%) and inventory (29.01%). This is supported by Abdullatif and Al-Rahahleh's (2020) study exploring the impact of a new audit regulation referring to KAM on Jordanian-listed firms, which yielded consistent results as the highest KAM by industrial firms. Furthermore, in the period before

Table 2. Definition of the variables

Variable	Definition
AEM	Accrual earnings Management (Abnormal level of accruals) calculated as the residual from Equation (1)
ABNCFO	Abnormal level of cash flows from operations calculated as the residual from Equation (2)
ABNDEXP	Abnormal level of discretionary expenses calculated as the residual from Equation (3)
ABNPROD	Abnormal level of production cost calculated as the residual from Equation (4)
REM_{TOTAL}	Total of Real earnings management
KAM	Number of Key Audit Matters disclosed in audit report
SIZE	The natural logarithm of total assets
BIG4	A dummy variable that equals 1 if the audit firm is one of the Big Four, and zero otherwise
LEV	Total debt divided by total assets
COVID-DUMMY	A dummy variable that equals 1 if the period during COVID-19 (2020 and 2021) and zero if before COVID-19 (2017–2019)

Source(s): Authors' own creation

Table 3. Descriptive statistics

Variables	Mean	Median	SD	Minimum	Maximum
AEM	0.001	0.002	0.174	−0.417	0.33
REM	−0.043	−0.023	0.8	−2.198	2.122
ABNCFO	−0.039	−0.007	0.242	−0.789	0.329
ABNDEXP	−0.067	−0.042	0.084	−0.265	0.025
ABNPROD	0.063	−0.007	0.622	−1.144	1.768
KAM	1.637	2	0.914	0	4
SIZE	16.743	16.671	1.521	11.14	21.132
BIG4	0.304	0	0.461	0	1
LEV	0.517	0.379	0.651	0	5.737

Note(s): This table presents the descriptive statistics of the variables
All variables are defined in Table 1
Source(s): Authors' own creation

and during COVID-19, the same KAM issues were reported. Thus, in the case of Jordanian industrial listed firms, the increase of KAM during COVID-19 period was caused by the same type of KAM with no introduction of a new type of KAM concerning the COVID period. Upon comparing the number of KAM between the pre-COVID year of 2019 and the COVID-affected year of 2020, there was a marginal increase of 6.57%, with the number rising from 76 to 81. This is consistent with the findings of PWC (2021) and Hay *et al*. (2021), who concluded that the impact of COVID-19 on audit outcomes pertaining to KAM was modest.

4.2 Empirical results

4.2.1 Testing the first hypothesis (before the COVID-19). Table 6 presents the result on the relationship between KAM and/or accrual and real earnings management before COVID-19 which refers to three years from 2017 until 2019 with 144 observations. Column (3) shows evidence that KAM reporting is positively significant with abnormal level of cash flows from operations which is part of real earnings management with coefficient on ABNCFO that is positive and statistically significant. Therefore, H1 is accepted since KAM is positively associated with real earnings management through abnormal levels of cash flows before the COVID-19 pandemic among Jordanian industrial listed firms.

This outcome leads to the conclusion that Jordanian industrial firms are actively involved in real earnings management, specifically through abnormal cash flows from operations (Alhadab *et al*., 2020). The positive association with KAM raises concerns about auditors' effectiveness in detecting real earnings management practices (Almarayeh *et al*., 2020; Alshdaifat *et al*., 2024c). This aligns with the insights of agency theory of type 2, suggesting that managers may exploit their positions for their own benefit and that of the majority shareholder, potentially neglecting the rights of minority shareholders.

4.2.2 Testing the second hypothesis (during the COVID-19). Table 7 presents the relationship between KAM with accrual and real earnings management during the COVID-19 which refers to two years period from 2020 until 2021 with 96 observations. Table 7 shows evidence that KAM is significantly and positively associated with ABNCFO, ABNPROD and aggregate REM. In particular, column (2) presents the result on the relationship between ABNCFO and KAM and shows that the coefficient on ABNCFO is positive and statistically significant. In addition, in columns 4 and 5 KAM is positively associated with ABNPROD and REM at significant level. This supports H2 and confirms that KAM is positively associated with real earnings management in two types which are abnormal levels of cash flows from operations and abnormal levels of production costs during the COVID-19 among Jordanian industrial listed firms. This finding is in line with the observations of Xiao *et al*. (2020), suggesting unintended consequences on managerial behaviour and financial reporting practices, potentially pushing

Table 4. Correlation matrix for all variables

Variables	AEM	REM	ABNCFO	ABNDEXP	ABNPROD	KAM	SIZE	BIG4	LEV	COVID-dummy
AEM	1									
REM	0.609***	1								
ABNCFO	0.701***	0.729***	1							
ABNDEXP	0.280***	0.403***	0.425***	1						
ABNPROD	0.473***	0.949***	0.491***	0.219***	1					
KAM	−0.010	−0.070	−0.029	0.018	−0.081	1				
SIZE	−0.390***	−0.398***	−0.221***	0.000	−0.426***	0.224***	1			
BIG4	−0.013	−0.132	−0.093	−0.336***	−0.088	−0.045	0.277***	1		
LEV	−0.261***	0.019	0.117	−0.113	−0.006	−0.179***	−0.150	−0.091	1	
COVID dummy	0.024	−0.041	0.004	0.084	−0.066	0.035	−0.018	−0.004	0.063	1

Note(s): *, ** and *** denote 0.1, 0.05 and 0.01 significance levels, respectively
All variables are defined in Table 1
Source(s): Authors' own creation

Table 5. Ranking of type of KAM issued

Type of KAM issued	Pre COVID-19			During COVID-19		Summation	
	2017	2018	2019	2020	2021	Total	Percentage
Accounts receivable	30	28	25	25	24	132	33.59%
Inventory	24	20	22	24	24	114	29.01%
Revenue recognition	8	8	9	8	9	42	10.69%
PPE	5	5	6	9	7	32	8.14%
Investments	5	6	6	6	6	29	7.38%
Insurance	0	3	3	4	3	13	3.31%
Goodwill	2	1	2	2	2	9	2.29%
Pensions	1	1	1	1	2	6	1.53%
Financial assets	1	1	1	1	1	5	1.27%
Biological assets	1	1	1	1	1	5	1.27%
Financial instruments	1	2	0	0	0	3	0.76%
Taxation	1	0	0	0	0	1	0.25%
Other impairments	0	1	0	0	0	1	0.25%
Acquisitions	0	0	0	0	1	1	0.25%
Total	*79*	*77*	*76*	*81*	*80*	*393*	*100.00%*

Source(s): Authors’ own creation

Table 6. Association between KAM and earnings management in the period of 2017–2019 (pre-pandemic)

Variables	(1) AEM	(2) ABNCFO	(3) ABNDEXP	(4) ABNPROD	(5) REM
KAM	−0.002	0.029**	−0.004	−0.065	−0.028
	(−0.087)	(1.779)	(−0.630)	(−1.068)	(−0.343)
SIZE	−0.067***	−0.018*	0.000	−0.257***	−0.297***
	(−6.239)	(−1.977)	(0.127)	(−7.415)	(−6.462)
BIG4	0.037	−0.035	−0.038***	0.362***	0.304**
	(1.054)	(−1.153)	(−3.117)	(3.220)	(2.037)
LEV	−0.129***	0.080***	0.015	0.012	0.080
	(−3.805)	(2.723)	(1.306)	(0.110)	(0.555)
Constant	1.162***	0.305*	−0.163**	4.087***	4.546***
	(6.178)	(1.871)	(−2.490)	(6.780)	(5.692)
Year fixed effect	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included
Observations	144	144	144	144	144
R-squared	0.322	0.304	0.461	0.417	0.374
Adj. *R*-squared	0.265	0.246	0.416	0.368	0.321

Note(s): *, ** and *** denote 0.1, 0.05 and 0.01 significance levels, respectively
Definitions of all variables are presented in Table 1
Source(s): Authors’ own creation

managers towards resorting to real earnings management. The critical argument here is that, during the challenging circumstances of the COVID-19 pandemic, KAM appears to have unintended consequences on the financial practices of Jordanian industrial firms, fostering real earnings management as a strategic response to the crisis.

4.3 Further analysis

4.3.1 Testing further analysis (full period). To further confirm the relationship between KAM with accrual and/or real earnings management, this study looked at a full sample period from

Table 7. Association between KAM and earnings management in the period of 2020–2021 (during pandemic)

Variables	(1) AEM	(2) ABNCFO	(3) ABNDEXP	(4) ABNPROD	(5) REM
KAM	0.019	0.042***	0.001	0.044**	0.083**
	(1.369)	(2.934)	(0.234)	(1.997)	(2.549)
SIZE	−0.051***	−0.010	0.008***	−0.061***	−0.064***
	(−6.376)	(−1.199)	(2.888)	(−4.677)	(−3.350)
BIG4	0.058**	0.039	−0.034***	0.039	0.063
	(2.076)	(1.353)	(−3.580)	(0.861)	(0.947)
LEV	−0.067***	0.036**	0.013**	0.046*	0.087**
	(−4.174)	(2.139)	(2.345)	(1.747)	(2.268)
Year fixed effect	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included
Constant	0.866***	0.069	−0.272***	0.836***	0.707**
	(6.175)	(0.476)	(−5.695)	(3.666)	(2.103)
Observations	96	96	96	96	96
R-squared	0.432	0.216	0.631	0.400	0.348
Adj. *R*-squared	0.365	0.124	0.588	0.330	0.271

Note(s): *, ** and *** denote 0.1, 0.05, and 0.01 significance levels, respectively
Definitions of all variables are presented in Table 1
Source(s): Authors' own creation

2017 to 2021 with total observations of 240. The result in Table 8 presents evidence that ABNCFO is the main type of real earnings management that is highly practiced by Jordanian-listed firms. In particular, column (2) presents the result on the relationship between ABNCFO and KAM and shows that the coefficient on ABNCFO is positive and statistically significant. This supports that KAM is positively associated with real earnings management in pre and during COVID-19 pandemic among Jordanian Industrial listed firms.

Table 8. Association between KAM and earnings management in the period of 2017–2021 (overall period)

Variables	(1) AEM	(2) ABNCFO	(3) ABNDEXP	(4) ABNPROD	(5) REM
KAM	0.009	0.034***	−0.002	0.005	0.037
	(0.796)	(3.047)	(−0.426)	(0.148)	(0.928)
SIZE	−0.057***	−0.016**	0.004	−0.132***	−0.164***
	(−8.321)	(−2.528)	(1.584)	(−7.040)	(−7.121)
BIG4	0.037	−0.008	−0.039***	0.098	0.115
	(1.628)	(−0.391)	(−4.723)	(1.580)	(1.496)
LEV	−0.087***	0.048***	0.013**	0.048	0.106*
	(−5.091)	(3.018)	(2.184)	(1.036)	(1.855)
COVID-dummy	0.024	−0.231***	−0.005	−0.056	−0.552***
	(0.802)	(−8.235)	(−0.512)	(−0.686)	(−5.523)
Year fixed effect	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included
Constant	0.964***	0.317***	−0.204***	2.020***	2.686***
	(7.997)	(2.793)	(−4.757)	(6.167)	(6.645)
Observations	240	240	240	240	240
R-squared	0.311	0.318	0.489	0.272	0.372
Adj. *R*-squared	0.271	0.278	0.459	0.230	0.336

Note(s): *, ** and *** denote 0.1, 0.05 and 0.01 significance levels, respectively
Definitions of all variables are presented in Table 1
Source(s): Authors' own creation

4.3.2 Testing further analysis (interaction effect of COVID-19 period). Additional analysis was also conducted by looking at the interaction effect of COVID-19 period on the relationship between KAM with accrual and/or real earnings management. Columns 4 and 5 in Table 9 showed that the result is a significantly positive coefficient of the interaction term (KAM*COVID-dummy), suggesting that the COVID-19 period positively influenced the relationship between KAM and real earnings management, and these findings confirm H2 in this study.

4.3.3 Endogeneity test. We utilized the two-stage Heckman (1979) estimation procedure, incorporating instruments tested for validity, to address concerns related to endogeneity or omitted-variable bias and enhance the robustness of our findings regarding the directionality of the results. In the initial step, probit regression was employed to generate a new variable named the Inverse Mills Ratio (INMILLS). This variable was subsequently applied to update the existing models. The outcomes from the secondary estimation stage align with those obtained in the original analysis. The findings are not presented, but they are available upon request.

5. Conclusion

This comparative study aims to investigate the impact of KAM on earning management practices which are divided into two periods before and during COVID-19 pandemic. Using a selected sample of Jordanian industrial listed firms, the result revealed that in pre COVID-19 period KAM affected real earning management positively specifically through abnormal cash flow from operation. While during COVID-19 it is proved that the Jordanian industrial listed firms engage more in real earnings management, through abnormal cash flow and abnormal levels of production cost. This result explained that the firms increased their real earnings activities to achieve their goals during COVID-19. The above result reflects the characteristics of Jordanian firms with high ownership concentration, weak corporate governance framework

Table 9. Effect of COVID-19 period on the association between KAM and earnings management

Variables	(1) AEM	(2) ABNCFO	(3) ABNDEXP	(4) ABNPROD	(5) REM
KAM*COVID-dummy	0.025	0.015	0.004	0.183***	0.182***
	(1.158)	(0.734)	(0.490)	(2.982)	(2.609)
KAM	−0.002	0.027*	−0.004	−0.082*	−0.033
	(−0.105)	(1.933)	(−0.673)	(−1.882)	(−0.674)
SIZE	−0.057***	−0.016**	0.004	−0.158***	−0.169***
	(−8.218)	(−2.508)	(1.578)	(−7.871)	(−7.406)
BIG4	0.041*	−0.006	−0.038***	0.174**	0.160**
	(1.779)	(−0.296)	(−4.605)	(2.586)	(2.096)
LEV	−0.087***	0.048***	0.014**	0.040	0.115**
	(−5.031)	(2.996)	(2.250)	(0.813)	(2.037)
COVID-dummy	−0.010	−0.250***	−0.011	−0.289**	−0.820***
	(−0.219)	(−5.748)	(−0.681)	(−2.155)	(−5.395)
Year fixed effect	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included
Constant	0.973***	0.323***	−0.202***	2.518***	2.826***
	(7.980)	(2.822)	(−4.698)	(7.154)	(7.077)
Observations	240	240	240	240	240
R-squared	0.313	0.310	0.489	0.331	0.397
Adj. *R*-squared	0.270	0.267	0.458	0.289	0.360

Note(s): *, ** and *** denote 0.1, 0.05 and 0.01 significance levels, respectively
Definitions of all variables are presented in Table 1
Source(s): Authors' own creation

and low audit quality as being discussed earlier in this study. In addition, managers may participate in earning management in areas not covered by the auditor in KAM report to meet their target.

The implication of KAM on earnings management, both before and during the COVID-19 pandemic, holds significant importance, particularly in the context of emerging countries like Jordan. The examination of the effectiveness of ISA 701 regarding KAM becomes crucial in shedding light on its role in identifying critical issues within firms, with a specific focus on the early detection of earnings management. This assumes added significance in uncertain circumstances such as the COVID-19 pandemic, where there is an anticipation of increased earnings management activities. The findings from this research can provide valuable insights for regulatory bodies involved in overseeing and managing auditing practices. By understanding the impact of KAM on earnings management, regulatory bodies can enhance their strategies for ensuring the integrity and transparency of financial reporting. This is especially pertinent during times of economic uncertainty, where the need for effective auditing practices becomes more pronounced. Moreover, the results of the study may offer valuable guidance to standard setters, regulators and the auditing profession as they navigate the challenges presented by an unpredictable economic environment. Understanding how KAM influences earnings management in different circumstances can inform the development and refinement of auditing standards and regulations. Furthermore, the generalizability of the findings to other countries in the MENA region broadens the scope of applicability. The insights gained from the study in Jordan could serve as a basis for understanding similar dynamics and challenges faced by other countries in the region, thereby contributing to the advancement of auditing practices across the broader MENA region.

To fill the gap in auditing and earnings management literature, this study provides a comparative analysis in pre and during COVID-19 pandemic periods. This comparative analysis provides evidence that real earnings management is prevalent in both situations. Therefore, it is an important issue that needs to be tackled by Jordanian industrial listed firms by strengthening their corporate governance and improving the effectiveness of the auditor's monitoring role in the company's management. In addition, the regulators need to pay close attention to the reported financial statements of Jordanian industrial listed firms to identify any questionable items inside the financial report which can possibly lead to earnings management.

This study is subject to a few limitations. Firstly, the sample focuses on one country's sector which is Jordanian industrial listed firms only. Therefore, future studies can extend the sample to other MENA countries context by adopting other measurements depending on the suitability of the study. This study employed a quantitative method using content analysis of the annual report; therefore, it is suggested that future researchers may employ other qualitative methods like interviews and questionnaires.

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