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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Earnings management in emerging markets: The COVID-19 and family ownership

Safia Abdo Ali Al-Begali^{1\star} and Lian Kee Phua^1

Abstract: This paper investigates the impact of COVID-19 and family ownership on earnings management (EM), both accruals (DA) and real (REM). This research also seeks to determine whether there is a substitutional or complementary relationship between DA and REM. The study's sample includes firms listed on the Jordanian market after excluding the banking and insurance sectors from 2017 to 2021. It used feasible generalised least squares estimation (FGLS) regressions to achieve the study's goals. The results reveal a negative and significant correlation between COVID-19 and discretionary accruals (DA), which indicates that COVID-19 restricts DA in Jordanian companies. However, the outcome shows a significant positive relationship between COVID-19 and REM, which indicates that COVID-19 encourages Jordanian companies to practice REM. According to the entrenchment theory, the majority shareholders in a family-owned business environment seek to expropriate the rights of the minority shareholders. Consistent with this theory, the result documents a significant positive correlation between family ownership and DA, indicating that high family ownership manages earnings through accruals. However, this study finds a significant negative relationship between family ownership and REM, indicating that a high concentration of family ownership restricts the practice of REM. This finding aligns with the alignment theory, which argues that the interests of minority and majority shareholders are compatible. These findings indicate a lack of accuracy and reliability in the financial reports in the Jordanian industrial and service enterprises due to the practicing DA by the familyowned companies as well as the outbreak of COVID-19 that led to a rise in the practice of REM. Finally, the findings document that Jordanian companies use REM and DA as complementary tools to maximise their impact on earnings. The findings of earlier research on EM who have used Jordanian-listed companies might not be beneficial in light of the current COVID-19 pandemic. Thus, the current study is one of the first empirical attempts to examine the impact of the COVID-19 pandemic and family ownership on the quality of financial reporting using both EM (DA and REM) in the context of the Jordanian market. The current study's findings are an important contribution to the literature on how family ownership affects the quality of financial reporting (QFR) and how COVID-19 affects the practice of EM. Therefore, the findings of this study can provide all stakeholders with information regarding the QFR in family-controlled companies and explore the accounting implications of the pandemic in order to assist all interested parties, particularly those in developing markets, in making more informed decisions.





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Subjects: Financial Accounting; Financial Statement Analysis; Corporate Governance

Keywords: COVID-19; earnings management; Jordanian companies; family ownership; AEM; REM

1. Introduction

The issue of earnings management (EM) has become attractive to numerous scholars, particularly after the collapse of numerous international companies with clout on global markets, due to its effect on the quality and integrity of financial reports (Ghaleb et al., 2020, 2021). These reports contain vital information, such as earnings and losses, which are the focal point of the attention of creditors and investors, among other recipients of financial reporting (Graham et al., 2005). EM has been defined as any activity (manipulation of accounting rules or operational decisions) intentionally utilised by the administration for opportunistic purposes to inform about intended results that differ from the actual ones to mislead investors and other stakeholders (Borralho et al., 2019).

EM diminishes the quality and reliability of financial reporting because the information contained in these documents may not accurately reflect the company's fundamental condition (Healy & Wahlen, 1999). As a result, investors will have less confidence in these reports. EM occurs due to conflicts of interest between shareholders and managers as well as information asymmetry (Ghaleb et al., 2020, 2021), where insiders (managers and controlling owners) take advantage of information asymmetry and hide the real performance of companies by practicing insider trading opportunities and thus presenting low-quality and unclear information (Zhang & Zhangs, 2018).

EM is usually practiced by manipulating accruals, real activities, or both. The empirical literature reviewed for Jordan demonstrates that listed Jordanian corporations engage in earnings management behavior (Al-Haddad & Whittington, 2019; Alhadab, 2018; Enomoto et al., 2015). Enomoto et al. (2015) used companies from 38 countries and determined that Jordan ranked seventeenth in AEM practice after Malaysia, India, and Taiwan and eighth in REM practice after Malaysia and Pakistan. It implies that Jordanian companies practice AEM and REM. Also, Alhadab (2018) provided evidence that Jordanian public offering companies manage earnings through real activities or by managing accruals. Thus, EM is a serious issue that requires further investigation.

Previous research has found that examining earnings management in the corporation using both EM alternatives (accruals and real) provides a comprehensive picture of EM practice (A. Zang, 2012; Fields et al., 2001; Lisboa, 2017; Swai & Mbogela, 2016). Furthermore, instead of replacing one another, both types of EM may work in complementary ways (Lisboa, 2017). To obtain a complete picture of EM, it is necessary to examine both AEM and REM (Lisboa, 2017). As a result, this paper focuses on both EM types. Our study also aims to determine if the relationship between EM strategies (AEM & REM) is substitutional or complementary.

In order to stop the COVID-19 virus from spreading, a number of nations were compelled to take immediate action to protect the lives of their citizens by halting a variety of public and private sector activities. Nonetheless, achieving a balance between citizen health and economic growth remains a challenge. Many people believe that the COVID-19 outbreak has only resulted in health and mental health crises. As a result of the lockdown imposed to prevent the spread of COVID-19 has affected the whole world and triggered an economic crisis in many countries and among many businesses. Consequently, some companies have entered a financial crisis as a result of ceasing operations (Rahman et al., 2022). Jordan was affected by the COVID-19 epidemic crisis in the same context. The repercussions of the crisis posed a great danger to the Jordanian economy. According to the ASE Annual Report (2020), the disruption caused affected various aspects such as energy, currencies, commodities, materials, consumerism, productivity, aviation, and others. Similar to other financial markets, the Amman Stock Exchange experienced a decrease in its performance

indicators and market value due to these impacts. The trading volume decreased by 33.9% in 2020 to 1.0 billion dinars from 1.6 billion dinars in 2019 (ASE Annual Report, 2020).

Managers may be taking advantage of the flexibility built into accounting principles and standards, allowing them to manipulate profits using discretion and accounting estimates (Healy & Wahlen, 1999). Accordingly, it is expected that managers' judgment may influence the assessment of the expected effects of COVID-19 to achieve certain objectives (Albitar et al., 2021). During economic downturns, companies may use more EM techniques to mitigate the unfavorable influence of crises on their performance, boost performance, and present a positive impression of the company (Filip & Raffournier, 2014; P. Ozili & Arun, 2020). Consequently, the COVID-19 disease outbreak is also a global crisis that has affected the entire planet. It may have been one of the opportunities managers utilised to manage earnings and increase corporate profitability during the COVID-19 virus (Albitar et al., 2021; P. K. Ozili, 2021).

Most earlier studies have focused on how managers managed earnings during the financial crisis (Filip & Raffournier, 2014; Kumar & Vij, 2017; Lisboa & Kacharava, 2018). There is consensus regarding using upward or downward earnings management during difficult times. For instance, to maintain the relationships between managers and stakeholders during the crisis, managers may be encouraged, according to Lisboa and Kacharava (2018), to release financial reports with positive content. In contrast, Hamza and Zaatir (2021) argued that managers manipulate earnings descending to defend their previous lousy behavior or exact to evade any political repercussions like increased taxes, stricter rules, and oversight during a crisis period. However, due to the paucity of research on this pandemic, managers' behavior in manipulating earnings throughout the COVID-19 pandemic period remains ambiguous, with mixed results (Ali et al., 2022; Aljawaheri et al., 2021; Azizah, 2021; Lassoued & Khanchel, 2021; Liang, 2022; Liu & Sun, 2022; Rahman et al., 2022; Xiao & Xi, 2021). However, these studies were conducted in a non-Jordanian context. Additionally, it is proposed that because of the differences in the institutional environment and degree of ownership concentration, the outcomes of developed countries aren't always easily transferred to underdeveloped countries (Chi et al., 2015). Thus, this is one of the first studies to look at Jordanian firms' EM practices during the pandemic. As a result, this article investigates the accounting implications of the pandemic by expanding the literature on the effects of the COVID-19 pandemic on EM practices in the Jordanian market.

Family ownership as controlling shareholders is among the fundamental corporate governance-(CG) mechanisms that have the attention of several scholars (Achleitner et al., 2014; Al Duais et al., 2021; Anderson et al., 2012; Bataineh et al., 2018; Ghaleb et al., 2020; Tsao et al., 2019; Wang, 2006; Zhang & Zhangs, 2018). They argued that family ownership affects the QFR. Anderson et al. (2012) found that family-controlled companies have substantially higher rates of abnormal short sales preceding earnings shocks compared with other companies. Also, Zhang and Zhangs (2018) argued that insider trading opportunities encourage insiders (managers and controlling owners) to hide firms' real performance by giving out low-quality, unclear information. Regarding recession, Inês Lisboa (2017) claims that earnings management is more common in family-owned enterprises, particularly during recessions, in order to increase socio-emotional wealth. Consequently, the family companies may manage earnings during economic downturns to cover up bad news.

Due to the weak CG and the legal system, family ownership dominates the business sector in Jordan, which means that most businesses are family-controlled (Alqatamin et al., 2017; Alzoubi, 2016; Bataineh et al., 2018). It makes Jordanian companies different from their counterparts in developed countries that are characterised by dispersed ownership in the hands of many shareholders. As a result of its high levels of family ownership, the Jordanian market is an intriguing region for an investigation into family-owned institutions and FRQ. Thus, the Type II agency problem (conflicts of interest between control and non-control owners) is common in the Jordanian family business.

Looking at the previous studies, we note that some previous studies focused on family ownership and EM by using accruals in isolation from real activities (Alzoubi, 2016; Bataineh et al., 2018; Hashmi et al., 2018; Rodriguez-Ariza et al., 2016). Also, some previous studies examined family ownership and focused on managing real earnings in isolation from managing earnings using accruals (Al Duais et al., 2021; Eng et al., 2019; Ghaleb et al., 2020; Razzaque et al., 2016; Tian et al., 2018; Tsao et al., 2019). Few studies, however, have looked at the connection between EM (using both Accruals &real) and family ownership in non- Jordanian context (Achleitner et al., 2014; Alhebri et al., 2020; Cherif et al., 2020; T.-Y. Chen et al., 2015).

Despite family firms' dominance in the Jordanian market, there is a dearth of research examining the quality of financial reporting in the context of Jordanian family corporations. They have used AEM only as a proxy of EM and have mixed results (Alqatamin et al., 2017; Alzoubi, 2016; Bataineh et al., 2018). Furthermore, these previous studies were conducted before updating JCGC and the COVID-19 epidemic. The family ownership's effects on EM (accruals and real) after updating JCGC remains an open question in the Jordanian market. Therefore, this is the first investigation to look into the impact of family ownership on EM (DA &REM) in the Jordanian market. As a result, our study adds to previous research by examining how family ownership in Jordanian enterprises hinders or facilitates EM from 2017 to 2021.

Jordan is an interesting research subject for several reasons, as we investigate a sample of Jordanian-listed companies between 2017 and 2021. First In 2017, an update to JCGC was issued. Therefore, it is important to determine if this update helped strengthen CG's role in limiting the opportunistic behaviour of managers and controlling shareholders (family). As a result, Jordanian regulators will be interested in the study's findings regarding the effectiveness or efficiency of the corporate governance law following the update. Second, emerging-market corporations have a higher proportion of EM than developed corporations (Ghaleb et al., 2021). Previous research has shown that EM is already a problem in Jordanian firms (Al-Haddad & Whittington, 2019; Alhadab, 2018; Enomoto et al., 2015). Third, while COVID-19 has received considerable attention from researchers, its impact on earnings management practices in Jordanian enterprises has yet to be examined. Thus, this is the first empirical investigation to look at the connection between COVID-19 and EM. Fourthly, the current study focuses on the impact of family ownership and COVID-19 on the manipulation of earnings with both types of EM (DA & REM), in contrast to previous research that focused on only one type of EM, either DA or REM and not both. Thus, our research provides a complete picture of EM practice. Therefore, the Jordanian market is considered a suitable setting for this research.

The current investigation utilises data selected from a panel of 137 Jordanian enterprises that traded on the Amman Stock Market throughout the study period from 2017 to 2021. The findings revealed that COVID-19 has a significant and negative association with DA and a significant and positive association with REM. These findings indicate that COVID-19 had an affected on Jordanian companies' behaviour, as they practiced a higher level of REM and a lower level of DA. Also, the outcomes found a significant and positive connection between family ownership and discretionary accruals (DA), indicating that Jordanian companies with high family ownership engaged in more discretionary accruals. However, the results documented a significant negative association between family ownership and REM, suggesting that high family ownership mitigated the practice of REM in Jordanian companies. Finally, the outcomes show a significant positive connection between DA and REM, indicating that companies in Jordan utilise REM and DA as complementary tools to maximise their impact on earnings. The study's findings show that COVID-19 had an impact on the quality of financial reports (QFR) by limiting the practice of discretionary accruals, but it resulted in an increase in REM.

Furthermore, the findings indicate that, while Jordanian companies with high family ownership limit the use of REM, they manage earnings through discretionary accruals, which affects the QFR in the Jordanian market. These outcomes contain empirical evidence for EM (DA& REM) in family

firms and during COVID-19 in a developing economy, which could be applied to situations similar to Jordan's in terms of poor investor protection and high concentration of family ownership. Typically, regulators, politicians, and stakeholders consider whether the company's financial information is accurate because they rely on it when making decisions. As a result, the results of this study will be beneficial to them, as they reflect the negative impact of profit manipulation on the quality and reliability of financial reports as a result of family ownership concentration and the outbreak of COVID-19, which has resulted in economic closure.

Following the introduction, the sections of our article are organised as follows: the literature is reviewed, and the hypotheses are developed in Section 2. Section 3 then describes the study sample, measures, and models. Sections 4 and 6 discuss the main findings and conclusions. Section 5, however, presents the robustness test.

2. Review of literature and development of hypothesis

2.1. Earnings management and the epidemic of COVID-19

Managers seek to exploit flexibility in accounting options by exercising their discretionary authority to achieve their own interests instead of those of stockholders (owners) or to achieve the target income and thus create distortions in accounting profits or financial statements (Healy & Wahlen, 1999). However, exploiting flexibility in accounting options is not the only way to manage profits. Still, managers can deviate from real or normal activities to manipulate the reported income, which, in turn, affects the cash flow (Roychowdhury, 2006). In summary, EM is classified into two types: first, EM involves changing accrual levels through estimates or judgements used by managers, which is known as accruals earnings management (DA) (Healy & Wahlen, 1999). Second EM is achieved by deviating from real activities, which is referred to as real earnings management (REM) (Roychowdhury, 2006).

According to agency theory, EM can be explained as opportunistic behavior by managers to manipulate earnings to achieve various incentives (Jensen & Meckling, 1976). Ines Lisboa and Kacharava (2018) argue that this behavior is more pronounced when companies face financial problems during a crisis, natural disaster, or pandemic. Thus, it is expected that the behavior of managers will be reflected in the exploitation of these crises to manipulate the financial position data for their own benefit in light of crises or epidemics. Also, the institutional theory provides the theoretical underpinning for explanatory models that seek to describe the practice of earnings management during times of crisis (Lassoued & Khanchel, 2021). The institutional theory contends that the environment in which corporations operate is a critical institutional element that significantly and widely impacts corporate behaviour (Campbell, 2007). Consequently, corporations may respond to environmental pressures and alter their accounting procedures for the purpose of EM in response to external shocks or adverse events, including natural disasters and economic crises (Chen et al., 2021). Additionally, these occurrences may heighten the level of economic uncertainty in the nation and the climate in which businesses operate (Chen et al., 2021).

During crises and disasters, such as COVID-19, managers are expected to seek to manage upward EM to convey a better sight of the corporation's financial situation. As a result, share-holders' and investors' faith will be restored (Aljawaheri et al., 2021; Ozili, 2021; Xiao & Xi, 2021). As a result, they are reassured that the company's position is favourable in comparison to its competitors. However, the epidemic period is most likely suitable for managing declining earnings (the big bath). Given the epidemic's negative impact on organisational activities, businesses may take advantage of the pandemic by reporting low profits during the current period in order to increase future profits (Liu & Sun, 2022). Another possibility for managers' behavior in earnings management during crises is to avoid the practice of EM on the grounds that crises have a detrimental effect on corporate activities (Filip & Raffournier, 2014; Kumar & Vij, 2017). Thus, shareholders anticipate a drop in profits or potential losses during COVID-19. It lessens the

incentive for executives to manage earnings because profit declines are unavoidable as a result of COVID-19.

However, the managers' demeanor in managing earnings during the COVID-19 epidemic remains ambiguous. The prior studies related to the COVID-19 epidemic are very few and have mixed results. For example, in Chinese companies, especially in the most badly afflicted locations, Xiao and Xi (2021) used a sample containing 2,029 A-share firms that published financial reports during the pandemic in 2020. They found a decline in REM and an increase in AEM. In contrast, Rahman et al. (2022) used Chinese-listed companies before the epidemic period (2017, 2018, and 2019) and the epidemic period (2020). They discovered that during the COVID-19 pandemic, Chinese companies are engaged in REM, whether family or non-family, but family companies are more engaged. Liang (2022) found that after COVID-19 enterprises were detailed on the Shanghai and Shenzhen stock exchanges, EM improved. Aljawaheri et al. (2021) discovered in Iraq that corporations use EM to sustain profits over time. Along the same line, Lassoued and Khanchel (2021) use European firms as a sample to show that European enterprises manipulated earnings further during the COVID-19 epidemic than before. However, Liu and Sun (2022) provide evidence from the US about the decline in discretionary accruals in the COVID-19 period (2020) compared to 2019. It implies that the corporations engaged in income-decreasing earnings management (AEM) during the pandemic year to boost profits in succeeding years. Also, Ali et al. (2022) show that companies tend to engage less in EM during the pandemic using data from G-12 countries. Azizah (2021) discovered in Indonesia that the amount of AEM present in (Q1 of 2020) was lower than the level of AEM present in (Q1 of 2019).

Insiders such as managers take advantage of information asymmetry and hide the real performance of companies by practicing EM (Zhang & Zhangs, 2018). Thus, it is expected that during COVID-19, managers may take advantage of information asymmetry and practice EM.

According to previous discussions and the findings of previous studies, managers are expected to manage earnings during COVID-19 to demonstrate that the financial position is in good shape. The following hypotheses can be proposed:

H1: 1: COVID-19 pandemic has positively affected EM measured by accruals.

H1: 2: COVID-19 pandemic has positively affected EM measured by real activities.

2.2. Earnings management and family ownership

Recently, there has been a rising level of curiosity among researchers regarding the matter of the quality of financial reports in family corporations (Achleitner et al., 2014; Al Duais et al., 2021; Alzoubi, 2016; Chi et al., 2015; Ghaleb et al., 2020; Tian et al., 2018; Tsao et al., 2019). They are trying to find out to what extent family companies are involved in or have avoided the practice of EM. Agency theory argues that in family businesses where ownership is concentrated among the family members, the majority of shareholders may seek to strip juvenility shareholders' rights by practicing earnings management to achieve their interests and maximise their wealth (Cherif et al., 2020; Jensen & Meckling, 1976; Razzague et al., 2016). Consistent with the agency theory, Anderson et al. (2012) discover that family-controlled businesses exhibit substantially more atypical short sales before negative earnings shocks than those that are not family-controlled, indicating that family-controlled exacerbate knowledgeable short selling. Furthermore, insider trading chances encourage insiders, who act as managers and controlling shareholders, to hide the true achievement of their companies. They accomplish this by disseminating inaccurate, opaque information (distorting insiders' information supply) to obtain an informational advantage over competitors and increase trading profits (Zhang & Zhangs, 2018). However, the decrease in profit smoothness is linked to the strictness of insider trading laws.

The literature offers two opposing viewpoints (alignment and entrenchment views) that could clarify how earnings management and family ownership are related (Wang, 2006). The alignment view argues that ownership concentration leads to better monitoring by majority shareholders (Wang, 2006). Thus, they will reduce the use of earnings management since they care about the company's worth and reputation (Ghaleb et al., 2020; Tsao et al., 2019). Consistent with the alignment assumption, recent empirical research shows that family control can help in reducing EM since family enterprises use EM less frequently than non-family corporations (Achleitner et al., 2014; Al Duais et al., 2021; Alzoubi, 2016; Chi et al., 2015; Ghaleb et al., 2020; Tian et al., 2018; Tsao et al., 2019). Consequently, family businesses have higher financial reports compared to non-family businesses (Al Duais et al., 2021; Alzoubi, 2016; Ghaleb et al., 2020).

However, the entrenchment effect argues that high family ownership may encourage the majority shareholders to expropriate the minority shareholders' benefit to grow their wealth, thus motivating EM (Alqatamin et al., 2017; Wang, 2006). Also, in family companies, family owners have the ability and right to control accounting reporting policies to limit information to achieve their own interests due to the concentrated ownership of the family, which has an entrenched impact on the integrity or accuracy of financial reporting (Fan & Wong, 2002). Thus, the influence of entrenchment may allow family members to manage earnings for their own benefit (Alzoubi, 2016). Consistent with the entrenchment assumption, recent empirical research shows that family ownership leads to greater engagement in earnings management (Alhebri et al., 2020; Bataineh et al., 2018; Cherif et al., 2020; Chi et al., 2015; Eng et al., 2019; Razzaque et al., 2016).

During the crises, Lisboa (2017) discovered that AEM is prevalent in family businesses as opposed to non-family ones when the company's financial status is less solid. Therefore, family businesses have lower-quality information during crises. Eng et al. (2019) found that REM varies between family companies in the US and China in post-crisis and pre-crisis periods. They found that REM in US family enterprises was higher than in non-family enterprises and the post-financial crisis period compared to the pre-financial crisis. However, REM in Chinese family enterprises was higher than in non-family enterprises was higher than in crisis period, REM is weaker effective in Chinese family companies than in non-family companies. All of these studies, though, were carried out before COVID-19.

Despite the damage done to most businesses because of the COVID-19 pandemic, family businesses have responded differently to negative events such as COVID-19. During times of crisis, family businesses are more adaptable. For example, Le Breton-Miller and Miller (2022) found that family businesses demonstrated aptitude and performed better throughout the crisis compared to non-family businesses. Family enterprises worldwide employed various tactics to battle the epidemic when the COVID-19 crisis initially started. Many of them have significantly increased production capacity by rearranging operations and showing amazing ingenuity (Le Breton-Miller & Miller, 2022). Also, Amore et al. (2022) examined how family participation in corporate ownership and leadership impacted how businesses responded to the COVID-19 pandemic using data from Italy. They discovered that family businesses outperformed other businesses in terms of market success and operating profitability throughout the pandemic. They emphasised that this outcome is more significant for businesses with a few family stakeholders. They made the case that family businesses do better because they deploy their labor more effectively and experience less revenue decline. However, Paiva et al. (2019) contend that when discussing incentives for earnings management, not all family businesses should be treated equally. In the Chinese context, according to research by Rahman et al. (2022), before the COVID-19 epidemic, Chinese-listed non-family firms tended to engage in higher REM activities compared to family firms. However, during the pandemic, they discovered that COVID-19 enhanced family and non-family businesses' participation in REM activities. Asia's countries are characterised by weak investor protection and high ownership concentration. Accordingly, Jordan is part of the Asia region, and their companies enjoy high ownership concentration, represented by the concentration of family ownership and lacking investor protection

(Alqatamin et al., 2017; Alzoubi, 2016; Bataineh et al., 2018). Therefore, it is expected that the majority shareholders, who represent the family, will seek to confiscate the rights of minority shareholders by practicing EM.

Based on the preceding explanation and the findings of previous studies, it can be expected that family ownership will affect EM. Thus, the following hypotheses can be formulated:

H2: 1 Family ownership and AEM (DA) have a positive correlation.

H2: 2 Family ownership and REM have a positive correlation.

2.3. The trade-off between DA and REM

According to Lisboa (2017), both ways of earnings manipulation (AEM and REM) may work in complementary ways instead of replacing each other. As a result, in order to create a complete picture of earnings management, it is necessary to examine both methods of earnings management. Previous research has shown mixed outcomes regarding the type of EM that managers prefer to use, as managers or companies practice one type of EM without others or move from manipulating earnings by accrual to manipulating earnings by real activities. Managers take into account a variety of factors or considerations when employing any type of EM. According to some studies, managers prefer accrual earnings management because it is difficult for external stakeholders to discover or monitor directly (Kothari et al., 2005). However, it does not directly affect cash flow (Roychowdhury, 2006).

In contrast, as the audit process became more rigorous, especially after the Sarbanes-Oxley Act (SOX) was passed in 2002, some studies found that managers prefer to manipulate earnings through real activities (Cohen et al., 2008; Goel, 2016). They believe that managing earnings through real activities may not expose them to the scrutiny and control of external auditors, regulatory bodies, and standard-setters. That means that REM has a lower chance of discovering it compared to AEM (Goel, 2016). Accordingly, it became necessary to measure EM by activities and EM by accruals due to the usage of REM and AEM as replacements for each other (Zang, 2012; Achleitner et al., 2014; Ferentinou & Anagnostopoulou, 2016; Ipino & Parbonetti, 2017; Roychowdhury, 2006). According to the degree of REM that has been realised, managers change the level of AEM (Zang, 2012). Zang (2012) studied a sample of companies between 1987 and 2008 to see whether managers were utilising AEM and real activity manipulation as alternatives for managing earnings. The findings show a positive and statistically significant association between the cost of AEM and REM. Thus, there is a negative link between types of EM. These findings persuade the researchers that managers view the two tactics as alternatives. Also, compared to non-family enterprises, Achleitner et al. (2014) showed that family enterprises fete REM and AEM as replacements instead of complementing instruments for manipulating earnings. Their research indicates that family firms strategically modify their earnings management practices, avoiding those reducing their long-term wealth (such as REM) and implementing those that would help them maintain transgenerational control (such as AEM).

Li (2018), on the other hand, argued that businesses could use both EM types simultaneously or in combination to achieve their goals. Nonetheless, the behaviour of the AEM and REM trade-off is heavily influenced by environmental factors. Moreover, Al-Haddad and Whittington (2019) discover that enterprises use REM and AEM together to achieve the greatest effects on profits, using a sample of 108 Jordanian enterprises from 2010 to 2014.

Based on the above discussion, it can be expected that DA and REM are related. Thus, this hypothesis can be developed:

H3: There is a substantial connection between DA and REM.

3. Research methodology

3.1. Sample and data collection

The study's sample comprises 137 industrial and service enterprises publicly traded on the Amman Stock Exchange (ASE) between 2017 and 2021 (685 firm-year observations). In accordance with previous research on EM (Al-Haddad & Whittington, 2019; Al-Mughrabi, 2020), the insurance and banking sectors are excluded from the study sample due to their unique working capital structure. Even though the scope of the investigation spans from 2017 to 2021, corporate data from 2015 and 2016 are collected to calculate the REM proxy. Data on REM and AEM (DA) are manually gathered from the publicly accessible annual reporting of the sample enterprises on the ASE website. The sample period was divided into two periods: From 2017 to 2019, we are in the prepandemic era. The pandemic had not yet occurred at this time. Nevertheless, the epidemic lasted from 2020 to 2021.

3.2. Earnings management measurements

3.2.1. Accruals earnings management (DA)

Commonly, discretionary accruals (DA) serve as a proxy for EM. Following the previous study, we used the modified Jones model by adding Return on assets (ROA) to calculate performanceadjusted discretionary accruals (Kothari et al., 2005). We control extreme operational performance to avoid bias in the estimation of discretionary accruals because accruals are associated with the company's performance (Cohen et al., 2008; Kothari et al., 2005). The calculation DA is total accruals (TAC) minus non-discretionary accruals. However, net income (NI) minus the cash flows from operations (CFO) will yield the total accruals (TAC = NI—CFO). Therefore, discretionary accruals are the absolute value of residuals in the model developed by Kothari et al. (2005). This model is estimated cross-sectionally each year for each industry as follows:

$$\frac{\mathsf{TAC}_{t}}{\mathsf{Assets}_{t-1}} = \beta_1 \left(\frac{1}{\mathsf{Assets}_{t-1}}\right) + \beta_2 \left(\frac{\Delta \mathsf{REV}_{t} - \Delta \mathsf{REC}_{t}}{\mathsf{Assets}_{t-1}}\right) + \beta_3 \left(\frac{\mathsf{PPE}_{t}}{\mathsf{Assets}_{t-1}}\right) + \beta_4 \mathsf{ROA} + \varepsilon_t \tag{1}$$

Where, TAC_t indicates to the total accruals, $Assets_{t-1}$ indicates the enterprise's total assets ending the year (t-1), ΔREV_t indicates to the sales revenues of the company in the year(t) minus sales revenues in the year (t-1), ΔREC_t indicates to change in accounts receivables, PPE_t/TA_{t-1} indicates gross of property, plant, and equipment of the company at the end of the year (t) Scaled by TA_{t-1} , ROA_t indicates the Return on assets, ε_t indicates to the residual of the Equation 1) and is representative of discretionary accruals, and $\beta_1, \beta_2, \beta_3, \beta_4$, indicates to estimate parameters.

3.2.2. Real earnings management

This article uses Roychowdhury's model has been broadly used in previous investigations (A. Zang, 2012; Al-Haddad & Whittington, 2019; Cohen et al., 2008; Rahman et al., 2022; Razzaque et al., 2016; Xiao & Xi, 2021). Three operational activities, according to Roychowdhury (2006), serve as the measures for REM. First, abnormal cash flow from operations (ACFO). Companies may seek to manipulate real activities through ACFO that reflect manipulation of sales by offering discounts on sale prices and facilitating credit terms to temporarily increase sales and record exaggerated profits. The abnormal cash flow can be calculated by subtracting the actual operating cash flow from the expected normal operating cash flow (Cohen et al., 2008; Roychowdhury, 2006). Cross-sectional regression is used to determine the abnormal operations cash flow for each sector and year:

$$\frac{CFO}{Assets_{t-1}} = \beta_1 \left(\frac{1}{Assets_{t-1}}\right) + \beta_2 \left(\frac{Sales_t}{Assets_{t-1}}\right) + \beta_3 \left(\frac{\Delta Sales_t}{Assets_{t-1}}\right) + \varepsilon_t$$
(2)

Where, CFO_t Indicates cash flow from operations in period t. $Assets_{t-1}$ indicate the lagged total assets for the previous year. Sales_t indicates the sales for every year. $\Delta Sales_t$ represents the difference in sales between the current period and the one before it as measured by sales in year t minus sales in year $t-1.\varepsilon_t$ indicates to the residual from equation number (2), it is known as unusual cash flow from operations if it is high, meaning lower REM and vice versa.

Second, abnormal discretionary expenses (ADIE): these expenses are considered unusual discretionary expenses (ADIE) because they are less than the normal level expected to be reported, and it is a form of earnings manipulation (REM) (Roychowdhury, 2006). Abnormal discretionary expenses equal the value of the actual expenditure minus the predicted normal level of discretionary expenditures estimated from equation number (3) (Eng et al., 2019; Razzaque et al., 2016; Roychowdhury, 2006). To estimate abnormal discretionary expenses, the next cross-sectional analysis is applied to every industry and every year:

$$\frac{DIE_{t}}{Assets_{t-1}} = \beta_1 \left(\frac{1}{Assets_{t-1}}\right) + \beta_2 \left(\frac{Sales_{t-1}}{Assets_{t-1}}\right) + \varepsilon_t$$
(3)

DIE denotes discretionary spending as the total amount of advertising, SG&A, and R&D costs. The residual from the calculation (3) represents the abnormal discretionary expenditures, which means that the higher the residuals, the more discretionary spending companies decrease to boost reported profits. The third is abnormal production costs (APRC); to distribute fixed costs over many units produced, businesses or managers may try to produce more than the market requires or wants. This, in turn, reduces the costs of goods sold and thus reports a high-profit margin (Roychowdhury, 2006). This means that production costs are abnormally higher than the level of nature. Production costs are a form of REM (Eng et al., 2019; Roychowdhury, 2006); it is possible to calculate them by adding the yearly percentage change in inventory to the cost of the items (goods) sold (Cohen et al., 2008; Roychowdhury, 2006). To forecast unusual cost of production, the next cross-sectional analysis is employed for every industry with the year:

$$\frac{PRC_{t}}{Assets_{t-1}} = \beta_{1} \left(\frac{1}{Assets_{t-1}}\right) + \beta_{2} \left(\frac{Sales_{t}}{Assets_{t-1}}\right) + \beta_{3} \left(\frac{\Delta Sales_{t}}{Assets_{t-1}}\right) + \beta_{4} \left(\frac{\Delta Sales_{t-1}}{Assets_{t-1}}\right) + \varepsilon_{t}$$
(4)

Where, PRC_t indices to the sum of the($COGS_t$) and (INV) in the year. $\Delta Sales_{t-1}$ is the difference between sales last year and sales the year before last. The unusual level of production cost (APRC) is the divergence between the actual production cost (PRC) taken from the income statement (PRC) and normal or expected production cost levels calculated from equation number (3). A higher APRC implies more REM practice (Eng et al., 2019; Roychowdhury, 2006).

Although Roychowdhury (2006) used the previously mentioned three measurements (ACFO, ADIE, APRC) to measure REM, most recent research has specified REM by using all of these because they would better reflect EM activity than the single scale of REM (Eng et al., 2019). As a result, this article employs the overall REM measure by multiplying the residuals (ACFO and ADIE) by (-1) and adding the results to APRC as follows:

$$REM = ACFO*(-1) + ADIE*(-1) + APRC$$
(5)

3.3. Regression model

This paper studies the effect of COVID-19 and family ownership on the level of earning management of industrial and service Jordanian companies, and it uses the following model:

$$EM_{it} = \beta_0 + \beta_1 COVID_{it} + \beta_2 FOW_{it} + \beta_3 FSIZE_{it} + \beta_4 LEV_{it} + \beta_5 MKTB_{it} + \beta_6 ROA_{it} + industry fixed effects + year fixed effects + e_{it}$$
(6)

To test the potential trade-off between REM and DA, the abnormal discretionary accruals proxy (DA) is added as an independent variable to the model of the study, following previous studies (Al-Haddad & Whittington, 2019; Doukakis, 2014; Ge & Kim, 2014). Therefore, if the results obtain a negative coefficient for DA will be inferred as proof of a substitutive association in both REM and DA. However, if the results show the opposite, it will be taken as proof of a complementary correlation among REM and DA. Therefore, the model will be as follows:

$$REM_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 COVID_{it} + \beta_3 FOWit + \beta_4 FSIZE_{it} + \beta_5 LE.V_{it} + \beta_6 MKTB_{it} + \beta_7 ROA_{it} + industry fixed effects + year fixed effects + \varepsilon_{it}$$
(7)

A regression diagnostics examination was carried out to analyse potential problems with estimates (normality, multicollinearity, heteroscedasticity, and autocorrelation). We control for the possible impact of outliers, the dependent, and control variables by winsorised at the 5% and 95% levels. Also, the findings of the heteroscedasticity test, carried out according to Breusch-Pagan/Cook-Weisberg, show that it was significant. The potential autocorrelation of the research model was also identified using the Durbin-Watson statistical test, and the outcomes supported this issue. To deal with heteroskedasticity and autocorrelation in panel data, we analyse our data using feasible generalised least squares (FGLS) following previous studies (Ghaleb et al., 2020; Hoechle, 2007; Reed & Ye, 2011). Thus, Table 1 presents the measurement of variables for this study.

4. Empirical results

4.1. Descriptive statistics

Given the data in Table 2 and 3 which present descriptive statistics for the continuous and dichotomous variables of our study, which represents descriptive statistics for the variables of our study, the EM proxies are discretionary accruals (DA) and real earnings management (REM). The means of DA and REM are 0.0612 and -2.01e-10, respectively. The control variable, firm size (FSIZE), has a mean of approximately 16.969. The leverage ratio (LEV) is typically around 30%. The mean firm market-to-book value (MKTB) is 1.037. The mean Return on assets (ROA) is 0.06%, indicating that the companies are not profitable. Also, as shown in Table (3), 40 % of the sample represents the period after COVID-19, and 60% of the sample represents the period before COVID-19.

4.2. Correlation analysis

The correlation matrix can be found in Table 4. It is clear that the correlation between COVID-19 and REM is positive, but the correlation between COVID-19 and DA is negative. Also, family ownership correlates negatively with REM. However, family ownership correlates positively with DA, as represented in Table 4. illustrates that multicollinearity among the variables in our study is not a significant issue because the coefficients are less than 90%. The variance inflation factors (VIFs) also were computed to test for multicollinearity. All VIF values are under 2 in our investigation. As a result, multicollinearity does not exist when the VIF value does not exceed ten (Hair et al., 2014).

4.3. Regression analysis results and discussions

This section includes the following regression analysis results to verify our study hypothesis:

4.3.1. The influence of the COVID-19 outbreaks and family ownership on EM (DA & REM)

The analytical regression findings on the impact of the COVID-19 outbreak and family ownership on DA and REM, as suggested by H1:1; H1:2; H2:1, and H2:2, are shown in Table 5. We run two regressions for DA and REM. This article uses the residuals 'absolute value as a representative for

Table 1. Measurement variables	
Variable	Measurement
EM	Earnings management, either Accruals or real
AEM (DA)	The discretionary accruals measured by Kothari et al. (2005) model
REM	The aggregate value of REM using Roychowdhury's (2005) model is equal to the sum of ACFO (*-1), ADIE (*-1), and APRC
COVID	indicates "1" for the COVID-19 disease outbreak years 2020 and 2021, and 0 refers to the period before for disease outbreak of COVID-19, from 2017 to 2019 (Aljawaheri et al., 2021; Lassoued & Khanchel, 2021; Rahman et al., 2022).
FOW	At least twenty percent of the company's total number of shares are owned by members of the same family (Bataineh et al., 2018; Ghaleb et al., 2020).
FSIZE	The natural logarithm of the total assets of the company
LEV	The proportion of aggregate debt to overall assets.
МКТВ	The company's book value/Company's market value
ROA	Net income/total assets
Industry fixed effects	The industry dummies
Year fixed effects	The year dummies

Table 2. Continuous variables' descriptive statistics					
Variable	Obs	Mean	Std	Min	Max
DA	685	0.0612	0.105	0.001	1.727
REM	685	-2.01e-10	0.202	2.158	0. 997
FOW	685	0.203	0.233	0.000	0.852
FSIZE	685	16.969	1.498	12.792	21.132
LEV	685	0.303	0.245	0.001	1.349
MKTB	685	1.037	0.849	0.227	3.536
ROA	685	0.0006	0.0776	-0.541	0.407

Note. DA = abnormal discretionary accruals, REM = the combined values of the three REM models (ACFO*-1 + ADIE*-1 +APRC), FWO = Family ownership concentration, FSIZE = Firm size, LEV = Leverage, MKTB = Percentage of market value/book value, and ROA = Return on assets.

Table 3. Descriptive statistics for dichotomous variables					
Variables	Measurement	Fre	Percentage (%)		
COVID	"1" for the COVID-19 pandemic period (2020– 2021)	274	40.00		
	"0"otherwise (2017– 2019)	411	60.00		

DA to gauge the degree of earnings management (Gao et al., 2017; Lassoued & Khanchel, 2021; Liu & Sun, 2022). In contrast to DA, REM is calculated using actual numbers for each industry and year, whether positive or negative (Gao et al., 2017).

Table 4. Correld	ution matrix								
Variables	(1)	(2)	(3)	(†)	(2)	(9)	(2)	(8)	VIF
(1) REM	1.000								
(2) DA	0.119**	1.000							
(3) COVID	0.10**	-0.14**	1.000						1.01
(4) FOW	-0.158***	0.121**	0.007	1.000					1.05
(5) FSIZE	-0.004	-0.101**	-0.017	0.049	1.000				1.47
(6) LEV	0.098	0.007	0.037	-0.144**	0.468***	1.000			1.48
(7) MKTB	-0.218**	0.134**	0.046	0.003	-0.068	0.075	1.000		1.04
(8) ROA	-0.320***	0.162***	-0.044	0.153**	0.196**	-0.165**	0.076	1.00	1.17
Note: *** p<0.01, **	p<0.05, * p<0.1	-							

* p<0.1
p<0.05,
*
p<0.01,

te:

Table 5. COVID-19 pandemic, family ownership and earnings management by FGLS regression				
Variable	DA	REM		
COVID	004(-2.128) **	.018(2.796) ***		
FOW	.009(2.199) **	037(-2.581) ***		
FSIZE	009(-11.058) ***	006(-2.472) **		
LEV	.015(3.276) ***	.034(2.415) **		
МКТВ	.005 (3.617) ***	021(-5.562) ***		
ROA	-0.02 (-1.142)	429(-7.923) ***		
Year fixed effects	Included	Included		
Industry fixed effects	Included	Included		
Observation	685	685		
Wald chi2	176.695	143.761		
Prob > chi2	0.000	0.000		

Note: *** *p*<.01, ** *p*<.05, * *p*<.1

The Wald chi-square test produces a highly significant value, indicating that the models are correct. In general, the findings presented in Table 5 suggest that there is a negative and statistically significant association between the COVID-19 pandemic and DA. It is evidenced by the pandemic dummy's negative coefficient (-0.004) and p < 0.05. It suggests that COVID-19 affected the behavior of Jordanian companies, as they practiced a lower level of DA. The result rejects the H1:1 related to DA. However, the findings indicate a positive and significantly associated among the pandemic and REM, as the pandemic dummy carries a positive coefficient (0.018) and p < 0.01. This result indicates that COVID-19 affected the behavior of Jordanian companies, as they practiced a higher-level REM. Thus, the result confirms the H1:2 related to REM. These outcomes are in agreement with those of recent research, which discovered that during COVID-19, companies had little opportunity to practice AEM (Ali et al., 2022; Azizah, 2021; Liu & Sun, 2022) and have a high incentive to practice REM during COVID-19 (Rahman et al., 2022).

Additionally, Table 5 shows the results of the H2:1 and H2:2 hypotheses on the effects of family ownership on a corporation's behavior in involving EM. The finding reflects a statistically significant and positive connection among family ownership and discretionary accruals (DA), meaning that Jordanian companies with high family ownership engaged in more discretionary accruals. Therefore, these results support H2:1. The conclusion is in accordance with the predictions made by the entrenchment hypothesis, which argues that high family ownership may provide an incentive for majority shareholders to expropriate minority rights through the practice of earnings management. Additionally, the result is in accordance with the outcomes of Algatamin et al. (2017) and Bataineh et al. (2018). However, it is inconsistent with the study by Alzoubi (2016), which used only data for one year (2013), suggesting that the small sample and the research period may be the reason for the difference in results. However, the results documented a significant negative association among family ownership and REM, suggesting that high family ownership mitigated the practice of REM. Therefore, H2:2 is rejected. This spotting backs up the idea of the alignment hypothesis that indicates that high family ownership leads to the alignment of the interests of the majority and minority shareholders and prevents managers from managing earnings. This outcome corresponds with those of (Al Duais et al., 2021; Ghaleb et al., 2020; Tsao et al., 2019). The study results indicate that although Jordanian companies with high family ownership restrict the practice of REM, they manage earnings through discretionary accruals, affecting the quality and reliability of financial reports in the Jordanian market. Also, in light of COVID-19, it impacted the quality of financial reports, as it limited the practice of discretionary accruals, but it led to an increase in REM.

Regarding the control variables, the outcomes indicate that firm size (FSIZE) negatively correlates with DA and REM. It indicated that large-scale Jordanian companies engaged in less EM than smaller ones. Larger corporations are closely screened and observed by investors and analysts; consequently, managers of larger firms have less motivation to manage earnings. This result agrees with the results of previous studies (Al-Mughrabi, 2020; Bataineh et al., 2018; Xiao & Xi, 2021). The findings also find a significantly positive association between leverage and EM (DA, REM), showing that companies with high leverage engage in high EM to hide the bad effect from investors and avoid breaching debt covenants. This outcome conforms with the earlier investigations (Al-Mughrabi, 2020; Bataineh et al., 2018; Xiao & Xi, 2021). Market-to-book value (MKTB), which measures a company's growth, is negatively correlated with REM and positively correlated with DA. It suggests that companies with high growth opportunities mitigate REM and engage in more discretionary accruals. This conclusion is aligned with that of Ghaleb et al. (2020). Finally, the outcomes discovered a negative and significant association between ROA and REM, implying that businesses with high ROA (good result) mitigate their practice of REM. It also conforms to the conclusions of the previous investigations (Ghaleb et al., 2020; Xiao & Xi, 2021).

4.3.2. The trade-off between DA and REM

The outcomes of the analysis regressions pertaining to the association between DA and REM in Jordanian companies, as suggested in H3, are shown in Table 6. REM and DA show a positive and significant correlation with p-values less than 5%. It shows that Jordanian companies use both REM and DA complementarily to manipulate earnings, suggesting that they did not shift their EM practice from DA to REM. Thus, H3 is accepted, which assumes a substantial connection between DA and REM. This finding agrees with the finding of Al-Haddad and Whittington (2019), who found that managers employed REM and AEM together to achieve the largest effects on earnings during the period (2010–2014).

5. Robustness tests

5.1. Alternative proxies for DA and REM

The study uses alternative proxies to evaluate DA and REM in order to verify whether the findings are reliable. We employ the Jones model (1991) and the Modified Jones model (1995) to estimate DA. Additionally, instead of using an aggregate REM (REM-ALL) measure, we employ two sub-aggregate measures in the robustness test: REM1 and REM2. APRC plus ADIE are known as REM1. However, ACFO plus ADIE is known as REM2. Therefore, our study re-investigated the regression

Table 6. Trade-off between DA and REM by FGLS Regression			
Variable	REM		
DA	0.118 (2.308) **		
COVID	.012 (3.802) ***		
FOW	033 (-3.129) ***		
FSIZE	.004 (1.742) *		
LEV	.034 (3.189) ***		
МКТВ	016 (-6.388) ***		
ROA	475 (-12.588) ***		
Year fixed effects	Included		
Industry fixed effects	Included		
Observation	685		
Wald chi2	137.613		
Prob > chi2	0.000		

Note: *** p<.01, ** p<.05, * p<.1

Table 7. Alternative Proxies for DA and REM by FGLS regression					
Variable	DA jones (1991)	DA Modified Jones (1995)	REM1	REM2	
COVID	004(-2.258) **	004(-2.28) **	.004 (2.153) **	.016(4.177) ***	
FOW	.009(2.111) **	.009(2.097) **	015(-2.933) ***	107(-7.72) ***	
FSIZE	009(-10.917) ***	009 (-10.977) ***	.005(4.417) ***	002(.786) ***	
LEV	.015(3.368) ***	.015(3.342) ***	.019(2.706) ***	007(678)	
МКТВ	.004(3.106) ***	.004(3.206) ***	01(-4.487) ***	029(- 8.215) ***	
ROA	012 (705)	013(736)	256(-12.819) ***	516(-14.543) ***	
Year fixed effects	Included	Included	Included	Included	
Industry fixed effects	Included	Included	Included	Included	
Obser	685	685	685	685	
Wald chi2	167.282	171.541	266.569	560.180	
Prob > chi2	0.000	0.000	0.000	0.000	

Note: *** p < .01, ** p < .05, * p < .1

analysis for the alternative estimations of EM. Table 7 summarises the outcomes of regressions based on alternative estimations of EM measurements. Under both models, COVID-19 was found to be adversely and significantly connected with DA, with p-values less than 5%. However, the outcomes demonstrate a positive and significant association among COVID-19 and REM1, with p-values less than 5%. Also, COVID-19 shows a positive and significant association with REM2, with p-values of less than 1%. It indicates that the COVID-19 outbreak has impacted the conduct of Jordanian businesses, as they have engaged in the practice of REM1 and REM2 and mitigated discretionary accruals. Also, both models showed a significant and positive connection among the family's ownership and DA. Finally, the finding documented a negative and statistically significant connection among family ownership and REM1 and REM2. As a consequence, the outcomes are nearly identical to those informed by the main analysis.

6. Conclusion

This study looked at whether the COVID-19 outbreak had an impact on Jordanian businesses' earnings management practices, either DA or REM, and how DA & REM might interact. In addition, this study investigated whether family ownership influences the practice of EM in 137 Jordanian enterprises listed on the Amman stock exchange, excluding the banking and insurance sectors. This paper analyses data collected from service and Jordanian industry companies in ASE from 2017 to 2021, using feasible generalised least squares estimation (FGLS). The findings showed that the COVID-19 outbreak had an impact on Jordanian businesses that practice EM, either DA or REM. According to the current results, the COVID-19 pandemic motivated Jordanian companies to practice a higher level of REM and a lower level of DA. The findings also revealed that companies with a high degree of family ownership engaged in more discretionary accruals. This outcome supports the entrenchment hypothesis, which contends that high family ownership provides an incentive for majority shareholders to expropriate minority rights through earnings management. However, we discovered that high family ownership reduced the practice of REM. This finding supports the alignment hypothesis, which states that high family ownership causes the interests of majority and minority stockholders to coincide, preventing managers from managing earnings. Finally, our findings show that Jordanian companies use REM and DA in tandem to maximise the impact on earnings.

The findings of this study will add to the existing body of knowledge by revealing company behaviour in dealing with COVID-19 and providing a comprehensive picture of earnings

management strategies (DA and REM). Furthermore, some have argued that a crisis period may impair the quality of financial reports because managers may use this period to manage earnings, whether up or down. Thus, the conclusions of this investigation may contribute to an improvement in the quality of financial reports for all beneficiaries, particularly in companies with a high degree of family ownership. Therefore, it may help users of financial reporting make better decisions and signal that the COVID-19 pandemic period should be taken into account when reading financial statements.

The current investigation's findings, however, have some flaws. For example, the findings of our study were obtained by analysing data collected from the Jordanian market, with the exception of the banking and insurance sectors before and after COVID-19. Consequently, the results of our analysis may not accurately reflect the state of those industries. Nonetheless, the results could be generalised to industrial and service companies in similar emerging markets with Jordanian characteristics, such as a high concentration of family ownership. Hence, these results might not prove to be useful in markets that are characterised by the dispersal of ownership. Although the period we used in our study on COVID-19 was two years, which is longer than the periods used in previous studies in other countries, it may not provide accurate results about the pandemic's influence on the practice of EM. Therefore, we suggest that future research should take a longer period to reflect the subsequent effects of COVID-19 more accurately. Additionally, we recommend utilising an alternative form of ownership concentration for various models of earnings management in various sectors.

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