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Article

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The moderating role of COVID-19 pandemic on the relationship between CEO characteristics and earnings management: evidence from Bangladesh

Mohammad Helal Uddin^{1,2*}

Abstract: This research uses accrual and real earnings management strategies in an emerging economy to evaluate how CEO characteristics (i.e. CEO nationality, duality, and compensation) affect earnings management and how the COVID-19 pandemic modifies this connection. The empirical investigation used annual reports from 2011 to 2021 of 118 listed enterprises in thirteen sectors of non-financial organizations in Bangladesh. The study divided the sample further into COVID-19 pandemic and pre-pandemic periods. Findings show that firms tend to engage less in real earnings management during the COVID-19 pandemic period compared to pre-pandemic period. CEO nationality significantly negatively affects accrual-earnings management, but CEO dualism positively affects real-earnings management. CEO compensation significantly impacts accrual and real earnings management. Finally, COVID-19 moderates the association between CEO compensation and real-earnings management positively. The study's findings contribute to the corporate governance literature by providing insights into the influence of CEO characteristics on earnings management. This is the first study to consider the moderating role of the COVID-19 pandemic on the relationship between CEO traits and earnings management.

Subjects: Corporate Finance; Corporate Governance

Keywords: CEO characteristics; Covid-19 pandemic; earnings management; emerging economies; Bangladesh; listed non-financial organization

JEL classification: M10; M12; M14; M41; M48

1. Introduction

The CEO is at the top of the organizational chart and is required by law (Lin, 2014) to keep the board of directors informed about the organization's prospects and any problems that might keep it from reaching its goals. CEOs lead the company and hold the top C-suite position (Westphal & Zajac, 1995). Due to their position, the CEO plays a vital role in making company decisions. As a result, they maintain a close relationship with the highest authorities. Sometimes, owners may ask CEOs to change data and records to help the company reach its goals. Because CEO pay is sensitive, corporate owners can use financial and non-financial incentives to get what they want. Research shows that the massive rise in CEO pay over the last 30 years has sparked a heated

debate about how pay is set (Frydman & Jenter, 2010). If a CEO is also the chair, he or she may be motivated to manipulate reports by offers from company owners.

On the other hand, agency theory says that avoiding duality improves corporate discipline and oversight, which may make corporations more accountable. Earnings management (EM) is a deliberate method a company's manager employs to profit from the market (Shipper, 1989). It was also discovered that the corporation manipulates accounts to produce financial benefit (Bergstresser & Philippon, 2006) and achieve its goals (Degeorge et al., 1999). EM occurs when "managers use discretion in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting information" (Healy & Wahlen, 1999).

To what extent do CEO traits affect the ability to manipulate earnings? Unfortunately, this problem defies any straightforward resolution. Even when comparing countries with similar economies and levels of good government (e.g., Al-Sraheen & Alkhatib, 2016; Bouaziz et al., 2020), there is still disagreement about the results of studies. Several studies have examined the link between CEO traits and EM. However, there needs to be more consistency in the findings among the researchers. For example, employing the listed companies of France and Portugal as an example, Bouaziz et al. (2020) and Isidro and Gonçalves (2011) discovered a favorable association between CEO traits and earnings management. Still, other researchers in the same field (Lakhal, 2005) found a negative link between CEO qualities (i.e., CEO duality) and managing earnings. COVID-19 has recently been the focus of global attention. The COVID-19 epidemic has caused a big problem for public health and put many groups in danger. Government restrictions caused a significant drop in demand for many goods and services, which led businesses to stop doing business in person and lose jobs and income (ILO, 2020). Another PricewaterhouseCoopers (PWC) survey shows that the COVID-19 crisis was dire for more than 70% of businesses (PWC, 2021). Therefore, COVID-19 may have an impact on CEO functions. No study presented the impact of COVID-19 issues on the CEO and earnings management study.

The study is essential for many reasons, especially in developing countries like Bangladesh. Most studies have been done in developed economies, which have led to mixed results on the relationship between CEO traits and earnings management (e.g., Al-Sraheen & Alkhatib, 2016; Bozanic et al., 2013). Moreover, a few research studies have been conducted in developing nations (e.g., Alhmoed et al., 2020; Qawasmeh & Azzam, 2020). Second, most studies (e.g., Dai et al., 2013; Wang et al., 2015; Arioglu, 2020, etc.) only examine accrual earnings management. There needs to be more than one method to understand the complexities of revenue management (Fields et al., 2001). Third, the COVID-19 epidemic may change the direction of the link between CEO characteristics and managing earnings. However, the influence of COVID-19 problems on the CEO-EM nexus is negligible. Previous research (Ahmad Zaluki et al., 2011; Tahinakis, 2014) shows that when the economy is terrible, businesses are looked at more closely by many different groups. This leads to more demands for conservative performance and fraud (Ahmad Zaluki et al., 2011; Tahinakis, 2014). Consequently, firms are likely to conduct window dressing during the COVID-19 pandemic. Fourthly, studies have yet to explore the effects of CEO nationality on real-earnings management, despite the association between CEO nationality and accrual earnings management as demonstrated by earlier research (Bouaziz et al., 2020).

This research is important in developing economy, because due to weak corporate governance, poor institutional contexts, susceptible legal and political systems (Punnett, 2017), and lack of board effectiveness in firms in underdeveloped nations, a CEO may wield an imbalance of power over company financial reporting. Furthermore, for three reasons, Bangladesh is an ideal growing country in which to study the impact of CEOs characteristics on earnings management. Firstly, Economically, Bangladesh is a sizable developing market (undefined). Based on purchasing power, it has the world's 35th-largest nominal economy and the world's 25th-largest economy.

Bangladesh is seen as a Next Eleven country, an emerging market, a frontier market, and a middle-income country by the financial sector. Furthermore, it's part of the World Trade Organization and the South American Free Trade Agreement (Wikipedia, 2021). Economic growth in Bangladesh was 7.2% in the years after the pandemic (Solutions, 2023). After India's partition, Bangladesh's industrialization was spurred by labor reforms and new industries (Basu, 2021). Bangladesh's economy underwent radical shifts in the late 1970s, prioritizing free trade and FDI. Throughout the 1990s, the ready-made clothing industry saw tremendous growth. With the help of government programs, Bangladesh's agricultural sector has become self-sufficient, and finances have been stable since the end of the epidemic (S., 2020; U.2022). Its infrastructure has been improved, and its digital economy and trade volume has grown (Booming Bangladesh – Deutsche Bank, n.d.). As a percentage of GDP, tax revenue is 7.7 percent (Market Overview, 2022). Eighty percent of the GDP comes from non-government sources (Public Sector Needs to Keep Pace with Private Sector, 2022). Bangladesh is home to not one but two stock exchanges in the cities of Dhaka and Chittagong (Exchange, 2023). Almost all of Bangladesh's businesses are small and privately owned (ICAB, n.d.)

Secondly, Bangladeshi firms engage in earnings manipulation in the forms of real earnings management (REM) and accrual earnings management (AEM) across the years. Furthermore they are beating earnings benchmarks in the form of small changes in earnings per share (Changes in EPS) and small changes in Return on Assets (Changes in ROA) (Bhuiyan, 2015). Bangladesh is very concerned about misleading business earnings reports (Arif et al., 2023). The Financial Reporting Council (FRC) head told a daily newspaper that the government founded the FRC after discovering substantial manipulation of numerous corporations' financial filings (Financial Reporting Council Not Fully Ready, 2019). These substantial misstatements cost thousands of regular investors and financial businesses who lend to manipulative enterprises every year. The earnings manipulation by GMG Airlines cost a few thousand stockholders BDT 3,000 million and a state-owned commercial bank BDT 2,470 million (Curious Case of GMG Loan, 2018). Lack of faith in listed corporations' financial statements is also driving foreign investment out of the stock market (Financial Reporting Council Not Fully Ready, 2019).

Thirdly, Influential CEOs in Bangladesh will lead to a rise in profits and an improvement in quality in the long run. According to a recent survey, more than half of publicly traded nonfinancial companies' CEOs are close relatives of the company's board chairs (Arif et al., 2023). These CEOs have the most influence on company policy. There has been a corresponding increase in the CEOs' political clout. Between Bangladesh's first and last parliamentary elections, the number of businesses that took part grew significantly (Arif et al., 2023). Bangladesh's private sector executives need close ties to the governing party to protect and advance their company's financial interests (Muttakin et al., 2015); during COVID-19, it becomes serious in the organizations. For instance, just one pharmaceutical company in Bangladesh sells Covishield (the COVID-19 vaccination). The company provided 5 million doses of vaccine out of 30 million and made BDT 383.7 million in net profit in the first three months of 2021, an increase of almost 62.5% over the same period for the next months (Lisic et al., 2016). The company's CEO and vice chairman are both members of parliament for the ruling party, with the latter also holding the cabinet minister position as an adviser to the prime minister (Akter et al., 2021). So, the purpose of this study is to analyse the moderating role played by COVID-19 in the relationship between CEO traits and earnings management

This study will shed light on how CEOs' traits affect earnings management. In particular, we make three contributions to the literature and corporate governance policy. Firstly, the association between CEO nationality and real-earnings management is comparatively unexplored in developing countries' context, where socioeconomic situations, corporate governance structure, institutional settings, and political instability are significantly different. Secondly, there is no comparative analysis between pre-pandemic and pandemic findings regarding the association between CEO

characteristics (i.e., CEO duality, compensation, nationality) and earnings management. Finally, this study is the first step to address the moderating role of the COVID-19 pandemic on this issue.

This article's purposes are threefold. First, we intend to investigate the effect of CEO duality, compensation, and nationality on earnings handling in an emerging economy, Bangladesh. The second objective is to examine the potential consequences of CEO characteristics (i.e. CEO duality, CEO compensation, and CEO nationality) on earnings management during the pandemic and pre-pandemic periods. Thus, our findings can assist policymakers in establishing measures that effectively reduce earnings manipulations during this pandemic. The final objective of this study is to contribute to the current literature by investigating the moderating effect of COVID-19 pandemic. This study uses accrual and real earnings management techniques in a developing country context to fulfill the purposes. Necessary information has been collected from the annual reports of the selected non-financial companies operating in Bangladesh from 2011 to 2021. Several statistical tests (Heteroscedasticity, multicollinearity, and endogeneity tests) have been conducted to check the endogeneity and other robustness issues. Initially, this study examine the association between CEO characteristics (i.e., CEO nationality, duality, and compensation) based on the entire sample, and then a comparison between the findings of the pre-COVID-19 and COVID-19 pandemic period; after that, the study uses a dummy variable equal to 1 during the pandemic period and zero otherwise. Finally, based on this dummy variable, study creates interaction terms (i.e., CEON×PANDEMIC, CEOD×PANDEMIC, and COMP×PANDEMIC) to measure the pandemic's interactions effect on CEO characteristics-EM connection. Additionally, to check the robustness of the findings, the study use alternative models of accrual earnings management (i.e., Jones model, Kothari model, and Caylor-2010 model) and individual proxies of real-earnings management (i.e., abnormal production cost, abnormal cash flow from operating activities and abnormal discretionary accruals). During the COVID-19 pandemic phase, corporations tend to engage in less real earnings management than they did prior to the epidemic. In addition, CEO nationality has a negative impact on accrual-earnings management, whereas CEO duality is positively connected with real-earnings management. In addition, the findings demonstrate that CEO compensation is negatively related to both accrual and real earnings management. Intriguingly, the findings reveal that CEO compensation and COVID-19 have a good combination effect on real-earnings management.

The remaining parts of the paper are laid down in the following format: The hypotheses are developed and explained in section 2. The research strategy is presented in Section 3, which includes the selection of samples, the measurement of variables, and the building of empirical models. In the fourth section, descriptive statistics, a multivariate analysis, and the primary findings are presented. The extra analyses and robustness checks are presented in Section 6. Discussions, limitations, and suggestions for further lines of inquiry are included in the final section of the paper, which is Section 6.

2. Literature review and hypothesis development

2.1. CEO duality and earnings management

A chairman holds the highest position on the board of directors and presides over board meetings, while a chief executive officer occupies the highest position within an organization. If the CEO assumes both roles, this is called CEO duality (Khalil, 2010). This immense authority of the CEO may have diverse effects on business financial management and reporting. However, previous research on this topic has shown contradictory findings about the relationship between earnings management and CEO duality (Peng et al., 2007). According to agency theory, separating the CEO and board chair improves organizational discipline and systematic monitoring, the authority of a single board member over all other board members, and compliance with corporate governance requirements (Krause et al., 2014; McKnight & Weir, 2009). Moreover unraveling the chairman and CEO increases the firm's productivity and profitability (Krause, 2017). Researchers (e.g., Al-Sraheen & Alkhatib, 2016; Baker et al., 2019; Bouaziz et al., 2020; Damak, 2018; Klein, 2002; Roodposhti &

Chashmi, 2011) have demonstrated positive relationship between CEO duality and earnings management. Stewardship theory says that CEO duality increases board members' accountability, reducing false information (Weir et al., 2002). Research also conducted on whether duality promotes the unity of command, centralization of decision-making, intimate connection, and coordination and reduces any latent conflict between the chairman and CEO. Recent findings indicate that CEO duality reduce earnings management (Khalil, 2010; Lakhali, 2005). Previous research on the Bangladesh economy indicates that CEO duality has no significant effect on agency cost, which suggests that CEO duality may have given CEOs enormous authority while limiting the board's ability to perform the governance (monitoring) function, which is not conducive to enhance business efficiency (Rashid, 2013). Therefore, we anticipate that CEO duality may have a good impact on earnings management, and this study suggest the following hypothesis:

H1: *There is significantly positive relationship between CEO duality and earnings management.*

2.2. CEO compensation and earnings management

Executive compensation is a contentious issue in corporate governance literature (Barontini & Bozzi, 2011). Research demonstrated that CEO compensation is vital to involve managers with earnings management (Bergstresser & Philippon, 2006). Because by offering various incentives, company owners minimize the gap with managers (Carter et al., 2003) and maximize their returns (Watts & Zimmerman, 1978). As a result, managers enjoy the freedom of accounting choices and authoritative power to deal with any transaction. However, results may vary according to managers' desire since they might get a bonus, stock option, or any other inducements as compensation (Cheng & Warfield, 2005). For instance, managers may manipulate financial statements by using accounting techniques such as a change from FIFO to LIFO inventory method and accelerated to straight-line depreciation method to maximize bonus compensation (Harakeh et al., 2019) since these two changes have remarkable effects on reported earnings. For example, changing the depreciation method from accelerated to straight-line typically increases earnings, whereas LIFO's change decreases earnings (Khalil, 2010). Prior research demonstrates that bonus compensation promotes fraudulent corporate reporting practices (e.g., Guidry et al., 1999). In contrast, CEOs can maximize their benefits by selling bonus shares and using aggressive accounting practices to enhance the short-term share price, causing a rapid explosion in corporate earnings (Burns & Kedia, 2006).

In addition, managers may receive compensation if they achieve the company's objective of being associated with income-decreasing strategies and income-increasing procedures. However, Healy (1985) noted that if the fiscal year earnings are below or above the specified limit, the management manipulates it to meet the aim. For instance, if the earnings exceed the limit, the managers save extra earnings to cover the following year to maximize payment (Jensen et al., 2004). P. M. Dechow and Sloan (1991) demonstrates that managers utilize EM to maximize their executive compensation schemes. Managers believe stakeholders use reported results to evaluate organizations' financial performance, CEO compensation, and future survival (Gerged et al., 2021). Thus, managers may be motivated to misrepresent earnings data to maximize their compensation (Xu et al., 2007). Alternatively; compensation might motivate managers to augment work efficiency and consciousness about the accuracy of financial statements. Because according to signaling theory, the company wants to disclose quality information and receive positive signals from the stakeholders (Bae et al., 2018). A recent study shows a negative relationship between CEO compensation and earnings management (Cella et al., 2017). In several domains, the performance of CEOs in Bangladesh varies according to their remuneration; the greater the income, the better the performance (Rashid, 2013). Therefore, we forestall that the CEO will be morally upright if compensation is enough and resulting lowering earnings management. Therefore, this research expects that CEO compensation will reduce earnings management. Based on the above discussion, we hypothesize as follows:

H2: There is a significant negative relationship between CEO compensation and earnings management

2.3. CEO nationality and earnings management

In managerial decision-making, nationality, and business culture play crucial roles. An empirical study of Hong Kong, Japan, and Korea demonstrates that national cultures greatly impact executive actions more than organizational cultures (Pizam et al., 1997). In addition, Jönsson and Tarukoski (2017) noted that nationality diversity generates multi-level cultural practices within organizations. CEO is the highest-ranking position in an organization. However, a CEO from a different nationality may find it more difficult to conduct business than a CEO from the same ethnic group (Bouaziz et al., 2020). Thus, nationalities may have significant effects on the prospects of an organization. Consistent with these beliefs, previous research, such as that conducted by Huang (2013), found no correlation between the nationality of a manager and the organizational outlook. Whether the nationality of the CEO has any bearing on earnings management is still an interesting question. The evidence from French-listed companies (Bouaziz et al., 2020) demonstrates a significant positive relationship, despite the paucity of research in this area. CEO nationality may influence real-earnings management. The previous year saw the beginning of a rise in the number of Bangladeshis holding top positions at multinational corporations. In order to better understand the company's goals, missions, and visions, the global outlook, local culture and consumer taste, the company's reputation, and emerging risks, as well as its relationship with regulators, multinational corporations have recently begun appointing local CEOs to facilitate local operations. Thus, the study expects that CEO nationality will impact earnings management. Consequently, the study postulates the following:

H3: The Bangladeshi CEO's are more engaged in earnings management than CEO's with other nationality.

2.4. The CEO characteristics-EM nexus: The moderating impact of COVID-19 on the CEO characteristics-EM association

In December 2019, SARS-CoV-2, a novel coronavirus strain, was discovered in Wuhan, Hubei Province, China (Xing et al., 2020). It resulted in a pandemic of instances of coronavirus illness, a kind of severe respiratory infection (COVID-19) (Stawicki et al., 2020). COVID-19 has infected over 200 nations and territories, including substantial epidemics in Brazil, Russia, India, Mexico, Peru, South Africa, The United States, and Western Europe (Singh et al., 2020). The World Health Organization declared COVID-19 a pandemic on 11 March 2020, marking the first worldwide pandemic since the 2009 swine flu epidemic (Jandrić, 2020). The number of persons infected with COVID-19 has surpassed 425 million worldwide since 23 February 2022. The death toll is 5,905,942 people (Singh et al., 2020). The COVID-19 epidemic has not only caused a serious public health emergency but has also put the existence of many organizations vulnerable. The significant drop in demand for numerous goods and services caused by government-imposed restrictions damaged businesses, compelling them to stop doing business in person and resulting in employment and revenue losses (ILO, 2020). According to the PwC (2021) Global Crisis Survey, the COVID-19 crisis harmed more than 70% of enterprises (PwC, 2021). Thus, reporting manipulation may happen in organizations. A recent study demonstrates that corporate governance mechanisms play active roles in keeping the quality of financial reporting during the COVID-19 crisis (Jebran & Chen, 2021). Other studies illustrate that the COVID-19 pandemic has given rise to opportunities and challenges for firms to use governance mechanisms to ensure reporting practices (Mathew & Sivaprasad, 2020). Therefore, we assume that COVID-19 and CEO characteristics impact earnings management in developing countries. Hence, we hypothesize as follows:

H4: Ceteris paribus, the COVID-19 pandemic, the more (less) negative is the relationship between CEO characteristics-EM.

3. Research method

3.1. Sample selection and data collection

The research sample comprised 237 non-financial organizations recognized in Bangladesh (Listed firms, 2021). The study omits financial institutions in the analysis due to the unique nature of their activities and different rules. The financial data on the research variables were obtained purposively from the yearly reports from 2011 to 2021. Due to the disparity of sufficient data for all earnings management proxies, the research period started in 2011. This research initially evaluated 2133 firm-year data; however, 837 observations were removed due to incomplete information and a lack of yearly reports. Finally, 118 companies across 13 sectors have been fixed. Each piece of data was painstakingly extracted from the annual reports by hand to ensure a reliable and precise analysis.

3.2. Measurements of the study

3.2.1. Measurement of accrual-based earnings management

Accrual earnings management was measured in two steps: first, total accruals then non-discretionary accruals. Finally, non-discretionary accruals deducted from total accruals. Accruals at the discretion of management are costs that could have been avoided. For instance, a standard transportation allowance for management would be documented in the books but not considered an expense. When a necessary expense is recorded in the financial statement in advance of its actual occurrence, this practice is known as non-discretionary accruals. Bonuses and investment in new technology are two examples of this kind of spending (Business dictionary, 2017a; Business Dictionary, 2017b; Chang et al., 2019). The research of (Uddin, 2022) examines discretionary accruals as an empirical alternative to earnings management. Therefore, according to (P. M. Dechow et al., 1995), the study uses the Modified Jones model as a proxy for earnings management. The model is as follows:

$$TAC_{it} = NOPI_{it} - CFO_{it}$$

Aforementioned formula depicts total accruals equals net operating income minus cash flow from operating operations. Yet, “i,t” stands for firm(i) and t for year.

Non-discretionary accruals (NDAC) as:

$$\frac{TAC_{i,t}}{TA_{i,t-1}} = \beta_1 \left(\frac{1}{TA_{i,t-1}} \right) + \beta_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t-1}}{TA_{i,t-1}} \right) + \varepsilon_{it}$$

Total accruals are denoted by $TAC_{i,t}$, while the difference between sales in year t and sales in year t-1 is the net sales revenue change, or REV. The acronym ΔREC means “variation in receivables.” Property, plant, and equipment (PPE) was valued at a gross amount that accounted for standard depreciation expenses. Total Asset is denoted by T.A., and $\varepsilon_{i,t}$ outlines arbitrary error.

Discretionary accruals (DAC) define as follows:

$$DAC_{it} = TAC_{it} - NDAC_{it}$$

The Discretionary Accruals (DAC) is the difference between the Total Accrual and the Accruals that was not subject to discretion.

3.2.2. Real Earnings Management (REM) measurement

To send a good signal to the market company may involve real-earnings management through three options; abnormal cash flow from operating activities, production cost and discretionary expenses (Roychowdhury, 2006). To begin, the practice of sales management, which entails increasing sales through various incentives such as discounts, after-sales assistance, and various credit facilities, causes a reduction in cash flows as a result of irregular margin erosion (Uddin, 2022). Conversely, excessive production increases manufacturing costs; therefore reducing discretionary expenditure increases operational cash flows (Gunny, 2010). Real-earnings management has been represented in past studies by abnormal cash flows, production costs, and discretionary expenditures (e.g., Lemma et al., 2018). Abnormal refers to variances between actual and planned cash flow, production costs, and discretionary expenditure outcomes (Laksmana & Yang, 2014). This study calculates real-return management using the following equations, consistent with (P. Dechow et al., 1998) and (Uddin, 2022). The first model is used to calculate abnormal operating cash flow. The first model is as follows:

$$\frac{CFO_{it}}{ASSET_{it-1}} = \beta_1 \left(\frac{1}{ASSET_{it-1}} \right) + \beta_2 \left(\frac{SALES_{it}}{ASSET_{it-1}} \right) + \beta_3 \left(\frac{\Delta SALES_{it}}{ASSET_{it-1}} \right) + \varepsilon_{it}$$

CFO stands for net operating cash flow, asset is a single-period lagged value of the total asset, and $\Delta SALES$ is sales change. This study use following model to measure abnormal production cost:

$$\frac{PROD_{it}}{ASSET_{it-1}} = \beta_1 \left(\frac{1}{ASSET_{it-1}} \right) + \beta_2 \left(\frac{SALES_{it}}{ASSET_{it-1}} \right) + \beta_3 \left(\frac{\Delta SALES_{it}}{ASSET_{it-1}} \right) + \beta_4 \left(\frac{\Delta SALES_{it-1}}{ASSET_{it-1}} \right) + \varepsilon_{it}$$

In above model PROD denotes the cost of goods sold and adjustments to inventory levels. The difference between the assessed assessment of manufacturing costs from the cost of products sold and the adjustment in stock for each company is then used to estimate abnormal production costs. The study also measured abnormal discretionary expenses as per following model;

$$\frac{DISC\ expenses_{it}}{ASSET_{it-1}} = \beta_1 \left(\frac{1}{ASSET_{it-1}} \right) + \beta_2 \left(\frac{SALES_{it-1}}{ASSET_{it-1}} \right) + \varepsilon_{it}$$

Where, DISC refers to selling and administrative costs as well as R&D costs in the profit and loss statement. The difference between the projected value of the discretionary cost and the amount of other in-service item charges is then used to estimate an atypical discretionary expense. Last but not least, real earnings management is evaluated by integrating the aforementioned three equations for each company.

$$\text{Real Earnings Management (REM)} = \sum \frac{CFO_{it}}{ASSET_{it-1}} + \frac{PROD_{it}}{ASSET_{it-1}} + \frac{DISC\ expenses_{it}}{ASSET_{it-1}}$$

3.3. CEO characteristics measurement

In this research, the study evaluates three independent variables: CEO Duality, CEO Nationality, and CEO Compensation. If the CEO undertakes both roles, this is referred to as CEO duality (Khalil, 2010). Nevertheless, according to (Wang et al., 2015), we calculated CEO duality as a dummy variable whose value is one if both positions (CEO and Chairmen) are held by the same individual and 0 otherwise. Then, based on (Bouaziz et al., 2020; Huang, 2013), we assessed CEO nationality as a dummy variable that takes 0 if the CEO is of another country and one otherwise. Our analysis concludes by calculating CEO compensation by summing basic salary, personal perks, bonuses, and other compensation-related advantages (Bouaziz et al., 2020; Price et al., 2015). This research used CEO nationality, dual status, and compensation as independent variables. Because the rapid increase in CEO compensation over the last three decades has created a heated discussion concerning the nature of the pay-setting process, many believe that the high level of CEO salary is due to prominent managers establishing their own salaries. Others see high compensation as the consequence of optimum contracting in a competitive market for management ability. CEO remuneration substantially impacts organizational performance, management decisions and corporate financial reporting (Frydman & Jenter, 2010; Rashid, 2013).

Conversely, CEO duality is prevalent in developing nations, and organizations with two CEOs yield worse financial performance (Ali et al., 2022). CEO duality, the practice of a single person acting as CEO and board chair, has been a topic of academic study for over two decades. During this period, the utilization of CEO duality by boards has varied, and academic conceptualizations of the phenomena have gotten increasingly intricate. Consequently, the requirement to comprehend CEO dualism has intensified over time (Krause et al., 2014). This issue is addressed so that future efforts to research it will benefit from a more comprehensive grasp of the current information. No prior research has examined the effect of CEO nationality on real-earnings management, which prompted us to investigate this variable.

3.4. Control variables

The study controlled firm size to improve the robustness of our models, based on the supposition that larger firms may have had more ability to select accounting system (Bouaziz et al., 2020) and typically have more sophisticated internal checking and controlling systems (Wimelda & Chandra, 2018; Zouari et al., 2012). In addition to that, based a review of literature we controlled firm financial leverage (Wimelda & Chandra, 2018); return on assets (Lopes, 2018); market to book ratio (El Guindy & Basuony, 2018); average operating cycle (Kordestani & Mohammadi, 2016); product market power (Datta et al., 2013); loss dummy and external financing (Zhang et al., 2020); debt maturity structure (Lemma et al., 2018); lagged total accruals (Muttakin et al., 2015); Tobin's Q (Muttakin et al., 2017). This study presents the variable definition in Appendix I, describe the data and provide descriptive statistics in the following section.

3.5. Research model

Based on the models stated earlier, the study developed and used the following model (Equation 1 and 2) to examine the association between earnings management (both accrual and real-activity-based earnings management) and CEO characteristics and other control variables of the study.

$$EM_{it} = \beta_0 + \beta_1(CEON_{it}) + \beta_2(CEOD_{it}) + \beta_3(COMP_{it}) + \beta_4(LD_{it}) + \beta_5(LEV_{it}) + \beta_6(ROA_{it}) + \beta_7(MBR_{it}) + \beta_8(EXTF_{it}) + \beta_9(TQ_{it}) + \beta_{10}(DSTR_{it}) + \beta_{11}(SIZE_{it}) + \beta_{12}(AOC_{it}) + \beta_{13}(LTAC_{it}) + \beta_{14}(MNGO_{it}) + \beta_{15}(PMP_{it}) + \beta_{16}(\text{Year fixed effects}_{it}) + \beta_{17}(\text{Industry fixed effects}_{it}) + \varepsilon_{it} \quad (1)$$

$$EM_{it} = \beta_0 + \beta_1(PANDEMIC_{it}) + \beta_2(CEON_{it} \times PANDEMIC_{it}) + \beta_3(CEOD_{it} \times PANDEMIC_{it}) + \beta_4(COMP_{it} \times PANDEMIC_{it}) + \beta_5(LEV_{it}) + \beta_6(ROA_{it}) + \beta_7(MBR_{it}) + \beta_8(EXTF_{it}) + \beta_9(TQ_{it}) + \beta_{10}(DSTR_{it}) + \beta_{11}(SIZE_{it}) + \beta_{12}(AOC_{it}) + \beta_{13}(LTAC_{it}) + \beta_{14}(LD_{it}) + \beta_{15}(MNGO_{it}) + \beta_{16}(PMP_{it}) + \beta_{17}(\text{Year fixed effects}_{it}) + \beta_{18}(\text{Industry fixed effects}_{it}) + \varepsilon_{it} \quad (2)$$

CEO nationality (CEON), CEO duality (CEOD), and CEO compensation (COMP) are shown to be the independent variables in models 1 and 2, respectively (see Appendix I for the description of the variables of the study). It is possible for a corporation to utilize both accrual and real-activity-based earnings management or one way over the others, or to use any one for managing earnings (Zang, 2012). However, the effects of earnings management activities might not be captured by a single earnings management system (Fields et al., 2001). The study employs two models of earnings management to deal with this matter (e.g., Laksmana & Yang, 2014).

4. Results and discussion

4.1. Descriptive statistics

The descriptive statistics of the variables employed in the regression models are shown in Table 1 and 6. Discretionary accruals and real-earnings management had typical values of 0.39 and 0.42, respectively. That coincides with what we find when we average out real-profits-management strategies and discretionary accruals. This is congruent with Lemma et al. (2018)'s 41-country cross-country study where they find the mean values of discretionary accruals and real-earnings management (0.45 to 0.50,

Table 1. Descriptive statistics

Variables	OBS	Mean	SD	MIN	MAX
DACC	1296	0.391	0.681	0	1.976
REM	1296	0.424	0.293	0	2.005
CEON	1296	0.052	0.223	0	1
CEOD	1296	0.034	0.181	0	1
COMP	1296	3.267	1.522	0.715	8.292
MNGO	1296	0.373	0.228	0	1
LD	1296	0.06	0.237	0	1
PMP	1296	0.145	0.176	-1.619	0.917
LEV	1296	0.108	0.133	0	2.183
MBR	1296	0.355	0.271	-4.11	0.985
ROA	1296	0.067	0.66	-2.969	23.542
TQ	1296	0.48	0.38	-3.571	9.865
DSTR	1296	0.34	0.211	0.003	1.599
PANDEMIC	1296	0.181	0.385	0	1
SIZE	1296	7.049	1.662	2.185	11.865
EXTF	1296	-0.27	1.441	-2.79	0.567
AOC	1296	-1.828	2.768	-4.03	0.713
LTAC	1296	-2.481	2.52	-3.078	0.852

respectively). Table 1 shows that on average, 4% of CEOs hold dual roles such as chairman and CEO, and 5% of CEOs are non-resident in Bangladesh's listed non-financial firms. The maximum, lowest, and average salary for CEOs of non-financial organizations in Bangladesh are, respectively, 8.292, 0.715, and 3.267. In this section, we calculate CEO compensation, Tobin's Q, loan maturity structure, business size, external financing, and lagged total accruals as log value. The value of ROA is expressed as a percentage.

4.2. Correlation analysis (univariate test)

The study presents the correlation coefficient of the full sample; results reveal no correlation coefficients are higher than ± 0.8 and therefore imply no multi-co linearity problem exists among the variables (Uddin, 2022). At the 1% level of significance, there was a positive and considerable relationship between accrual and real earnings management, suggesting that managers of Bangladesh's listed non-financial enterprises are employing both approaches to gain the benefits to which they are entitled. The table also reveals a strong correlation between all CEO characteristics and real-earnings management, as well as significant correlation between CEO nationality, CEO remuneration, and accrual earnings management. The univariate test gives minimal insight into this link; hence, we investigate the relationship using regression analysis. The heteroscedasticity (white test) and variance inflation factor (VIF) tests (see Table 7) revealed no heteroscedasticity and multicollinearity issues (see Table 8).

4.3. Regression analysis results

4.3.1. CEO characteristics (CEO nationality, CEO duality, CEO compensation) and earnings management

Table 3 demonstrates the regression results of accrual and real earnings management with CEO characteristics (CEO duality, nationality and compensation) along with the study's control variables.

Table 2. Correlation statistics (entire sample: 2011–2021)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1.DACC	1.00											
2.REM	0.48***	1.00										
3.CEON	-0.09***	0.06**	1.00									
4.CEOD	0.00	0.09***	0.24***	1.00								
5.COMP	-0.40***	-0.25***	-0.03	-0.02	1.00							
6.MNGO	-0.03	-0.03	-0.08***	0.09***	-0.03	1.00						
7.LD	0.05	0.05**	0.01	-0.03	-0.13***	-0.06**	1.00					
8.PMP	-0.03	-0.16***	-0.04	-0.08***	0.03	-0.11***	-0.23***	1.00				
9.LEV	0.00	-0.11***	-0.06**	0.02	0.09***	0.05*	0.11***	0.02	1.00			
10.MBR	0.06**	0.04	0.03	0.06**	-0.29***	-0.11***	0.02	0.05*	-0.05*	1.00		
11.ROA	-0.02	0.01	0.00	-0.01	0.02	-0.02	-0.05*	0.02	-0.02	-0.02	1.00	
12.TQ	0.03	-0.05*	0.03	0.09***	-0.13***	-0.03	0.04	0.02	0.21***	0.41***	-0.02	1.00
13.DSTR	0.02	0.16***	0.03	0.12***	0.14***	0.21***	0.03	-0.21***	-0.06**	-0.03	0.02	0.04
14.SIZE	-0.43***	-0.24***	0.06**	0.05*	0.73***	0.04	-0.14***	0.14***	0.13***	-0.12***	0.03	0.01
15.EXTF	-0.07***	-0.06**	-0.16***	0.02	0.03	0.05*	-0.02	0.03	0.02	-0.01	0.00	0.00
16.AOC	0.01	0.02	0.02	0.01	-0.03	0.07***	0.03	-0.05*	-0.04	-0.02	0.00	-0.03
17.LTAC	-0.22***	-0.15***	0.08**	-0.04	0.31***	0.00	-0.01	0.04	-0.03	-0.15***	-0.05*	-0.10***
18.PANDEMIC	0.12	0.13	-0.23**	-0.02	-0.23***	-0.04	0.05*	-0.13	-0.08	-0.20	-0.03	-0.20

(Continued)

Table 2. (Continued)

Var.	13	14	15	16	17	18
1DSTR	1.00					
SIZE	0.17***	1.00				
EXTF	-0.02	0.06***	1.00			
AOC	0.06**	0.01	-0.01	1.00		
LTAC	0.00	0.29***	0.01	-0.02	1.00	
PANDEMIC	-0.24	-0.55	-0.03***	-0.03	0.17	1

Note: Table shows the univariate results of all the variables. The definitions of variables are given in Table 2. Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively.

Table 3 illustrates a significant negative relationship between CEO nationality and accrual earnings management, which indicates that CEOs from diverse nationalities would lessen accrual earnings management. Though, these findings are the opposite of (Bouaziz et al., 2020; Huang, 2013) because (Bouaziz et al., 2020) stated a significant positive association between accrual earnings management and CEO nationality and (Huang, 2013) found no association in this regard. Our empirical results also reveal that real earnings management positively correlates with CEO dual functions. These findings are also consistent with existing literature (e.g., Al-Sraheen & Alkhatib, 2016; Baker et al., 2019; Bouaziz et al., 2020; Damak, 2018; Klein, 2002; Roodposhti & Chashmi, 2011). CEO compensation is significantly (at 1% level) negatively associated with both earning management. These findings support the agency theory. According to agency theory, separating CEO and board chair augment discipline and systematic monitoring in the organization, consequently decreasing the authoritative power of a single member over all other representatives on the board and improving the compliance status of corporate governance guidelines (Krause et al., 2014; McKnight & Weir, 2009). Moreover, these results support our hypotheses and are consistent with the views of (Bae et al., 2018) and hold the outcomes of (Cella et al., 2017), who also found a negative association between CEO compensation and earnings management. However, this result is the opposite (Raman & Shahrur, 2008). As stated earlier, we controlled

Table 3. Regression results on CEO characteristics and earnings management

Variable	CEO characteristics Vs Earnings management	
	Accrual earnings management	Real-earnings management
CEON	-0.307***(-4.17)	0.058(0.75)
CEOD	0.099(1.17)	0.160*(1.82)
COMP	-0.068***(-4.15)	-0.059***(-3.43)
MNGO	-0.089(-1.27)	-0.156**(-2.15)
LD	-0.075(-1.15)	-0.053(-0.78)
PMP	0.040(0.44)	-0.317***(-3.32)
LEV	0.286**(2.43)	-0.141(-1.15)
MBR	-0.118*(-1.85)	0.070(1.06)
ROA	-0.017(-0.77)	0.005(0.21)
TQ	-0.008(-0.18)	-0.115**(-2.55)
DSTR	0.215*** (2.76)	0.543*** (6.71)
SIZE	-0.124***(-6.67)	0.015(0.79)
EXTF	-0.001**(-2.49)	-0.001**(-2.17)
AOC	0.000(-0.06)	0.000(-0.58)
LTAC	0.000(-1.05)	0.000***(-3.39)
CONSTANT	-0.037(-0.21)	-0.651***(-3.52)
Year-dummy	yes	yes
Industry-dummy	yes	yes
Adjusted. R ²	0.255	0.213
Prob.	0	0
N	1296	1296

Note: Table shows the regression results of CEO characteristics and earnings management. Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively. The numbers in parentheses are t statistics.

a range of independent variables: firm size, financial leverage, return on assets, market-to-book ratio, average operating cycle, product market power, loss dummy and external financing, debt maturity structure, and lagged total accruals, and Tobin's Q. As reported in Table 3, we see that some of the variables have a significant relationship with earnings management. Managerial ownership, Tobin's Q, and product market power show a significant and negative association with real-earnings management but lagged total accruals (LTAC) show a positive association. Market-to-book ratio, external financing, and firm size are negatively associated with accrual earnings management. Leverage and debt maturity structure show a significant positive relationship with discretionary accruals. Return on asset (ROA) and loss dummy illustrates no relationship with earnings management.

4.3.2. The moderating impact of COVID-19 on the CEO characteristics-EM association

To examine the moderating impact of the COVID-19 pandemic, we use a regression model (model-2). Our objective is to assess the moderating effects of the COVID-19 epidemic on the association between CEO traits and earnings management. Therefore, the regression analysis includes the interaction variables of three pandemic period dummies (e.g., CEON×PANDEMIC, CEOD×PANDEMIC, COMP×PANDEMIC). As indicated in Table 4, the COVID-19 epidemic has no measurable impact on earnings management. Consistent with the primary conclusion in Table 5, CEO compensation is considerably adversely correlated with real-earnings management. However, the interaction term coefficient (COMP×PANDEMIC) is positive and statistically significant at the 10% level, indicating that CEO compensation and the COVID-19 epidemic have a combined effect on real-earnings management. Moreover, during the COVID-19 pandemic, CEO compensation increased abnormal production costs, discretionary accruals, and operating cash flow. Because of the susceptibility of corporate professionalism during pandemics, this may occur.

5. Additional analysis and robustness check

5.1. CEO characteristics and earnings management (pre-pandemic and pandemic period)

Table 5 illustrates the association between CEO characteristics and earnings management in the pandemic and pre-pandemic periods. Consistent with the main results (shown in Table 3), CEO nationality has no significant effect on real-earnings management. The evidence further depicts that CEO nationality decreased accrual-earnings management in both periods. Moreover, CEO duality increases real-earnings management in the pre-pandemic period, but CEO duality does not significantly affect earnings management during the pandemic. Furthermore, CEO compensation negatively affects accrual-earnings management in both periods but does not affect real-earnings management in the pandemic period.

5.2. CEO characteristics and earnings management (alternative models of accrual and real-earnings management)

We conduct robustness checks on the link between CEO characteristics and earnings management. Therefore we examine whether our results hold when we use alternative measures of earnings management. We show our results in Tables 6 using entire sample. Our study uses three alternative models of measuring accrual earning management, namely, the Jones model (Jones, 1991), the Kothari model (Kothari et al., 2005), Caylor model (Caylor, 2010). Results demonstrate that our findings are qualitatively the same as our main results. We also use individual proxies of real-earnings management, such as; abnormal production cost, abnormal cash flow from operating activities, and abnormal discretionary accruals (P. Dechow et al., 1998). Our additional findings are also robust with the main result of CEO characteristics and real-earnings management. Only a little difference shows in the outcomes of CEO nationality and abnormal discretionary accruals. CEO nationality increases abnormal discretionary accruals when we use the pre-pandemic period sample. However, our main results show no significant association between CEO nationality and real earnings management.

Table 4. Interaction affects

Variable	CEO characteristics and earnings management	
	Accrual-earnings management	Real-earnings management
PANDEMIC	-0.252(-0.480)	-0.002(0.000)
CEON	-0.291***(-3.730)	0.055(0.670)
CEOD	0.120(1.350)	0.201**(2.170)
COMP	-0.070***(-4.230)	-0.063***(-3.630)
CEON×PANDEMIC	-0.084(-0.450)	0.076(0.390)
CEOD×PANDEMIC	-0.140(-0.580)	-0.338(-1.340)
COMP×PANDEMIC	0.037(1.070)	0.060*(1.690)
MNGO	-0.091(-1.300)	-0.162**(-2.220)
LD	-0.073(-1.110)	-0.049(-0.720)
PMP	0.047(0.510)	-0.309***(-3.220)
LEV	0.288**(2.450)	-0.141(-1.150)
MB	-0.117*(-1.820)	0.070(1.060)
ROA	-0.017(-0.760)	0.005(0.220)
TQ	-0.009(-0.210)	-0.118***(-2.620)
DSTR	0.217*** (2.780)	0.543*** (6.700)
SIZE	-0.125***(-6.700)	0.014(0.720)
EXTF	-0.001**(-2.540)	-0.001**(-2.040)
AOC	0.000(-0.060)	0.000(-0.580)
LTAC	0.000(-1.050)	0.000***(-3.370)
CONSTANT	0.150(0.270)	-0.978*(-1.700)
Year-dummy	YES	YES
Industry-dummy	YES	YES
Adjusted. R ²	0.254	0.213
Prob.	0	0
N	1296	1296

Note: Table shows the regression results of CEO characteristics and Earnings management. Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively. The numbers in parentheses are t statistics.

5.3. Test of multicollinearity

Multicollinearity occurs in a multivariate regression model when two or more independent variables have strong intercorrelations. Regarding the influence of independent variables in a model, multicollinearity may provide bigger confidence intervals, resulting in less reliable probabilities. As a consequence, we utilize the VIF test for multicollinearity. The variance inflation factor (VIF) is a statistic used to measure the multicollinearity of a set of multivariate regression variables. In mathematics, the VIF for a variable in a regression model is equal to the ratio of the overall model variance to the variance of a model that contains a single independent variable. This ratio is computed for each independent variable. A high VIF indicates that the linked independent variable is highly correlated with the other variables in the model. Regression models with multicollinearity cannot distinguish between independent and dependent variables' effects. Traditional VIF starts at one and has no limit. The lower the value of VIF is better for the regression model. When the VIF

Table 5. Regression results on CEO characteristics and earnings management (pre-pandemic and pandemic period)

Variable	CEO Characteristics and Earnings Management		CEO Characteristics and Earnings Management	
	Pre-Pandemic period		Pandemic period	
	Accrual-earnings management	Real-earnings management	Accrual-earnings management	Real-earnings management
CEON	-0.273***(-3.28)	0.043(0.49)	-0.612***(-3.75)	0.123(0.74)
CEOD	0.114(1.21)	0.187*(1.90)	0.174(0.88)	0.064(0.31)
COMP	-0.066***(-3.65)	-0.060***(-3.22)	-0.128***(-2.95)	-0.024(-0.54)
MNGO	-0.099(-1.25)	-0.177**(-2.13)	-0.060(-0.41)	-0.070(-0.47)
LD	-0.092(-1.16)	-0.070(-0.84)	0.041(0.39)	0.067(0.63)
PMP	-0.012(-0.11)	-0.378***(-3.49)	0.047(0.22)	-0.037(-0.16)
LEV	0.299**(2.35)	-0.113(-0.85)	0.442(1.15)	-0.179(-0.45)
MB	-0.100(-1.46)	0.069(0.96)	-0.466*(-1.88)	-0.101(-0.40)
ROA	-0.018(-0.77)	0.004(0.18)	2.432*** (2.93)	2.091** (2.46)
TQ	-0.007(-0.15)	-0.113**(-2.27)	0.042(0.30)	-0.113(-0.79)
DSTR	0.225*** (2.65)	0.548*** (6.19)	0.141(0.64)	0.342(1.50)
SIZE	-0.131***(-6.45)	0.010(0.49)	-0.055(-1.46)	-0.037(-0.96)
EXTF	-0.001(-1.57)	-0.001(-1.25)	-0.003***(-3.30)	-0.002**(-2.46)
AOC	0.000(-0.20)	0.000(-0.52)	0.000(0.13)	0.000(-0.06)
LTAC	0.000(-0.88)	0.000***(-2.81)	0.000(0.12)	0.000(-0.66)
CONSTANT	0.027(0.12)	-1.017***(-4.22)	0.206(0.83)	-0.051(-0.20)
Year-dummy	yes	yes	yes	yes
Industry-dummy	yes	yes	yes	yes
Adjusted. R ²	0.2479	0.2047	0.2408	0.1289
Prob.	0	0	0	0
N	1061	1061	235	235

Note: Table shows the regression results of CEO characteristics and earnings management. Statistical significance levels are marked by star *, **, *** for 10%, 5%, and 1% level respectively. The numbers in parentheses are t statistics.

surpasses 5 or 10, multicollinearity between independent variables is high (Snee, 1981). No variables have a VIF larger than 5, as shown in Table 7, showing no multicollinearity problem.

5.4. Test of homoscedasticity

Breusch and Pagan (1979) tests our findings' homoscedasticity. Ordinary least squares (OLS) regression demands that all residuals are drawn from a population with a constant variance (homoscedasticity), which is the idea that variances in various groups are equal. Because parametric statistical tests are sensitive to any difference, this is a necessary assumption. Uneven sample variances are the source of skewed and biased test results. The primary indication of the Breusch and Pagan (1979) test is that the null hypothesis of homoskedasticity is rejected, and heteroskedasticity is accepted if the test statistic has a p-value less than a specific threshold (e.g., 0.05) (Breusch & Pagan, 1979). Our findings in Table 8 reveal a p-value greater than 0.05 ($P > 0.05$), indicating Homoscedasticity of variance.

Table 6. Robustness check using alternative models of accrual and real-earnings management

Variable	Accrual-earnings management				Real-earnings management			
	Jones Model	Kothari Model	Caylor-2010 model	Abnormal production cost	Abnormal cash flow from operating activities	Abnormal discretionary accruals		
CEON	-0.256***(-3.10)	-0.269***(-3.26)	0.139(1.35)	0.011(0.13)	0.121(1.46)	0.362***(-4.41)		
CEOD	0.095(1.01)	0.114(1.21)	0.235*(2.01)	0.191*(1.95)	-0.082(-0.87)	0.097(1.04)		
COMP	-0.063***(-3.54)	-0.064***(-3.59)	-0.051**(-2.28)	-0.021(-1.13)	-0.050***(-2.79)	0.005(0.28)		
MINGO	-0.098(-1.25)	-0.099(-1.25)	-0.358***(-3.64)	-0.090(-1.10)	-0.199***(-2.51)	0.196**(-2.50)		
LD	-0.095(-1.25)	-0.087(-1.11)	-0.019(-0.19)	-0.200**(-2.43)	-0.047(-0.59)	-0.098(-1.25)		
PMP	-0.009(-0.09)	-0.006(-0.06)	0.010(0.08)	-0.211**(-1.97)	0.006(0.06)	-0.318***(-3.11)		
LEV	0.314**(-2.49)	0.296**(-2.35)	-0.248(-1.57)	-0.220*(-1.66)	-0.022(-0.17)	-0.101(-0.80)		
MBR	-0.100(-1.47)	-0.100(-1.47)	0.073(0.86)	-0.043(-0.60)	0.083(1.21)	0.043(0.63)		
ROA	-0.017(-0.74)	0.004(0.16)	0.016(0.58)	0.010(0.42)	-0.001(-0.06)	-0.056**(-2.50)		
TQ	-0.008(-0.17)	-0.008(-0.17)	-0.027(-0.47)	-0.018(-0.38)	-0.020(-0.42)	-0.023(-0.49)		
DSTR	0.215**(-2.56)	0.225***(-2.67)	0.278***(-2.65)	0.464***(-5.28)	0.403***(-4.76)	0.359***(-4.29)		
SIZE	-0.130***(-6.46)	-0.132***(-6.54)	0.054**(-2.13)	0.106***(-5.02)	-0.024(-1.17)	0.131***(-6.53)		
EXTF	-0.001(-1.56)	-0.001(-1.58)	0.000(-0.46)	0.000(0.29)	0.000(-0.66)	-0.001(-1.30)		
AOC	0.000(-0.23)	0.000(-0.14)	0.000(0.36)	0.000(0.37)	0.000(-0.74)	0.000*(-1.71)		
LTAC	0.000(-1.09)	0.000(-0.91)	0.000(1.08)	0.000*(-1.66)	0.000(-1.83)	0.000*(-1.90)		
CONSTANT	0.029(0.13)	0.030(0.13)	-1.844***(-6.47)	-1.705***(-7.13)	-1.395***(-6.06)	-3.019***(-13.28)		
Year-dummy	yes	yes	yes	yes	yes	yes		yes

(Continued)

Table 6. (Continued)

Variable	CEO characteristics and Earnings management					
	Accrual-earnings management		Real-earnings management			
	Jones Model	Kothari Model	Caylor-2010 model	Abnormal production cost	Abnormal cash flow from operating activities	Abnormal discretionary accruals
Industry-dummy	yes	yes	yes	yes	yes	yes
Adjusted. R ²	0.248	0.249	0.113	0.248	0.191	0.214
Prob.	0.000	0.000	0.000	0.000	0.000	0.000
N	1296	1296	1296	1296	1296	1296

Table 7. VIF test of multicollinearity

Variable	VIF	Tolerance
COMP	2.5	0.399
SIZE	2.44	0.410
MBR	1.36	0.738
TQ	1.31	0.763
Pandemic	1.27	0.787
PMP	1.17	0.855
DSTR	1.17	0.858
LTAC	1.15	0.866
CEON	1.14	0.878
LEV	1.14	0.880
MNGO	1.12	0.893
LD	1.11	0.899
CEOD	1.11	0.901
EXTF	1.04	0.963
AOC	1.02	0.984
ROA	1.01	0.991
Mean VIF	1.32	

Table 8. Breusch-Pagan/Cook-Weisberg test for heteroscedasticity

Particulars	Accrual-Earnings Management model	Real-Earnings Management model
Chi ²	0.08	1.53
Prob. > Chi ²	0.774	0.216

5.5. Test of endogeneity

When an explanatory variable is correlated with the error term in the regression equation, this is known as endogeneity. In observational studies using regression-type methods, invalid conclusions might be obtained if endogeneity is not taken into account and leads to skewed parameter estimates. Here, we employ an instrumental variables strategy based on the two-stage least square (2SLS) method to deal with endogeneity. It is useful for testing if a particular statistical model can adequately explain the data (De Min, 1973; Durbin, 1954). The Durbin-Wu-Hausman test defines endogeneity as a P-value of less than 0.05; however, our results shown in table 9 that no P-values are less than 5, demonstrating that endogeneity is absent from our model.

Table 9. Tests of endogeneity: DurbinWu-Hausman test

Tests of endogeneity				
Ho: variables are exogenous				
	Accrual-Earnings Management		Real-Earnings Management	
Durbin (score) chi ² (3)	=6.828	=0.077	=7.207	(p=0.065)
Wu-HausmanF(3,1279)	=2.254	=0.080	=2.380	(p=0.068)

6. Conclusion

This article serves three functions. First, we will examine the impact of CEO duality, compensation, and nationality on earnings management in a developing market. The second purpose is to investigate the possible effects of CEO characteristics (i.e. CEO duality, compensation, and nationality) on earnings management during the pandemic and pre-pandemic eras. Consequently, our results may aid policymakers in developing strategies that successfully limit earnings manipulations during this epidemic. This study's ultimate purpose is to add to the existing research by examining the moderating influence of COVID-19 on the link between CEO attributes (CEO duality, CEO compensation, and CEO nationality) and earnings management. According to the research, companies tend to engage in fewer earnings management during the pandemic. In addition, there is a substantial negative connection between CEO nationality and accrual-earnings management. The research also uncovers a positive correlation between CEO dualism and real-earnings management.

In addition, CEO remuneration strongly correlates negatively with accrual and real earnings management. Interestingly, the COVID-19 epidemic considerably moderates the link between CEO compensation and real-earnings management in a good direction. This research adds to the literature on corporate governance by shedding light on the influence of varied CEO qualities on earnings management. The outcomes of this study may aid corporate governance academics in expanding their knowledge of the influence of corporate governance measures in developing countries. This study's conclusions may pave the way for legislators to alter reporting methods and CEO-related legislation to defend the stakeholders' interests, especially those of shareholders.

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References

- Ahmad Zaluki, N. A., Campbell, K., & Goodacre, A. (2011, June). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance. *The International Journal of Accounting*, 46(2), 111–137. <https://doi.org/10.1016/j.intacc.2011.04.001>
- Akter, S., Hakim, S. S., & Rahman, M. S. (2021, December). Planning for pandemic resilience: COVID-19 experience from urban slums in Khulna, Bangladesh. *Journal of Urban Management*, 10(4), 325–344. <https://doi.org/10.1016/j.jum.2021.08.003>
- Alhmoode, M. A., Shaari, H., & Al-Dhamari, R. (2020, June). CEO Characteristics and Real Earnings Management in Jordan. *International Journal of Financial Research*, 11(4), 255. <https://doi.org/10.5430/ijfr.v11n4p255>
- Ali, S., Naseem, M. A., Jiang, J., Rehman, R. U., Malik, F., & Ahmad, M. I. (2022, July). "How" and "When" CEO Duality Matter? Case of a Developing Economy. *SAGE Open*, 12(3), 215824402211161. <https://doi.org/10.1177/21582440221116113>
- Al-Sraheen, D. A. D. O., & Alkhatib, K. (2016). Proposing a model for limiting earning management practices: The case of Jordanian listed firms. *Corporate Board Role Duties and Composition*, 12(3), 81–84. <https://doi.org/10.22495/cbv12i3art9>
- Arif, H. M., Mustapha, M. Z., Abdul Jalil, A., & Gherghina, S. C. (2023, January). Do powerful CEOs matter for earnings quality? Evidence from Bangladesh. *Plos One*, 18(1), e0276935. <https://doi.org/10.1371/journal.pone.0276935>
- Arioglu, E. (2020, July). The affiliations and characteristics of female directors and earnings management: Evidence from Turkey. *Managerial Auditing Journal*, 35(7), 927–953. <https://doi.org/10.1108/maj-07-2019-2364>
- Bae, S., Masud, M., & Kim, J. (2018, July). A Cross-Country Investigation of Corporate Governance and Corporate Sustainability Disclosure: A Signaling Theory Perspective. *Sustainability*, 10(8), 2611. <https://doi.org/10.3390/su10082611>
- Baker, T. A., Lopez, T. J., Reitenga, A. L., & Ruch, G. W. (2019). The influence of CEO and CFO power on accruals and real earnings management. *Review of Quantitative Finance and Accounting*, 52(1), 325–345. <https://doi.org/10.1007/s11156-018-0711-z>
- Bangladesh - Market Overview. *International Trade Administration | Trade.Gov*. (2022, July 20) <https://www.trade.gov/country-commercial-guides/bangladesh-market-overview>
- Barontini, R., & Bozzi, S. (2011). Board compensation and ownership structure: Empirical evidence for Italian listed companies. *Journal of Management & Governance*, 15(1), 59–89. <https://doi.org/10.1007/s10997-009-9118-5>
- Basu, K. (2021). The Bangladesh Economy: Navigating the Turning Point. *Innovations: Technology, Governance, Globalization*, 13(1–2), 28–40. https://doi.org/10.1162/inov_a_00281

- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics*, 80(3), 511–529. <https://doi.org/10.1016/j.jfineco.2004.10.011>
- Bhuiyan, M. H. U. (2015). Earnings Management to Exceed Earnings Threshold: Evidence from Bangladesh. *Journal of Business Studies*. XXXVI(3), 1–22.
- Booming Bangladesh – Deutsche Bank. (n.d). Booming Bangladesh – Deutsche Bank. https://flow.db.com/trade-finance/booming-bangladesh?language_id=1
- Bouaziz, D., Salhi, B., & Jarboui, A. (2020). CEO characteristics and earnings management: Empirical evidence from France. *Journal of Financial Reporting and Accounting*, 18(1), 77–110. <https://doi.org/10.1108/JFRA-01-2019-0008>
- Bozanic, Z., Roulstone, D. T., & Van Buskirk, A. (2013). Management Earnings Forecasts and Forward-Looking Statements. *SSRNLibrary*. <https://doi.org/10.2139/ssrn.2130145>
- Breusch, T. S., & Pagan, A. R. (1979). A Simple Test for Heteroskedasticity and Random Coefficient Variation. *Econometrica*, JSTOR 1911963MR 0545960. 47(5), 1287–1294. <https://doi.org/10.2307/1911963>
- Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of Financial Economics*, rights and content. 79(1), 35–67. <https://doi.org/10.1016/j.jfineco.2004.12.003>
- Business Dictionary. (2017a). Discretionary accrual, available at: www.businessdictionary.com/definition/discretionary-accrual.html
- Business Dictionary. (2017b). Non-discretionary accrual, available at: www.businessdictionary.com/definition/non-discretionary-accrual.html
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, 38(1), 33–53. <https://doi.org/10.1111/1540-6288.00034>
- Caylor, M. L. (2010). Strategic revenue recognition to achieve earnings benchmarks. *Journal of Accounting and Public Policy*, 29(1), 82–95. <https://doi.org/10.1016/j.jaccpubpol.2009.10.008>
- Cella, C., Ellul, A., & Gupta, N. (2017). Earnings management and CEO compensation over tenure: Risks bank Research Paper Series Forthcoming. *Kelley School of Business Research Paper*, 15(2), 15–18. or <https://ssrn.com/abstract=2544262> <https://doi.org/10.2139/ssrn.2544262>
- Chang, H. Y., Liang, L. H., & Yu, H. F. (2019). Market power, competition, and earnings management: Accrual-based activities. *Journal of Financial Economic Policy*, 11(3), 368–384. <https://doi.org/10.1108/JFEP-08-2018-0108>
- Cheng, Q., & Warfield, T. D. (2005). Equity incentives and earnings management: *The accounting review*. 80(2), 441–476. <https://www.jstor.org/stable/4093065>; <https://doi.org/10.2308/accr.2005.80.2.441>
- Curious case of GMG loan. (2018, March 2). The Daily Star. <https://www.thedailystar.net/frontpage/curious-case-gmg-loan-1542823>
- Dai, Y., Kong, D., & Wang, L. (2013). Information asymmetry, mutual funds and earnings management: Evidence from China. *China Journal of Accounting Research*, 6(3), 187–209. <https://doi.org/10.1016/j.cjar.2013.03.001>
- Damak, S. T. (2018). Gender diverse board and earnings management: Evidence from French listed companies. *Sustainability Accounting, Management and Policy Journal*, 9(3), 289–312. <https://doi.org/10.1108/SAMPJ-08-2017-0088>
- Datta, S., Iskandar Datta, M., & Singh, V. (2013). Product market power, industry structure, and corporate earnings management. *Journal of Banking & Finance*, 37(8), 3273–3285. Get rights and content <https://doi.org/10.1016/j.jbankfin.2013.03.012>
- Dechow, P., Kothari, S., & Watts, R. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, 25(2), 133–168. [https://doi.org/10.1016/S0165-4101\(98\)00020-2](https://doi.org/10.1016/S0165-4101(98)00020-2)
- Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics*, 14(1), 51–89. [https://doi.org/10.1016/0167-7187\(91\)90058-S](https://doi.org/10.1016/0167-7187(91)90058-S)
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 193–225. <https://www.jstor.org/stable/248303>
- DeGeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings management to exceed thresholds. *The Journal of Business*, 72(1), 1–33. <https://doi.org/10.1086/209601>
- De Min, W. (1973, July). Alternative Tests of Independence between Stochastic Regressors and Disturbances. *Econometrica*, 41(4), 733–750; ISSN 0012-9682. JSTOR 1914093. <https://doi.org/10.2307/1914093>
- Durbin, J. 1954. Errors in variables: Review of the *International Statistical Institute*. 22 (1/3), 23–32. JSTOR 1401917. <https://doi.org/10.2307/1401917>
- Economy of Bangladesh - Wikipedia. (2021, October 1). Economy of Bangladesh - Wikipedia. https://en.wikipedia.org/wiki/Economy_of_Bangladesh#cite_note-42
- El Guindy, M. N., & Basuony, M. A. (2018). Audit firm tenure and earnings management: The impact of changing accounting standards in UK firms. *Journal of Developing Areas*, 52(4), 167–181. <https://doi.org/10.1353/jda.2018.0058>
- Exchange, D. S. (2023, March 1). *Dhaka Stock Exchange*. Dhaka Stock Exchange. <https://www.dse.com.bd/>
- Fields, T. D., Lys, T. Z., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics*, 31(1–3), 255–307. [https://doi.org/10.1016/S0165-4101\(01\)00028-3](https://doi.org/10.1016/S0165-4101(01)00028-3)
- Financial Reporting Council not fully ready. (2019, March 11). The Daily Star. <https://www.thedailystar.net/business/news/financial-reporting-council-not-fully-ready-1713802>
- Frydman, C., & Jenter, D. (2010). CEO compensation. *Annual Review of Financial Economics*, 2(1), 75–102. <https://doi.org/10.1146/annurev-financial-120209-133958>
- Gerged, A. M., Albitar, K., & Al-haddad, L. (2021). Corporate environmental disclosure and earnings management—the moderating role of corporate governance structures. *International Journal of Finance & Economics*. <https://doi.org/10.1002/ijfe.2564>
- Guidry, F., Leone, A. J., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics*, 26(1–3), 113–142. [https://doi.org/10.1016/S0165-4101\(98\)00037-8](https://doi.org/10.1016/S0165-4101(98)00037-8)
- Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, 27 (3), 855–888. <https://doi.org/10.1111/j.1911-3846.2010.01029.x>
- Harakeh, M., El-Gammal, W., & Matar, G. (2019). Female directors, earnings management, and CEO incentive compensation: UK evidence. *Research in International Business and Finance*, 50, 153–170. <https://doi.org/10.1016/j.ribaf.2019.05.001>
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and*

- Economics*, 7(1–3), 85–107. [https://doi.org/10.1016/0165-4101\(85\)90029-1](https://doi.org/10.1016/0165-4101(85)90029-1)
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365–383. <https://doi.org/10.2308/acch.1999.13.4.365>
- Huang, S. K. (2013). The impact of CEO characteristics on corporate sustainable development. *Corporate Social Responsibility and Environmental Management*, 20(4), 234–244. <https://doi.org/10.1002/csr.1295>
- ICAB. (n.d.). ICAB. <https://www.icab.org.bd/>
- ILO. (2020). “A global survey of enterprises”, https://www.ilo.org/wcmsp5/groups/public/—ed_dialogue/—act_emp/documents/publication/wcms_760306.pdfact_emp/documents/publication/wcms_760306.pdf
- Isidro, H., & Gonçalves, L. (2011). Earnings management and CEO characteristics in Portuguese firms. *Corporate Ownership and Control*, 1(1), 87–95. <https://doi.org/10.22495/cocv9i1art5>
- Jandrić, P. (2020). Postdigital research in the time of Covid-19. *Postdigital Science and Education*, 2(2), 233–238. <https://doi.org/10.1007/s42438-020-00113-8>
- Jebran, K., & Chen, S. (2021). Can we learn lessons from the past? COVID-19 crisis and corporate governance responses. *International Journal of Finance & Economics*. <https://doi.org/10.2139/ssrn.3753578>
- Jensen, M., Murphy, K., & Wruck, E. (2004). Remuneration: Where we’ve Been, How We Got to Here, What are the Problems, and How to Fix Them? https://papers.ssrn.com/sol3/papers.cfm?abstract_id=561305.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193–228. <https://doi.org/10.2307/2491047>
- Jönsson, C. A., & Tarukoski, E. (2017). How does an appointed CEO influence the stock price?: A Multiple Regression Approach. In *Degree Projects in Applied Mathematics and Industrial Economics, Degree Programme in Industrial Engineering and Management*. KTH Royal Institute of Technology.
- Khalil, M. M. M. (2010). Earnings management, agency costs and corporate governance: Evidence from Egypt (Doctoral dissertation, University of Hull). <http://hydra.hull.ac.uk/resources/hull:7975>
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375–400. [https://doi.org/10.1016/S0165-4101\(02\)00059-9](https://doi.org/10.1016/S0165-4101(02)00059-9)
- Kordestani, G. R., & Mohammadi, M. R. (2016). A study of the relationship between product market competition & earnings management. *Procedia Economics and Finance*, 36, 266–273. [https://doi.org/10.1016/S2212-5671\(16\)30037-5](https://doi.org/10.1016/S2212-5671(16)30037-5)
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197. <https://doi.org/10.1016/j.jacceco.2004.11.002>
- Krause, R. (2017). Being the CEO’s boss: An examination of board chair orientations. *Strategic Management Journal*, 38(3), 697–713. <https://doi.org/10.1002/smj.2500>
- Krause, R., Semadeni, M., & Cannella Jr, A. A. (2014). CEO duality: A review and research agenda. *Journal of Management*, 40(1), 256–286. <https://doi.org/10.1177/0149206313503013>
- Lakhal, F. (2005). Voluntary earnings disclosures and corporate governance: Evidence from France. *Review of Accounting and Finance*, 4(3), 64–85. <https://doi.org/10.1108/eb043431>
- Lakshmana, I., & Yang, Y. W. (2014). Product market competition and earnings management: Evidence from discretionary accruals and real activity manipulation. *Advances in Accounting*, 30(2), 263–275.
- Lemma, T. T., Negash, M., Mlilo, M., & Lulseged, A. (2018). Institutional ownership, product market competition, and earnings management: Some evidence from international data. *Journal of Business Research*, 90, 151–163. <https://doi.org/10.1016/j.jbusres.2018.04.035>
- Lin, T. C. (2013). Ceos and Presidents. *UCDL Rev*, 47, 1351.
- Lisic, L. L., Neal, T. L., Zhang, Z., IX, & Power, Y. C. (2016). Internal Control Quality, and Audit Committee Effectiveness in Substance versus in Form. *Contemporary Accounting Research*, 33(3), 1199–1237. <https://doi.org/10.1111/1911-3846.12177>
- Listed firms. (2021). Dhaka stock exchange, https://www.dse.com.bd/by_industrylisting.php
- Lopes, A. P. (2018). Audit quality and earnings management: Evidence from Portugal. *Athens Journal of Business & Economics* -, 4(2), 179–192. <https://doi.org/10.30958/ajbe.4.2.4>
- Mathew, S., & Sivaprasad, S. (2020). Corporate Governance Practices in the Context of the Pandemic Crisis. Available at SSRN. <https://ssrn.com/abstract=3590253> <https://doi.org/10.2139/ssrn.3590253>
- McKnight, P. J., & Weir, C. (2009). Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: A panel data analysis. *The Quarterly Review of Economics and Finance*, 49(2), 139–158. <https://doi.org/10.1016/j.qref.2007.09.008>
- Muttakin, M. B., Khan, A., & Azim, M. I. (2015). Corporate social responsibility disclosures and earnings quality are they a reflection of managers’ opportunistic behavior?. *Managerial Auditing Journal*, 30(3), 277–298. <https://doi.org/10.1108/MAJ-02-2014-0997>
- Muttakin, M. B., Khan, A., & Mihret, D. G. (2017). Business group affiliation, earnings management and audit quality: Evidence from Bangladesh. *Managerial Auditing Journal*, 32(4/5), 427–444. <https://doi.org/10.1108/MAJ-01-2016-1310>
- Peng, M. W., Zhang, S., & Li, X. (2007). CEO duality and firm performance during China’s institutional transitions. *Management and Organization Review*, 3(2), 205–225. <https://doi.org/10.1111/j.1740-8784.2007.00069.x>
- Pizam, A., Pine, R., Mok, C., & Shin, J. Y. (1997). Nationality vs. industry cultures: Which has a greater effect on managerial behavior? *International Journal of Hospitality Management*, 16(2), 127–145. [https://doi.org/10.1016/S0278-4319\(97\)00001-7](https://doi.org/10.1016/S0278-4319(97)00001-7)
- Price, S. M., Salas, J. M., & Sirmans, C. F. (2015). Governance, conference calls and CEO compensation. *The Journal of Real Estate Finance and Economics*, 50(2), 181–206. <https://doi.org/10.1007/s11146-014-9457-0>
- Public sector needs to keep pace with private sector. (2022, January 20). *The Business Standard*. <https://www.tbsnews.net/supplement/public-sector-needs-keep-pace-private-sector-359749>
- Punnett, B. J. (2017). *The developing world: Toward a managerial understanding* (387–405). *The Blackwell Handbook of Global Management: A Guide to Managing Complexity*.
- PWC. (2021). “Global Crisis Survey 2021”, www.pwc.com/gx/en/crisis/pwc-global-crisis-survey-2021.pdf
- Qawasmeh, S., & Azzam, M. (2020). CEO characteristics and earnings management. *Accounting*, 6(7), 1403–1410. <https://doi.org/10.5267/j.ac.2020.8.009>
- Raman, K., & Shahrur, H. (2008). Relationship-specific investments and earnings management: Evidence on corporate suppliers and customers. *The Accounting*

- Review, 83(4), 1041–1081. <https://doi.org/10.2308/accr.2008.83.4.1041>
- Rashid, A. (2013). CEO duality and agency cost: Evidence from Bangladesh. *Journal of Management & Governance*, 17(4), 989–1008. <https://doi.org/10.1007/s10997-012-9213-x>
- Riaz, A., & Rahman, M. S. Eds., 2016. *Routledge handbook of contemporary Bangladesh*. Routledge
- Roodposhti, F. R., & Chashmi, S. N. (2011). The impact of corporate governance mechanisms on earnings management. *African Journal of Business Management*, 5(11), 4143–4151. <https://doi.org/10.5897/AJBM10.471>
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335–370. <https://doi.org/10.1016/j.jacceco.2006.01.002>
- S. (2020, July 13). *Ensuring food security for all - Dr Fahmida Khatun* | CPD. Centre for Policy Dialogue (CPD). <https://cpd.org.bd/ensuring-food-security-for-all-dr-fahmida-khatun/>
- Shipper, K. (1989). Commentary on earnings management. *Accounting Horizons*, 3(4), 91–102.
- Singh, R. K., Rani, M., Bhagavathula, A. S., Sah, R., Rodriguez-Morales, A. J., Kalita, H., Nanda, C. ... Nanda, C., Sharma, S., Sharma, Y. D., Rabaan, A. A., Rahmani, J., Kumar, P. (2020). Prediction of the COVID-19 pandemic for the top 15 affected countries: Advanced autoregressive integrated moving average (ARIMA) model. *JMIR Public Health and Surveillance*, 6(2), e19115. <https://doi.org/10.2196/19115>
- Snee, R. (1981). Origins of the variance inflation factor as recalled by cuthbertdaniel (technical report). *Snee Associates*, 14(2), 170–188.
- Solutions, E. D. (2023, January 1). *Bangladesh Economy, Politics and GDP Growth Summary - the Economist Intelligence Unit*. Bangladesh Economy, Politics and GDP Growth Summary - the Economist Intelligence Unit. <https://country.eiu.com/bangladesh>
- Stawicki, S. P., Jeanmonod, R., Miller, A. C., Paladino, L., Gaieski, D. F., Yaffee, A. Q., De Wulf, A. ... De Wulf, A., Grover, J., Papadimos, T., Bloem, C., Galwankar, S., Chauhan, V., Firstenberg, M., DiSomma, S., Jeanmonod, D., Garg, S., Tucci, V., Anderson, H., Fatimah, L., Worlton, T., Garg, M. (2020). The 2019–2020 novel coronavirus (severe acute respiratory syndrome coronavirus 2) pandemic: A joint American college of academic international medicine-world academic council of emergency medicine multidisciplinary COVID-19 working group consensus paper. *Journal of Global Infectious Diseases*, 12(2), 47. https://doi.org/10.4103/jgid.jgid_86_20
- Tahinakis, P. (2014). R&D expenditures and earnings management: Evidence from Euro zone countries in crisis. *The Journal of Economic Asymmetries*, 11, 104–119. <https://doi.org/10.1016/j.jeca.2014.09.002>
- U. (2022, July 15). *Govt focuses on food security in new action plan amid global crisis*. Prothomalo. <https://en.prothomalo.com/bangladesh/eybiil9rfk>
- Uddin, M. H. (2022). Board-diversity, audit committee characteristics and earnings management: Family versus non-family controlled firms. *Journal of Accounting and Taxation*, 14(2), 170–188.
- Wang, H., Li, Q., & Chen, Y. (2015). Earnings management, business cycle, and product market competition. *China Journal of Accounting Studies*, 3(2), 136–157. <https://doi.org/10.1080/21697213.2015.1023694>
- Watts, R. L., & Zimmerman, J. L. (1978). Towards a positive theory of the determination of accounting standards. *Accounting review*, 112–134. <https://www.jstor.org/stable/245729>
- Weir, C., Laing, D., & McKnight, P. J. (2002). Internal and external governance mechanisms: Their impact on the performance of large UK public companies. *Journal of Business Finance & Accounting*, 29(5–6), 579–611. <https://doi.org/10.1111/1468-5957.00444>
- Westphal, J. D., & Zajac, E. J. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, 40(1), 60–83. <https://doi.org/10.2307/2393700>
- Wimelda, A., & Chandra, L. (2018). Opportunistic behavior, external monitoring mechanisms, corporate governance, and earnings management. *Accounting and Finance Review*, 3(1), 44–52. [https://doi.org/10.35609/afr.2018.3.1\(6\)](https://doi.org/10.35609/afr.2018.3.1(6))
- Xing, Y., Mo, P., Xiao, Y., Zhao, O., Zhang, Y., & Wang, F. (2020). Post-discharge surveillance and positive virus detection in two medical staff recovered from coronavirus disease 2019 (COVID-19), China, January to February 2020. *Eurosurveillance*, 25(10), 2000191. <https://doi.org/10.2807/1560-7917.ES.2020.25.10.2000191>
- Xu, R. Z., Taylor, G. K., & Dugan, M. T. (2007). Review of real earnings management literature. *Journal of Accounting Literature*, 26, 195.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675–703. <https://doi.org/10.2308/accr-10196>
- Zhang, Y., Uchida, K., & Dong, L. (2020). External financing and earnings management: Evidence from international data. *Research in International Business and Finance*, 54, 101275. <https://doi.org/10.1016/j.ribaf.2020.101275>
- Zouari, Z., Lakhil, F., & Nekhili, M. (2012). Do CEO's characteristics affect earnings management? *Evidence from France*. June 11, 2012. <https://dx.doi.org/10.2139/ssrn.2082009>

Appendix(1)

Table A1. Description on the variables of the study

Variable	Description
Accrual-Based Earnings Management:	
DACC	Discretionary accruals is measured by Modified Jones Model
Real-Earnings Management:	
$\frac{CFO_t}{ASSET_{t-1}}$	Abnormal cash flow from operations (3.2.2 Real earnings management (REM) measurement)
$\frac{PROD_t}{ASSET_{t-1}}$	Abnormal production costs(3.2.2 Real earnings management (REM) measurement)
$\frac{DISCexpenses_t}{ASSET_{t-1}}$	Abnormal discretionary expenses(3.2.2 Real earnings management (REM) measurement)
REM	$\sum \frac{CFO_t}{ASSET_{t-1}} + \frac{PROD_t}{ASSET_{t-1}} + \frac{DISCexpenses_t}{ASSET_{t-1}}$
Independent Variable:	
PANDEMIC	A dummy variable equal to 1 during the pandemic period, and zero otherwise
CEOD (CEO Duality)	We computed CEO duality as a dummy variable which takes the value 1 if both the position (CEO and Chairmen) carried out by the same person, and zero otherwise.
CEON (CEO Nationality)	We measured CEO nationality as a dummy variable which takes 1 for the Bangladeshi nationality and 0 otherwise.
COMP(CEO Compensation)	We measured the compensation CEO by the total of the compensation of the CEO.
LD (Loss Dummy)	If companies incur loss in a year we denoted it by 1 and 0 otherwise.
PMP (Product Market Power)	(Sales-cost of goods sold- selling and administrative expenses)/ Sales
LEV(Leverage)	The ratio of total shareholders' equity to total assets.
ROA (Return on Asset)	We measured ROA by using the formula, such as, Net income/Total asset
MBR(Market to Book Ratio)	Market value divided by the book value of shareholders equity.
EXTF(External financing)	Total long-term interest-bearing debt, current long-term debt, other short-term debt, and capital from common stocks divided by retained earnings.
TQ (Tobin's Q)	Tobin's q is the market value of equity plus the book value of total debt divided by the book value of asset.
DSTR (Debt maturity structure)	Total current liabilities to total liabilities.
SIZE (Firm Size)	Firm size is calculated by taking the natural log of total sales.
AOC (Average Operating Cycle)	We used the following formula $\left(\frac{\text{Average account receivable}}{\text{Sales}/360} + \frac{\text{Average Inventory}}{\text{Cost of Good sold}/360} \right) - \frac{\text{Average account Payable}}{\text{Purchase}/360}$
LTAC (Lagged total Accruals)	Lagged total accruals.



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