Does Corporate Sustainability Management Moderate the Relationship Between Cost Stickiness and Earnings Management? The Case of Egypt

Research extracted from a Master thesis of Accounting

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Does Corporate Sustainability Management Moderate the Relationship Between Cost Stickiness and Earnings Management? The Case of Egypt

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Abstract

The main objective of this study is to examine the moderating role of corporate sustainability management on the relationship between cost stickiness and earnings management. In this research, a sample of 256 observations from 65 Egyptian firms listed on the Egyptian Stock Exchange is used for a period of five years, from 2018 to 2022. The ordinary Least Squares (OLS) regression is applied for four multiple regression models to test the research hypotheses. Cost stickiness is measured by the model of Homburg and Nasev (2008) and selling, general, and administrative expenses are used as a proxy for cost stickiness. Discretionary accruals estimated from the modified Jones model (1995) are used to measure earnings management, and the S&P Global ESG Score is used to assess a company's sustainability performance, determined by aggregating its environmental, social, and governance dimension scores.

The results reveal a significant positive relationship between cost stickiness and earnings management. Moreover, it is found that corporate sustainability management has a significant negative effect on cost stickiness. Additionally, corporate sustainability management has a positive significant effect on earnings management. Finally, the findings indicate that corporate sustainability management moderates the relationship between cost stickiness and earnings management, implying that corporate sustainability management reduces the positive impact of cost stickiness on earnings management.

Keywords: Cost Stickiness, Earnings Management, Corporate Sustainability Management, Discretionary Accruals, Egyptian companies.

JEL Classification: D23, Q56, M40

Introduction

Research on managerial discretion and the motivations behind it is productive in the fields of financial accounting and management. This study integrates two research streams, Earnings Management and Cost Stickiness, which are essentially grounded on managerial behavior. Considering the changes that have occurred in the business environment, managers are exposed to situations that require them to make quick decisions. The management is faced with a decision when activity levels fall, whether to maintain committed resources and pay for unused capacity, at least temporarily, or cut committed resources right away. In this case, when the level of activities increases in the future, the company incurs further costs to replace resources. However, when they choose to keep the unused resources, the cost becomes sticky. Cost Stickiness (CS) is a phenomenon that occurs when costs seem to decrease less in response to a reduced firm activity level than they increase for an equivalent increase in activity level (Anderson et al., 2003).

Additionally, according to the agency theory, managers act as agents who are hired by shareholders; they may have little incentive to optimize firms' operating efficiency. Due to this conflict of interest, opportunistic managers may choose not to reduce costs during periods of downturn for their interest, which will lead to a reduction in net income. A reduction in net income will motivate managers to manipulate earnings to smooth their income. (Anderson et al., 2003 and Chen et al., 2012). As costs are a fundamental component of accounting earnings, cost behavior also has the potential to influence financial reporting decisions. The financial decisions of a company are made based on the information received from the accounting reporting systems. Consequently, users won't be able to make rational decisions if accounting information is manipulated (Barth, et al., 2013).

Moreover, political and economic instability can easily affect the pattern of earnings in the whole market (Velte, 2023). Those external factors make the earnings volatile due to sales decline in many companies. At the same time, every company has a goal and a challenge to grow, and this could happen by maintaining earnings smoothing, therefore, if costs don't decrease at a sufficient rate, the earnings of the companies will reduce, and this will drive managers to

commit earnings management (EM). EM is the practice of achieving a targeted profit within Generally Accepted Accounting Principles (GAAP), and it is typically used by managers to improve the company's financial position, present consistent profits, smooth fluctuations in earnings, meet financial expectations, and keep the company's stock price up. Hence, the CS phenomenon could positively affect the firm's EM (Silva et al., 2019; Flannery and Mohs, 2020; and Hartlieb and Loy, 2022).

Corporate governance (CG) is a set of rules, policies, and processes that manage and regulate a company. CG aims to balance the interests of many interested parties, including shareholders, executives, clients, suppliers, financiers, the government, and the community (Sarhan and Al-Najjar, 2023). Corporate Sustainability Management (CSM) measures how actively a company reacts to a variety of stakeholder demands, including shareholders, employees, suppliers, customers, and the larger community. CSM demands could include guaranteeing pollution-free environments, workplace diversity and good working conditions for employees, educational and housing help, and high-quality products (Carmine and Marchi, 2023). CSM activities are frequently referred to as an effective technique for obtaining stakeholder support, ensuring effective use of an organization's resources, obtaining good media coverage, signaling credibility to the community, hiring, and keeping higher-quality personnel. These techniques allow companies to better market their products and services, contribute to the acquisition of social acceptability, and lessen criticism from investors and employees (Orlitzky, et al., 2003). Furthermore, it was found that a company with strong governance and high CSM reduces EM practices (Lin and Hwang, 2010; Hong and Anderson, 2011; Scholtens & Kang, 2013; Gil et al., 2016; and Park and Ha, 2020). Therefore, in today's competitive world, governments all over the world encourage the incorporation of sustainability aspects (economic, social, and environmental) into firms in all sectors.

In the Egyptian context, several programs and projects were conducted by the Egyptian government for economic development, such as the Suez Canal Area Development Project, the new administrative capital, applying the value-added tax to increase consumption expenditure, improving road networks for development, developing national railway networks, and the green economy

program. Also, there is a goal of increasing the rank of Egypt regarding the quality of scientific research institutions and research and development. Currently, there is a comprehensive program to stimulate innovation activities by Small and Medium Enterprises (SMEs).

Considering the social role, the Egyptian government seeks to reduce the child mortality rate and the percentage of the population below the poverty line by examining and developing regulations and legislations pertaining to social justice and integration, developing, and expanding the role of state authorities concerned with transparency and protection, enhancing social protection, reducing gender gaps, and attaining a balanced geographical distribution of services. Also, Egypt works on providing an integrated, accessible, high-quality, and universal healthcare system capable of improving health conditions and providing the necessary skills to students and trainees to think creatively and empower them technically and technologically. So, by 2030, Egypt will become a society that supports citizens' rights, and according to the law, this will lead to prosperity, welfare, happiness, and social and economic development (GB Auto, 2016; GB Auto, 2017; GB Auto, 2018; GB Auto, 2019).

Additionally, every aspect of the economy is impacted by the environment to protect natural resources, encourage their wise use, and safeguard the rights of future generations. A clean, safe, and healthy environment leads to diversified production resources and economic activities, supporting competitiveness, providing new jobs, eliminating poverty, and achieving social justice (GB Auto, 2016; GB Auto, 2017; GB Auto, 2018; GB Auto, 2019).

Although a plentiful amount of literature has been published on the relationship between CS and EM, this study contributes to the literature in several ways. First, to the best of the researchers' knowledge, no study in Egypt has discussed the effect of CS on EM. Therefore, this research explains whether CS influences EM in the Egyptian context. Additionally, despite the extensive literature on the one-to-one relationship between these variables, no study has considered the possible moderating role of CSM on the relationship between CS and EM. Therefore, this study would help in filling this gap by determining the moderating role of sustainability on the relationship between CS and EM in the emerging market.

Moreover, studying CS and EM could provide valuable insights to Egyptian managers, investors, and analysts in several ways. For managers, understanding CS could help managers identify cost categories that are more resistant to changes in activity levels. This knowledge allows managers to focus their cost control efforts on the less sticky cost components, which are easier to be adjusted in the short term. This understanding could help in setting realistic performance targets and evaluating the performance of different business units or departments. Therefore, managers would reduce EM practices.

Additionally, Egyptian managers would apply CSM practices due to their good impact on both the CS phenomenon and EM. For investors, EM could influence a company's stock price. When a company reports earnings that exceed expectations, its stock price often rises. On the other hand, if the reported earnings fall short of expectations, the stock price might drop. Therefore, understanding EM practices could help investors predict potential stock price movements. For analysts, knowledge of CS helps analysts make more accurate financial forecasts. By understanding the stickiness of costs, analysts can project the impact of changes in activity levels on a company's cost structure. So, this would not put stress on managers to meet the analysts' expectations by managing earnings because the projections were based on the existence of the CS phenomenon.

Hence, the main objective of this research is to investigate the relationship among CS, CSM, and EM. This main objective could be achieved through the following sub-objectives, first, examine the direct association between CS and EM. Second, investigate the direct effect of CSM on a firm’s CS. Third, examine the direct effect of CSM on a firm’s EM. Fourth, examine the moderating effect of CSM on the relationship between CS and EM.

The rest of the paper is designed as follows: section 2 presents the literature that is relevant to the study's variables to formulate the research hypotheses. Section 3 presents the study methodology, which includes an overview of data collecting, research models, and variable measurements. While section 4 contains the empirical models used to test the research hypotheses as well as the analysis and discussion of the empirical results. Finally, section 5 concludes the findings, highlights study limitations, and suggests future research paths.

Literature Review and Hypotheses Development:

The main objective of this study is to examine the relationship among CS, CSM, and EM in the Egyptian context. As a result, the literature review of this paper can be classified into four groups: the first group discusses the studies that examine the direct association between CS and EM. The second group presents studies that investigate the direct effect of CSM on a firm's CS. The third group provides an overview of studies that discussed the direct effect of CSM on a firm's EM. The fourth group provides an analysis of studies that investigated the moderating effect of CSM on the relationship between CS and EM.

Cost Stickiness and Earnings Management

Several recent studies have concentrated on the relationship between asymmetric cost behavior and income-increasing short-term EM. This body of literature has interpreted changes in cost behavior as a simple result of financial accounting incentives such as compensation, meeting or exceeding last year's earnings, avoiding reporting losses, and meeting or exceeding consensus analyst forecasts (Degeorge et al., 1999).

There are two views on the existence of CS: rational decision-making and motivational decision-making. The rational decision-making perspective views CS as a result of management rationally when choosing between alternatives after thoroughly weighing their costs and benefits. It has been proposed that the adjustment cost of decreasing input under declining activities is greater than the adjustment cost of increasing input under increasing activities (Balakrishnan et al., 2004; Banker and Chen, 2006; and Balakrishnan and Gruca, 2008). Thus, even under declining activities, it is rare for management to reduce input.

The second point of view is motivational, and it links CS to managerial incentives, implying that managers are not expected to behave in an ideal world. Chen et al. (2008) studied the relationship between empire-building and CS and discovered that higher CS was associated with stronger managerial incentives for empire-building. In other words, managers may maintain slack input resources that are helpful to their rewards. They may expand the firm beyond its optimal size or keep slack resources due to the fear of losing

prestige, authority, or compensation, resulting in an inefficient and high level of CS.

As a result, Koo et al. (2015) demonstrated that when faced with declining sales, firms with suspect EM mitigate CS. This result is obtained when managers aggressively cut costs to manage earnings or are prepared for bad times when faced with declining sales. Moreover, Xue and Hong (2016) examined the non-EM sub-sample and the EM sub-sample and found that there is significant CS in the non-EM sub-sample, compared with the EM sub-sample. Furthermore, Wei and Li (2020) supported the previous results by proving that companies' upward adjustment of the surplus can weaken CS. When the company's sales fall, the manager with the incentive to increase the surplus can increase the accounting income by lowering the cost, therefore weakening the enterprise's CS.

Managers in Real Earnings Management (REM) seek to reduce or increase R&D investments, anticipate, or delay sales, and reduce advertising spending, or non-core expenses. Managers can also increase or decrease production, causing fixed costs to be reduced. Management by accounting choices entails the use of an accruals basis, which can be analyzed individually by applying different depreciation, amortization, and depletion rates, provisions, and asset impairment losses (Leuz et al., 2003; Hartlieb and Loy, 2022). Silva et al. (2019) argued that based on the evidence pointed out by Chen et al., (2012), Kama and Weiss (2013), and Banker et al. (2016), it is assumed that profit may be affected by both operational decisions resulting from sticky costs and accounting choices, such as discretionary accruals used by managers to achieve profitability goals and consequently reduce the level of cost.

All the previously mentioned studies examined the impact of EM on CS and showed that short-term upward EM incentives encourage more decisive cost cutting and, as a result, reduce CS; however, this study will examine the impact of CS on EM.

Regarding the effect of CS on EM, Boakye et al. (2019) studied the effect of CS on the relationship between discretionary current accruals and abnormal stock returns in US firms. The study found that firms with higher stickier costs have a stronger relationship with accruals and abnormal returns, implying that

EM is more common in these firms. Additionally, Flannery and Mohs (2020) investigated whether CS affects enterprise earnings and, if so, whether this unintentionally creates ethical issues for management decision-making because they may benefit in compensation from these decisions, and demonstrated how asymmetric cost behavior influences management decision-making by examining the link between Selling, General, and Administrative expenses (SG&A) and earnings. In other words, the existence of CS leads to decisions that may result in managing earnings to be compensated. Moreover, Silva et al. (2019) contributed to the literature on cost behavior in developing countries by proving that the accounting profit of Brazilian firms is affected by sticky cost behavior and EM practices. In other words, part of EM can be due to sticky costs.

Based on the above analysis of previous studies, the first hypothesis is developed:

H_1.: Cost Stickiness has a significant positive effect on Earnings Management.

Corporate Sustainability Management and Cost Stickiness

CSR initiatives are often driven by stakeholder expectations, including customers, investors, employees, and communities. Meeting these expectations can enhance reputation, brand value, and stakeholder trust. Therefore, firms may avoid layoffs because they risk damaging the firm's reputation and undermining employee loyalty (Guenther, et al., 2014), as well as lowering morale and productivity among remaining employees, resulting in higher organizational costs that must be included in the adjustment costs (Balakrishnan & Gruca, 2008).

In the Egyptian context, Habib and Hasan (2019) stated that organizations with stronger CSR behavior exhibit a higher degree of CS. The study found that when strategic CSR scores are high, CS becomes higher. This could be justified due to the pressures exerted on companies nowadays to comply with societal requirements. Guenther, et al. (2014) argued that the constraints of employment and social regulations for dismissal prevent fast cost adjustment when sales decrease. Furthermore, state-owned enterprises have higher labor CS than private organizations due to the varying levels of socioeconomic and political interests in both types because state-owned firms have more commitments

compared with private ones (Prabowo et al., 2018). As a result, social factors might be said to cause CS. Additionally, Fan et al., (2021) demonstrated that Chinese organizations with stronger CSR behavior exhibit a higher degree of CS.

Kristianti and Yuyetta (2022) investigated how CS interacts with the CSR of Indonesian firms. When a company makes a long-term commitment to value creation to participate in CSR, it becomes challenging to immediately cut off committed resources. The study's findings showed that CS exists in SG&A expenses and that the degree of CS increases when CSR costs are included in the research model. These findings added to our understanding of how CSR affects CS in manufacturing firms.

In addition, managers' self-interest behavior can occasionally result in CS (Chen et al., 2008). According to Chen's (2008) study, US companies with larger boards of directors, more independent boards (the separation of the chairman and CEO, more external independent directors), and directors who own larger shareholdings have lower levels of CS. Additionally, when managers have an incentive to build an empire, CG mechanisms perform better at reducing CS. Moreover, Chen et al. (2012) in the U.S. demonstrated that effective CG syste23ms will prevent managers from unnecessarily increasing SG&A costs in response to demand increases and motivate managers to minimize slack in SG&A expenses in reaction to demand drops.

Wan and Wang (2011) and Qin and Ll (2014) investigated whether CG mechanisms can influence CS by limiting managers' self-interest incentives. The findings showed that companies with higher levels of CG can limit managers' self-interest incentives, resulting in lower CS. Further research revealed a significant positive correlation between CG and corporate values. These findings have practical implications for strengthening CG to alleviate the agency problem by limiting managers' self-interest incentives and for strengthening cost control to enhance corporate values.

Based on the above discussion of literature related to CSM and CS, the second hypothesis is formulated:

$H_{2.}$: The CSM activities of a firm have a significant negative effect on Cost Stickiness.

Corporate Sustainability Management and Earnings Management

It has been demonstrated that integrating CSR into the business strategy will improve the effectiveness and value of the enterprise. There is a strong correlation between how the business is perceived and how the numbers are presented, which is where EM comes into play. By using EM, it is possible to modify the numbers to make the company appear more desirable than it truly is. The link between CSR and EM has been the subject of extensive research (Orlitzky et al., 2003).

Chih et al. (2008) found that CSR negatively affects EM. The inference behind this is that companies with comprehensive CSR initiatives have a strong commitment to social responsibility and that EM thus happens less frequently. Hong and Anderson (2011) examined the impact of CSR activities on accruals quality and REM of US firms. The results revealed that socially responsible firms engage less in REM practices. Scholtens & Kang (2013) tested if EM is negatively related to CSR in ten Asian nations based on the literature discussion. The findings argued that Asian enterprises with relatively excellent CSR are much less involved in EM.

Moreover, Gras-Gil et al. (2016) studied the relationship between CSR and EM of Spanish companies. CSR is related to ethical and moral concerns about corporate decision-making. Participating in socially responsible initiatives not only increases stakeholder satisfaction but also improves corporate reputation. According to the findings, CSR policies may be an organizational tool that leads to more efficient resource utilization, which has an inverse impact on EM activities.

Furthermore, Park & Ha (2020) investigated the relationship between CSR and earnings transparency in Korean enterprises. According to the findings, firms with greater CSR initiatives have higher earnings transparency. This implies that the more a company practices CSR, the more market participants believe its earnings information. Also, the findings demonstrated that a company with a longer history of CSR efforts had greater earnings transparency. This means that continued CSR practices encourage a corporation to openly disclose information to outside stakeholders.

Lin & Hwang (2010) examined relationships between CG, audit quality variables, and EM. For CG, there is a negative correlation between EM and the board of directors' independence and competency. EM is negatively correlated with the audit committee's size, experience, independence, and frequency of meetings. The ownership of shares by the audit committee is positively correlated with EM.

Xie et al. (2003) and Saleh et al. (2007) found a negative relationship between the number of audit committee meetings and the level of EM, implying that a more active audit committee is associated with a lower level of discretionary current accruals. According to Lin et al. (2006), a larger audit committee may provide more oversight over the financial reporting process. Such oversight improves earnings quality by lowering the likelihood of financial statements being restated. Additionally, Abbott et al. (2004) argued that there is a negative relationship between the financial expertise of the audit committee and the occurrence of EM.

On the other hand, Chih et al. (2008), Prior et al. (2008) in cross-countries, and Gargouri et al. (2010) found that CSR has a positive impact on EM. This result is supported by the rationale that managers smooth earnings to reduce earnings volatility to provide stakeholders with more useful information. Earnings smoothing may be beneficial if it improves the information quality of stated profits and aids in forecasting profits for future periods. This occurs when management attempts to minimize current high earnings figures if they anticipate a drop in future profits. The Opportunistic Financial Reporting Hypothesis (OFRH) was presented by Pasko et al. (2021) and Palacios-Manzano et al. (2021). OFRH suggested that managers continue to utilize EM while being fully aware of the damage it causes and use CSR as a cover to do so.

Therefore, based on the previous discussion of literature, the researchers formulated the third hypothesis, which could be stated as follows:

H_3: The Corporate Sustainability Management activities of a firm have a significant positive relationship with Earnings Management.

Corporate Sustainability Management, Cost Stickiness and Earnings Management

Oh and Park (2021) conducted an empirical analysis of the association between earnings transparency and CS. They also studied at how CSM affected the association between earnings transparency and CS. The empirical findings demonstrated that earnings transparency is adversely affected by CS. This showed that a company's earnings transparency decreased with its stickier costs. Furthermore, the results indicated that the relationship between CS and earnings transparency is strongly moderated by CSM. This suggests that CSM initiatives serve as a safeguard against the unfavorable correlation between CS and earnings transparency. It is anticipated that these results will have significant implications for managers, external auditors, and investors regarding the moderating function of CSM in the association between CS and EM.

In addition, Abdel Megeid and El-Deeb (2021) concluded that CG mechanisms in Egyptian firms have an inverse effect on CS. The independence of the board, the size of the board, and the absence of CEO duality have a positive impact on efficient monitoring and reducing EM. The statistical findings demonstrated that effective CG could reduce CS while having a strong effect on mitigating EM.

Based on the above literature analysis, the researchers formulated the fourth hypothesis, which can be stated as follows:

H_4: The Corporate Sustainability Management activities of a firm have a significant moderating role in the relationship between Cost Stickiness and Earnings Management.

Research Methodology

Data Collection and Sample Selection

The initial sample includes companies in the EGX 100 for 2022, as they are the leading publicly traded firms that meet the sustainability requirements. The data is collected over 5 years, from 2018 to 2022, to provide sufficient observations for the research models and to provide strong results that can be generalized. This period was chosen due to the availability of data on the

Mubasher information website. In addition, financial firms were excluded due to their financial reporting requirements, which differ from those of non-financial firms, resulting in fundamentally distinct accrual activities that are unlikely to be adequately captured by ordinary accrual activity models. The final sample consists of 65 companies and 256 firm-year observations from 2018 to 2022. The conditions followed in the sample selection include: first, Global Industry Classification Standard (GICS) sectors with fewer than eight firms were excluded since the prediction of cross-sectional accrual models requires at least eight firms per sector-year combination (Ferguson et al., 2004). Second, the company must be publicly listed during the selected period. Consequently, only companies that were publicly traded during that period were chosen. Third, the financial data for the selected period must be complete. Companies with incomplete data were excluded. Fourth, every company must have an ESG score of at least three out of the five years in the sample. Observations with no ESG score were excluded.

The financial data necessary for measuring CS, EM, and the control variables was collected from the annual financial statements obtained from the companies' official websites, Mubasher Misr, and the EGX information center. While CSM was measured using the ESG index obtained from the EGX information center.

Variables Measurement

This study uses the model of Homburg and Nasev (2008) to measure CS. The modified Jones model is used as a proxy for EM, the CSM is measured by the ESG index. To illustrate, this section presents the proxy measures of the study variables.

Cost Stickiness

CS is measured by the model of Homburg and Nasev (2008). Most previous studies measured CS using the Anderson, Banker, and Janakiraman (ABJ) model (2003). Anderson, et al. (2003) defined CS and formulated an empirical estimation model (ABJ Model) for measuring asymmetric cost behavior. Since physical output data is not directly observable (i.e., the physical quantity of items), the ABJ Model uses sales revenue as an imperfect proxy for

sales volume. Several follow-up studies have modified the ABJ model (2003) by introducing new determinants of CS (e.g., fixed asset intensity). Their model can be used to investigate various components of SG&A or other types of costs. Seeking more accuracy, the researchers measure the CS variable using the model of Homburg and Nasev (2008), as it gives a value for the CS in each observation.

According to Homburg and Nasev (2008) model, CS is measured as follows:

CS_{it} = SG&A $Ratio_{it}$ * Dummy sales $ratio_{it}$ * Dummy SG&A $ratio_{it}$

Where,

SG&A $_{it}$ = sales, general, and administrative for firm i in year t

Sales $_{it}$ = sales for firm i in year t

SG&A $Ratio_{it} = \left[\frac{SG\&A_{i,t}}{Sales_{i,t}} - \frac{SG\&A_{i,t-1}}{Sales_{i,t-1}}\right]$.

Dummy SALES $ratio_{it}$ = 1 if $\left[\frac{Sales_{i,t}}{Sales_{i,t-1}}\right]$ <1, and 0 otherwise

Dummy SG&A $ratio_{it}$ = 1 if $\left[\frac{SG\&A_{i,t}}{Sales_{i,t}} - \frac{SG\&A_{i,t-1}}{Sales_{i,t-1}}\right]$>0, and 0 otherwise

Earnings Management

According to the literature, the modified Jones model was employed in this study to measure EM. To measure EM, the following steps are followed:

First step: Total Accruals (TAC) are calculated by subtracting cash flow produced by operating activities (OCF) from net income before extraordinary items (NI) (Wang, 2006), as shown in equation (1):

$$TAC_{ijt} = NI_{ijt} - OCF_{ijt} \quad \text{……Equation (1)}$$

Second step: TAC obtained from equation (1) is substituted in equation (2), then αj, β1 and β2 are sector-particular coefficients assessed by applying the following cross-sectional regression analysis of the preliminary Jones model as shown in equation (2):

$TAC_{ijt}/TA_{ijt-1}=\alpha_j(1/TA_{ijt-1}) + \beta 1_j(\Delta REV_{ijt}/ TA_{ijt-1})+\beta 2_j(PPE_{ijt}/ TA_{ijt-1}) +\varepsilon$..... Equation (2)

Where,

TAC_{ijt} = Total accruals for firm $_i$ in sector $_j$ in financial year $_t$;

ΔREV_{ijt} = The change in firm $_i$ revenue in sector $_j$ from year t to $_{t-1}$;

PPE_{ijt} = Total property, plant, and equipment for firm $_i$ in year $_t$;

TA_{ijt-1} = Total assets for firm $_i$ in sector $_j$ at the end of the prior year $_{t-1}$.

Third step: The coefficients generated from equation (2), will be used in equation (3) to get the non-discretionary part of total accruals:

$NDAC_{ijt} = \alpha j(1/ TA_{ijt-1})+ \beta 1_j(\Delta REV_{ijt} -\Delta REC_{ijt}/ TA_{ijt-1}) + \beta 2_j(PPE_{ijt}/TA_{ijt-1})$……..Equation (3)

Where,

TAC_{ijt} = Total accruals for firm $_i$ in sector j in financial year $_t$;

$NDAC_{ijt}$ = Non-discretionary accruals for firm $_i$ in sector j in financial year t;

ΔREV_{ijt} =the change in firm $_i$ revenue in sector j from year t to $_{t-1}$;

PPE_{ijt} = Total property, plant, and equipment for firm $_i$ in year $_t$;

TA_{ijt-1} =Total assets for firm $_i$ in sector $_j$ at the end of the prior year $_{t-1}$;

ΔREC_{ijt} = the change in accounts receivables for firm $_i$ in sector $_j$ from year t and year $_{t-1}$.

Note: All elements included in the model will be scaled by the lagged total assets of the previous year ($_{t-1}$).

Fourth step: Equation (3) was used to calculate NDAC after using the coefficients generated from equation (2), and the degree of discretionary accruals for a certain firm was computed using this method as the difference between the firm's total accruals (TAC) and its non-discretionary accruals (NDAC). Equation (4) was used to calculate the discretionary accruals (DAC) amount for firm I in sector j for year t:

$DAC_{ijt} = TAC_{ijt} – NDAC_{ijt}$.....Equation (4)

The degree of EM was measured in this research using the absolute value of DAC. This is consistent with the literature on EM that found that the results' validity does not rely on the sign of the expectation of managing earnings numbers (González & García-Meca, 2014).

Corporate Sustainability Management

The S&P Global ESG Score is a single assessment of a company's sustainability performance determined by aggregating its Environmental, Social, and Governance Dimension Scores, each of which is weighted based on its importance for a given sub-industry. Because of its comprehensiveness and simplicity, this overall score is frequently employed in portfolio or index design. Around 130 question-level scores provide even more information into a company's performance on certain sub-themes within each criterion, with approximately half of the questions being industry-specific. Each question is supported by many data points, with a maximum of 1,000 per organization. This provides unprecedented transparency about how the S&P Global ESG Scores are calculated and can be used in several ways.

Control Variables

For the regression test, and to have robust results, control variables must be used. Table (1) summarizes the study's main variables and the control variables selected for this study, their proxy measures, and the data source of each variable.

Table 1: Variables Measurements, Proxies, and Sources

Name	Proxies Measures	Data Source
Cost Stickiness (CS)	The model of Homburg and Nasev (2008) is used. CS_{it} = SG&A $Ratio_{it}$ * Dummy SALES ratio $_{it}$ * Dummy SG&A ratio $_{it}$	Financial Statements
Earnings Management (EM)	The modified jones model (1995) is used. The discretionary part of Accruals is used as an estimate of Earnings Management $DACC_{ijt} = TAC_{ijt} - NDAC_{ijt}$	Financial Statements
Corporate Sustainability Management (CSM)	The S&P Global ESG Score	S & P Global ESG Score
Firm Size (Size)	$Size_{it} = Natural\ log\ of\ (total\ assets)$	Financial Statements
Return on Assets (ROA)	$ROA_{it} = \frac{Net\ Income}{Total\ Assets}$	Financial Statements
Financial Leverage (LEV)	$LEV_{it} = \frac{Total\ Debts}{Total\ Equity}$	Financial Statements
Firm Growth (GROW)	$LEV_{it} = \frac{Sales_{it} - Sales_{it-1}}{Sales_{it-1}}$	Financial Statements
Audit Firm (AUDIT)	Measured as a Dummy Variable, 1 for Big Four audit firms, otherwise 0	Annual Reports

Statistical Analysis and Hypotheses Testing

The researchers used the STATA Software to estimate the parameters of the paths, which represent the hypothesized relationships that link the study variables. Therefore, the statistical analysis and hypotheses testing section is divided into the following: descriptive statistics, frequency of dummy variables, matrix of correlation, evaluation of the OLS regressions, hypotheses testing, and discussion of results.

Descriptive Analysis

The importance of descriptive statistics stems from the simplicity in presenting the basic properties of a large set of observations. Table (2) shows descriptive statistics for the independent, dependent, and control variables of the study.

In terms of the dependent variables, the average EM of the sample firms is (0.061) and a median of (0.044) meaning that 50% of data points have a value smaller or equal to (0.044) and 50% of data points have a value higher or equal to (0.044), with a maximum value of (0.276) and a minimum value of (0.001) representing firms with a very low level of EM, and the standard deviation value is (0.059).

Table (2) Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Earnings Management (EM)	256	0.061	0.044	0.059	0.001	0.276
Cost Stickiness (CS)	256	0.003	0	0.005	0	0.012
Corporate Sustainability Management (CSM)	256	122.91	121.299	11.073	100	181
Firm Size (Size)	256	21.85	21.827	1.256	19.17	23.55
Return on Assets (ROA)	256	0.054	0.052	0.067	-0.088	0.19
Financial Leverage (LEV)	256	1.433	0.958	1.294	0.033	4.278
Firm Growth (GROW)	256	0.13	0.124	0.321	-0.583	0.831

While CS has an average of (0.049) and a median of (0) meaning that 50% or more of the observations have zero CS, with a maximum value of (4.572) indicating a high level of CS and a minimum value of (0) representing firms with no CS, and the standard deviation value is (0.342). CSM has a mean of (122.91) and a median of (121.299) meaning that 50% of data points have a value smaller or equal to the median and 50% of data points have a value higher or equal to the median, with minimum and maximum values of (100) and (181) respectively, and the standard deviation value is (11.073). The scores of ESG are scaled according to some criteria. The higher the score, the better the ESG practices.

Regarding the control variables, firm size has a mean of (21.85) and a median of (21.827), with a minimum and maximum value of (19.17) and (23.55) respectively, and a standard deviation value of (1.256). ROA has a mean of (0.054) and a median of (0.052), with minimum and maximum values of (-0.088 and 0.19) respectively, and the standard deviation value is (0.067). Financial Leverage has a mean of (1.433) and a median of (0.958), with a minimum and maximum value of (0.033) and (4.278) respectively, and the standard deviation value is (1.294). GROWTH has a mean of (0.13) and a median of (0.124), with a minimum and maximum value of (0.583) and (0.831) respectively, and the standard deviation value is (0.321).

Frequency of Dummy Variables

The control variable of the Audit Firm is measured as a dummy variable that takes the value of 1 if the auditor is one of the BIG FOUR firms, otherwise, it takes the value of zero. Based on the results presented in Table (3), 52.73% of the observations took the value of 1 (one of the Big Four) and the rest took zero (Non-Big Four).

Table (3): Frequency of Audit Firm variable

Audit Firm	Freq.	Percent
0	121	47.27
1	135	52.73
Total	256	100.00

Pearson Correlation Test

To determine both the direction and the strength of the relationship between the independent and dependent variables, a Pearson correlation matrix is built. The Pearson Correlation values with a two-tailed significance test shown in Table 4. The findings displayed in Table 4 indicate that Return on Assets (ROA), Firm Size (Size), and Audit Firm (AUDIT) have the strongest correlations with Corporate Sustainability Management (CSM), all of which are significant at the 0.01 level. This implies large firms with high ROA and that are audited by BIG 4 auditing firms have more sustainability practices.

Table (4): Pearson's Correlation Matrix

Variables	EM	CS	CSM	Size	ROA	LEV	GROW	AUDIT	FIXASS
EM	1.000								
CS	0.042	1.000							
	(0.503)								
CSM	0.089	-0.021	1.000						
	(0.157)	(0.734)							
Size	-0.124*	-0.148**	0.347***	1.000					
	(0.048)	(0.018)	(0.000)						
ROA	0.104*	-0.141**	0.200***	0.306***	1.000				
	(0.095)	(0.024)	(0.001)	(0.000)					
LEV	0.042	0.130**	0.025	0.272***	-0.220***	1.000			
	(0.499)	(0.038)	(0.694)	(0.000)	(0.000)				
GROW	-0.014	-0.161***	-0.025	0.167***	0.239***	0.047	1.000		
	(0.825)	(0.010)	(0.694)	(0.007)	(0.000)	(0.450)			
AUDIT	0.149**	-0.070	0.222***	0.169***	0.022	0.196***	0.034	1.000	
	(0.017)	(0.264)	(0.000)	(0.007)	(0.730)	(0.002)	(0.590)		
FIXASS	0.116*	0.230***	-0.048	-0.088	0.010	-0.038	-0.066	0.028	1.000
	(0.065)	(0.000)	(0.447)	(0.158)	(0.879)	(0.542)	(0.296)	(0.661)	
*** $p<0.01$, ** $p<0.05$, * $p<0.1$									

In addition, the most correlated variables with Cost Stickiness (CS) is Firm Growth (GROW), significant at the 0.01 level. Companies may experience a higher level of CS due to reasons such as social, personnel, operating, psychological, and agency-related reasons. Furthermore, the most correlated variable with Earnings Management (EM) is Audit Firm (AUDIT), significant at 0.05 level.

Evaluation of the OLS regression

Before running the OLS regression for the four models, the researchers conduct Multicollinearity Test to ensure that there is no problem with the data, and if any problem is found, it should be resolved.

Multicollinearity Test

When two or more independent variables in a regression model have a strong association with one another, this is known statistically as multicollinearity. Because of this, while doing a regression analysis, it could be challenging to determine with precision the distinct impacts of each independent variable on the dependent variable. According to Field (2013), Multicollinearity exists when the Variance Inflation Factor (VIF) of any independent variable exceeds 10 and the tolerance factor (1/VIF) is less than 0.10. According to Table (5) every explanatory variable in the OLS model has a VIF coefficient less than 10 and a tolerance coefficient greater than 0. Therefore, there is no multicollinearity among them.

Table (5) Variance Inflation Factor

	VIF	1/VIF
CSM	1.211	0.826
CS	1.174	0.852
GROW	1.156	0.865
AUDIT	1.115	0.897
SIZE	1.461	0.684
LEV	1.368	0.731
FIXASS	1.218	0.821
Mean VIF	1.274	

Regression Analysis and Discussion of Results

In this section, the researchers present the results of the tests of the four hypotheses. Each hypothesis is tested using multiple regression after conducting tests that ensure that the findings are reliable.

Results of the Relation between Cost Stickiness and Earnings Management

The first model examines the direct impact of CS on EM using the following multiple regression model:

$$EM = \beta 0 + \beta 1\ CS + \beta 2\ SIZE + \beta 3\ ROA + \beta 4\ LEV + \beta 5\ GROW + \beta 6\ AUDIT + \varepsilon$$

Table (6) shows that the coefficient of determination (R^2) is 8.3%. This means that the independent variables included in the research model explain around 8.3% of the variance in the dependent variable, which is EM. From the results shown in Table (6), it is clear that CS has a positive significant effect on EM with a p-value of (0.098) significant at 10% and a coefficient of (0.001). The findings are consistent with the literature and previous studies conducted in different countries (Silva et al., 2019; Flannery and Mohs, 2020; and Hartlieb and Loy, 2022). Therefore, the first hypothesis which states that "*Cost Stickiness has a significant positive effect on Earnings Management"* is accepted.

Table (6) Linear Regression of the First Model

Dependent: Earnings Management	**Coef.**	**p-value**	**Sig**
Cost Stickiness	0.001	0.098	*
Firm Size	-0.011	0.003	***
Return On Assets	0.189	0.01	***
Financial Leverage	0.006	0.07	*
Firm Growth	-0.006	0.621	
Audit Firm	0.02	0.01	***
Constant	0.282	0.001	***
R-squared 0.083	Number of observations		256
*** $p<0.01$, ** $p<0.05$, * $p<0.1$			

This could be justified because of the asymmetric cost behavior relative to sales changes which increases earnings volatility and thus restricts managers' capabilities to report smooth income streams implying that companies with stickier costs are more likely to manipulate earnings to meet their targets and consequently managers will be compensated.

Results of the Relation between Corporate Sustainability Management and Cost Stickiness

The second model examines the direct impact of CSM on CS using the following multiple regression model:

$$CS = \beta 0 + \beta 1\ CSM + \beta 2\ GROW + \beta 3\ FIXASS + \varepsilon$$

Table (7) shows that the coefficient of determination (R^2) is 10.3%. This indicates that the independent variables in the second model explain around 10.3% of the variance in the dependent variable, which is CS. From the results shown in Table (7), it is apparent that CSM has a negative significant effect on CS, therefore, the second hypothesis, which states that: "*The CSM activities of a firm have a significant negative effect on Cost Stickiness"* is accepted. This result is consistent with Chen et al. (2008), Wan and Wang (2011), and Chen et al., (2012), that found that CSM and CS are negatively related.

Table (7) Linear Regression of the First Model

Dependent: Cost Stickiness	**Coef.**	**p-value**	**Sig**
Corporate Sustainability Management	-0.002	0.066	*
Firm Growth	-0.275	0.033	**
Audit Firm	0.118	0.159	
Constant	0.277	0.041	**

R-squared	0.103	Number of observations	256
*** p<0.01, ** p<0.05, * p<0.1			

Several reasons support the achieved results. First, implementing sustainability practices frequently necessitates businesses becoming more resource-efficient. This can lead to cost savings by saving energy and water and reducing waste. These efficiency improvements could help to reduce CS by aligning costs with actual resource usage. The effect of applying sustainability practices on cost reduction is in the long run. Second, Egyptian companies are frequently pushed by sustainability to adopt new technologies and innovative practices. Cost savings can be realized through improved processes, reduced waste, and the use of renewable resources. These cost-cutting innovations can help businesses reduce CS by allowing them to quickly adjust their cost structures in response to changing market conditions.

Results of the Relation between Corporate Sustainability Management and Earnings Management

The third model examines the impact of CSM on EM using the following multiple regression model :

$$\mathbf{EM = \beta0 + \beta1\ CSM + \beta2\ SIZE + \beta3\ ROA + \beta4\ LEV + \beta5\ GROW + \beta6\ AUDIT + \varepsilon}$$

Table (8) shows that the coefficient of determination ($\boldsymbol{R}^2$) is 9.2%. This means that the independent variables included in the research model explain around 9.2% of the variance in the dependent variable, which is EM. From the results shown in Table (8), it is clear that the CSM has a positive significant effect on EM, therefore, the third hypothesis states that "*The Corporate Sustainability Management activities of a firm have a significant positive relationship with Earnings Management"* is accepted. The finding is in line with Chih et al. (2008), Prior et al. (2008), Gargouri et al. (2010) and Pasko et al. (2021) that found a positive association between CSM and EM. The reasons for this positive association between CSM and EM in the Egyptian listed companies could be due to the increasing efforts exerted by the Egyptian government and regulatory bodies that emphasize sustainability and impose stricter regulations on businesses to reduce their environmental impacts. Compliance with such regulations frequently necessitates substantial investments in sustainable practices. These investments can have an impact on accrual EM as they affect the timing and recognition of costs and revenues. Companies may be incentivized to manage their accruals to offset the costs of sustainability initiatives and to comply with regulations while meeting desired financial performance targets. Additionally, Egyptian companies may manage earnings by applying sustainability to receive tax benefits, grants, or other rewards and consequently increase earnings.

Table (8) Linear Regression of the First Model

Dependent: Earnings Management	**Coef.**	**p-value**	**Sig**
Corporate Sustainability Management	0.001	0.088	*
Firm Size	-0.013	0.001	***
Return On Assets	0.178	0.018	**
Financial Leverage	0.006	0.036	**
Firm Growth	-0.004	0.712	
Audit Firm	0.017	0.025	**
Constant	0.251	0.002	***
R-squared 0.092	Number of observations		256
*** $p<0.01$, ** $p<0.05$, * $p<0.1$			

Moreover, Egyptian investors, particularly socially responsible investors, are increasingly interested in investing in companies that demonstrate good environmental, social and governance practices. Therefore, companies manage earnings indirectly by doing more sustainability activities to attract more investors and have easier access to capital markets. This can lead to higher earnings through reduced costs of capital and increased investments.

Results of the Moderating Effect of Corporate Sustainability Management on the association between Cost Stickiness and Earnings Management

The fourth model examines the moderating impact of CSM on the relationship between CS and EM using the following multiple regression model:

$$\mathbf{EM = \beta0 + \beta1\ CS + \beta2\ CSM + \beta3\ CS \times CSM + \beta4\ SIZE + \beta5\ ROA + \beta6\ LEV + \beta7\ GROW + \beta8\ AUDIT + \varepsilon}$$

Table (9) shows that the coefficient of determination ($\boldsymbol{R}^2$) is 9.5%. This means that the independent variables included in the research model explain around 9.5% of the variance in the dependent variable, which is EM. From the results shown in Table (9), it is clear that the interaction of CS and CSM, that represents the moderating effect of CSM on the relationship between CS and EM has a negative significant moderating role. Therefore, the fourth hypothesis which states that "*The Corporate Sustainability Management activities of a firm have a significant moderating role in the relationship between Cost Stickiness and Earnings Management"* is accepted.

Table (9) Linear Regression of the First Model

Dependent: Earnings Management	**Coef.**	**p-value**	**Sig**
Cost Stickiness	0.063	0.004	***
Corporate Sustainability Management	0.001	0.089	*
CS x CSM	-0.001	0.004	***
Firm Size	-0.013	0.001	***
Return On Assets	0.177	0.019	**
Financial Leverage	0.006	0.045	**
Firm Growth	-0.003	0.806	
Audit Firm	0.017	0.023	**
Constant	0.242	0.004	***
R-squared 0.095	Number of observations		256
*** $p<0.01$, ** $p<0.05$, * $p<0.1$			

The moderating role of CSM in the relationship between CS and EM in the Egyptian firms exist for several reasons. First, companies that use sustainable practices prioritize long-term goals, so when costs increase due to investment in CSR activities, managers will not be pressed to engage in EM. This long-term perspective can help to mitigate the desire to engage in EM, which is typically motivated by short-term financial targets. Second, identifying and managing environmental and social risks is a common component of sustainability practices. Companies can reduce the likelihood of unexpected costs and negative financial consequences by proactively addressing these risks. Because companies are less likely to manipulate financial results to offset unanticipated costs or mitigate negative consequences, this risk management approach can reduce the need for EM.

Conclusion

The current study provides empirical evidence that enriches the accounting literature regarding the impact of CS on EM, the effect of CSM on CS, the direct impact of CSM on EM, and finally the moderating effect of CSM on the relationship between CS and EM. The main findings derived from this study are as follows: First, CS has a positive significant effect on EM. The findings are consistent with the literature and previous studies conducted in different countries. In the Egyptian context, asymmetric cost behaviors increase earnings volatility and thus restrict managers' capabilities to report smooth income streams. This implies that companies with stickier costs are more likely to manipulate earnings to meet their targets and, therefore, to be compensated.

Second, CSM has a negative significant effect on CS. The reason behind this is that cost savings could be realized through improved processes, reduced waste, and the use of renewable resources. Also, companies with strong governance will have a very low level of conflict of interest that could drive managers to prioritize their self-interest. The empire-building problem contributes to SG&A cost asymmetry, and CG mitigates cost asymmetry by preventing self-interest incentives and empire-building managers from overspending on SG&A costs.

Third, CSM has a positive significant effect on EM. This could be interpreted because the benefits of applying CSR exceed its costs. In other words, sustainability practices include several ways to increase revenues without any manipulations in the adoption of sustainability and without adopting sustainability to conceal the EM. Firms might perform more EM to present attractive numbers to their shareholders, but at the same time engage in more CSR activities to not get detected.

Fourth, the CSM moderates the relationship between CS and EM. Examining the long-term picture and the wider effects of business choices is a common component of CSM. Prioritizing sustainability can make a company more likely to concentrate on creating long-term value as opposed to manipulating short-term earnings. Businesses may lessen the pressure on managers to use short-term EM strategies, such as CS, by highlighting sustainable practices. In addition, CSM involves enhancing financial reporting transparency. More thorough and accurate reporting by businesses on their non-financial as well as financial performance might assist in reducing the need for EM techniques, particularly those that involve CS. With increased transparency into a company's activities, stakeholders such as investors, analysts, and regulatory agencies can pose a greater challenge to management seeking to manipulate earnings.

Moreover, CSM encourages moral conduct and good governance. EM strategies, including CS, are more likely to be discouraged and detected by a company that develops a strong governance framework and an ethical culture. Effective internal controls, independent boards, and well-defined policies are examples of strong governance practices that can establish a controlled atmosphere that deters unethical activity.

The study's findings would help in improving the financial statements accuracy of Egyptian publicly traded companies and in prohibiting EM practices since they affect the decision-makers. To reduce EM, Egyptian regulatory bodies could impose limits on the amount of loans a company can borrow relative to its assets because high levels of financial leverage can increase the risk of EM. In addition, regulators could encourage greater board independence through rules requiring a certain percentage of independent board members or by discouraging CEO duality.

In addition, managers should distinguish between high sticky costs and low sticky costs, and they should impose their cost management efforts on the less sticky costs. This distinction could be useful in establishing reasonable performance goals and assessing the effectiveness of various divisions or business units. Therefore, managers will engage in fewer EM practices, and this will be reflected in transparent financial reporting practices.

Limitations and Directions for Future Research

The results of the research findings should be considered with caution, taking into consideration the research's limitations. These limitations include:

1. The financial sector, including banks, was excluded from the sample because of the differences in their financial reporting environments compared to those of non-financial companies, leading to fundamentally different accrual activities that are unlikely to be adequately captured by models of typical accrual activities.

2. All firms with an ESG score of less than three years out of the five years in the sample are excluded. Additionally, Observations with no ESG score were excluded.

3. The Accrual-based EM is used to measure EM. However, there are other proxies to measure EM such as Real EM and earnings smoothing.

Considering the researchers' findings, the researchers believe that several areas could form the basis for future research. Future studies could consider other aspects of CS such as cost of goods sold and total costs, in examining the same relationships between the study variables. Further studies could re-examine the same relationships between the study variables using Real Earnings Management. Future studies could examine the impact of CS on EM using data from the Egyptian banking sector.

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