



Does Real Earnings Management changes according to Industry? Evidence from Egypt

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1. Introduction

Prior research has discussed real earnings management practices according to several themes such as R&D investment (e.g. Gunny,2005), performance (e.g. Leggett *et al.*,2009; Kumar *et al.*,2020), leverage (e.g. Zamri, *et al.*,2013), governance (e.g. Ge and Kim, 2014; Tabassum *et al.*,2015; Cheng *et al.*,2016), institutional ownership stability(e.g. Sakaki *et al.*,2017; AL-Duais *et al.*,2021; Siraji,2021), CFO and CEO reimbursement (e.g. Zhou *et al.*,2018), earnings quality (e.g. Li,2019),social responsibility reporting (e.g. Ghaleb *et al.*,2021), managerial ability (e.g. Oskouei *et al.*,2021), market value (e.g. Bansal, *et al.*,2021).However, the results of previous studies vary according to environment, cultural factors, regulations besides the differences concerning the scope and analysis. Moreover, to the best of knowledge the extant accounting research does not discuss the key differences among industries regarding the occurrence of real earnings management practices from emerging markets perspectives.

Accordingly, the research problem essence is to examine the key differences among industries of Egyptian Stock Exchange concerning the real earnings management practices. The research aims to clarify and describing the differences of real earnings practices among sectors of Egyptian Stock Exchange. The research contributes to the extant accounting literature by extending the notion of earnings management within different sectors of Egyptian Stock Exchange. Moreover, it provides empirical evidence from Egyptian context as an emerging market. Finally, the research provides crucial information for shareholders, stakeholders, financial analysts and related parties concerning the motivations of real earning management practices each sector.

The reminder of the research can be organized as follows. Section 2 presents the literature review and hypothesis development. Section 3 explains the research design and methodology. Section 4 demonstrates the results whereas conclusions, recommendations and further research are presented in section 5.

2. Literature review and Hypothesis development

Extant accounting literature includes several attempts to examine the existence of real earnings management besides its motivations and consequences. For instance, Gunny (2005) examined the consequences earnings management through different real activities such as decreasing intentionally investment in R&D and SG&A to raise income, timing of income recognition from the disposal of fixed assets and long term investments, and cutting prices to increase sales in the current period and /or overproducing to decrease COGS expense. The results are consistent with all real earnings management activities having a significantly adverse effect on operating performance.

Osma (2008) analyzed the role of independent directors on the research and development spending manipulation using a sample of companies in UK .The outcomes signpost that more independent boards limit the handling of R&D expenditure. The outcomes show that independent directors have sufficient methodological tools to create the opportunistic reductions in research and development.

Leggett *et al.* (2009) examined the earnings management through real activities to meet an earning's threshold. The results revealed that real earnings management negatively related to following period accounting measures especially return on assets and cash flows from operations.

Zamri, *et al.* (2013) examined the relationship between leverage and earnings management via real activities in Malaysia throughout the period 2006-2011.The results revealed that there was a significant adverse relationship between leverage and REM. Accordingly, leveraged companies have minor levels of earnings management via real activities.

Ge and Kim (2014) investigated the influence of board governance and takeover protection on earnings management through real activities such as sales management, overproduction, the anomalous decrease of research and development expenditures, and the anomalous decline of other optional expenses. The outcomes revealed that earnings management through real activities sales rises with superior board governance and drops with greater takeover protection.

Tabassum *et al.* (2015) examined whether managers manipulate earnings through real activities to comprehend good performance using data of companies listed in Karachi Stock Exchange during 2004–2011.The results referred that companies involved in earnings management through real activities especially sales to report greater earnings have inferior financial performance in future.

Cheng *et al.* (2016) examined the effect of internal governance on the levels of real earnings management in U.S companies. They found that the influence of internal governance is stronger for complex companies especially after SOX law. In the same view, Susanto *et al.* (2016) referred that financial reports are prepared according to accrual basis that opens the opportunity for earnings management regardless through accruals or real activities. Real earnings management is much more difficult to detect because it is done in the real activities of companies such as sales. Moreover, they examined the effect of corporate governance on real earnings management of companies listed in Indonesia Stock Exchange during 2011 to 2014. The outcomes showed that the audit committee meetings, board of directors, institutional ownership affect the real earnings management. Audit committee meetings cannot reduce real earnings management.

Sakaki *et al.* (2017) examined the association between institutional ownership stability and earnings management through real activities. The results showed that companies with further stable institutional ownership practice inferior real activities.. Generally, the results indicated those institutional ownership constraints the companies' real activities of earnings management.

Gao *et al.* (2017) examined the trade-off between real activities earnings management and accrual-based earnings management of Chinese listed companies to detect the model in which the manager could. They empirically investigated how managers choose between the two types of earnings management throughout the period 2008 to 2012. The results indicated that the level of real activities earnings management is higher for companies under inferior government intervention, companies with higher financial leverage and lower corporate governance. Otherwise, Companies in a less stringent legal environment, double-listed companies, and companies with higher growth prospects are more likely to involve in accrual-based earnings management. Companies in a less stringent legal environment, double-listed firms, and firms with higher growth prospects are more likely to engage in accrual-based earnings management.

Chouaibi *et al.* (2018) investigated the the influence of board director's characteristics on earnings management through real activities especially sales manipulation proxy that measured by the abnormal level of operating cash flows using data of 29 Tunisian-listed companies throughout the period 2009-2013. The results revealed that there was an adverse influence of board size, board independence, and board meetings on the sales manipulation. Moreover, the results concerning duality indicated that there was no relationship with the level of sales management. Accordingly, prior results conclude that the board of directors significantly impacts the sales management practices.

Zhou *et al.* (2018) investigated whether high CFO or CEO reimbursement intentionally practice earnings management in Chinese firms. The outcomes indicated that earnings management through accruals does not affect executive payment where earnings management through real activities increases the executive

payment. Moreover, the result revealed that the CEO force is the main factor of real earnings management.

Li (2019) investigated the influence of earnings management through real activities especially abnormal reduction in discretionary expenditures on earnings quality and earnings persistence. The outcomes indicated that real earnings management was negatively connected with earnings persistence. Generally, the outcomes proposed that earnings management through the abnormal decrease in discretionary expenditures is associated with earnings quality.

Srivastava (2019) investigated the presence of earnings management through real activities as an opportunistic action. The results concluded that real earnings management according to the difference amongst a company's costs in the industry and its peers. Moreover, the models of real earnings management ignores the competitive strategies between companies in the industry.

Azzam and Zalut (2020) examined the prevalence of real earnings management in light of the commitment of applying IFRS of listed companies of basic resources on the Egyptian Stock Exchange. They established an aggregate model for predicting real earnings management practices throughout the period 2013 – 2018. The results revealed that there was a decline of adjusted R^2 after implementing IFRS by 9.4%, 0.4%, 25.1%, 47.7%, and 9.4%, for the models of abnormal production costs, abnormal discretionary expenses, abnormal operating cash flows, and abnormal financing cash flows, and the proposed aggregate respectively.

Kumar et al. (2020) examined the effect of real earnings management on companies' performance in India using data of 108 non-financial firms within 21 industries during the period 2006 -2018. The outcomes indicated that Indian firms intentionally reduce discretionary expenses as a real method to manipulate their earnings.

AL-Duais *et al.* (2021) examined the role of ownership structure on real earnings management using data of companies on the Malaysian Stock Exchange throughout the period 2013–2016. The outcomes revealed that that family, foreign and institutional ownership has a confirmatory association with financial reporting quality. The conclusions indicated that some form of ownership significantly affects real earnings management.

Ghaleb *et al.*, (2021) have examined the connection between corporate social responsibility reporting, gender diversity and earnings management through real activities. They also investigated how the association between corporate social responsibility reporting and earnings management through real activities varies according to gender diversity on the Amman Stock Exchange during 2011–2016. The results display that corporate social responsibility reporting is significantly and negatively related with earnings management through real activities. Moreover, their results showed that gender moderates the relationship between corporate social responsibility reporting and earnings management through real activities.

Oskouei *et al.* (2021) examined the role of managerial ability in earnings management throughout real activities during financial crisis. The results showed that the managers with lower ability take higher usage of real activities to manage earnings. The results also indicate that managerial ability and financial crisis have significant and adverse influence on real earnings management.

Bansal, *et al.* (2021) investigated the impact of real earnings management on the stock return considering the moderating role of market effect, size effect, value effect and momentum effect in India during the period 2000-2009 .

Amin and Cumming (2021) investigated the role of blockholders in constraining earnings management through real activities. They examined the instruments used by blockholders to engage with the executives to manipulate earnings. The results showed that powerful family blockholders improve a league to handle the decisions to enhance real earnings management.

Chowdhury and Eliwa (2021) examined the influence of audit quality on earnings management throughout activities during the period 2005-2018. The results indicated that the existence of Big 4 auditors is significantly and positively related with greater levels of sales and discretionary expenses manipulation.

Alkebeese, *et al.* (2021) have examined the relationship between executives' enticements and earnings management especially earnings management through real activities during the the period from 2009 to 2017 .The results revealed that CEOs' and CFOs' cash reimbursement is significantly related to earnings management through real activities. Moreover, their results indicated that the CFO's cash payment has a more significant effect on real earnings management than the CEO's cash payment signifying that the CFO's accounting aptitude and financial knowledge reinforces the chance that affect the quality of financial reporting.

Liu *et al.* (2021) have examined the association between both real and accrual-based earnings management and firms' capital investment. The outcomes referred to an inverted relationship between earnings management and firms' investment and it indicated that ROE impacts managers' concerning real and accrual earnings management. Accordingly, it is noticeable that ROE may act as an important determinant in this relationship.

Huang *et al.* (2021) referred that earnings management is a technical method used by managers to manipulate earnings to hide the real performance of a company besides the characteristics of the board of directors influence the company performance. Their study investigated the influence of earnings management and board characteristics on company efficiency during the period 2009 to 2017. The outcomes indicated that earnings management has an insignificant influence on company efficiency. Moreover, more independent directors and a higher attendance rates dwindled company efficiency. They suggested that more female directors and could increase firm performance despite companies' earnings management practices.

Siraji (2021) examined the effect of family and managerial ownership on real earnings management in Sri Lanka using data throughout the period 2015-2020. The results indicated that family and managerial ownership negatively related with real earning management activities.

According to the discussion above, the research null hypothesis can be stated as follows.

H₀: There is no a significant difference among companies in sectors of the Egyptian Stock Exchange concerning real earnings management practices.

3. Research Design and Methodology

3.1 Sample and data collections

The sample includes companies listed in seven Egyptian sectors which are communication, foods, basic resources, real state, travel and leisure, personnel and home and chemicals .The research covers the period 2012-2020 with 180 observations according to the tree following criteria. First, Companies prepared its financial statements in Egyptian pound. Second, Financial accounting period started on January and ended on December. Third, Companies issued their financial statements continuously during the period.

3.2 Real earnings management measurement

Roychowdhury (2006) was the first who developed an empirical model to measure the extent of real activities earnings management. He concluded that managers use overproduction to report lower cost of goods sold, approve price discounts to temporarily increase sales, and reduce discretionary expenditures to develop reported margins.

Gao et al (2017) indicated that real activities earnings management is achieved through changing the actual operational activities in the company such as presenting much more cash discounts, reducing research and development expenditures, and overproduction. These practices of real activities of earnings management usually change company cash flows.

Extant accounting research includes several models to measure real activities of earnings management (Roychowdhury, 2006); Li and Zhang, 2010; Azzam and Zalut, 2020).The first model is related to production model that presented according to the following formula.

$$\left(\frac{PROD_{it}}{A_{it-1}} \right) = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{Sales_{it}}{A_{it-1}} \right) + \beta_3 \left(\frac{\Delta Sales_{it}}{A_{it-1}} \right) + \beta_4 \left(\frac{\Delta Sales_{it-1}}{A_{it-1}} \right) + \varepsilon_{it}$$

Where:

$PROD_{it}$: refers to the production costs for company I during the period t.

A_{it-1} : refers to the assets for company i during the period t-1.

$Sales_{it}$: refers to the sales of company i during the period t.

- $\Delta Sales_{it}$: refers to the change of sales of company I during the current period t.
- $\Delta Sales_{it-1}$: refers to the change of sales of company i during the previous period t-1
- ε_{it} : refers to residual of the model that present abnormal production costs.

The second model is related to discretionary expenses as a method of real activities of earnings management and this model can be stated as follows (Al – Amri *et al.*, 2017):

$$\left(\frac{DIS - EXP_{it}}{A_{it-1}} \right) = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{Sales_{it-1}}{A_{it-1}} \right) + \varepsilon_{it}$$

Where:

- $DIS - EXP$: refers to the discretionary expenses measured by sales expenses plus R&D expenditure.
- A_{it-1} : refers to the assets for company i during the period t-1.
- $\Delta Sales_{it-1}$: refers to the change of sales of company i during the previous period t-1
- ε_{it} : refers to residual of the model.

The third model is related to cash flow from operations as a method of real activities of earnings management and this model can be presented as follows.

$$\left(\frac{CFO_{it}}{A_{it-1}} \right) = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{Sales_{it}}{A_{it-1}} \right) + \beta_3 \left(\frac{\Delta Sales_{it}}{A_{it-1}} \right) + \varepsilon_{it}$$

- CFO_{it} : refers to cash flow from operations for company i during the period t.
- A_{it-1} : refers to the assets for company i during the period t-1.
- $Sales_{it}$: refers to the sales of company i during the period t.
- $\Delta Sales_{it}$: refers to the change of sales of company I during the current period t.
- ε_{it} : refers to residual of the model.

The fourth model is considered to measure real earnings management throughout cash flow from investment activities and this model is presented as follows (Azzam and Zalat,2020).

$$\left(\frac{CFI_{it}}{A_{it-1}} \right) = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{Sales_{it}}{A_{it-1}} \right) + \beta_3 \left(\frac{\Delta Sales_{it}}{A_{it-1}} \right) + \varepsilon_{it}$$

Where:

- CFI_{it} : refers to cash flow from investments for company i during the period t.
 A_{it-1} : refers to the assets for company i during the period t-1.
 $Sales_{it}$: refers to the sales of company i during the period t.
 $\Delta Sales_{it}$: refers to the change of sales of company I during the current period t.
 ε_{it} : refers to residual of the model.

Fifth model is considered to measure the real earnings management via cash flow from finance activities and this model is presented as follows (Azzam and Zalal,2020).

$$\left(\frac{CFF_{it}}{A_{it-1}} \right) = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \left(\frac{Sales_{it}}{A_{it-1}} \right) + \beta_3 \left(\frac{\Delta Sales_{it}}{A_{it-1}} \right) + \varepsilon_{it}$$

Where:

- CFF_{it} : refers to cash flow from finance activities for company i during the period t.
 A_{it-1} : refers to the assets for company i during the period t-1.
 $Sales_{it}$: refers to the sales of company i during the period t.
 $\Delta Sales_{it}$: refers to the change of sales of company I during the current period t.
 ε_{it} : refers to residual of the model.

4. Results

4.1 Descriptive statistics

Table (1) shows the descriptive statistics of real earnings management practices of firms listed in Egyptian Stock Exchange considering that real earnings management practices were measured according to unstandardized residual of production model and absolute values of residuals of production model. The results indicate that the average of absolute values of residuals equals 0.1323 and the standard deviation equals 0.5362 for the sample during the period. The skewness and kurtosis coefficients are 12.509 and 163.307 respectively with standard deviation error equals 0.181 and 0.360 individually. As shown in table (1) the average of unstandardized residual of the sample equals 0.000 with standard deviation by 0.552

Moreover, the results revealed that the average of absolute values of residuals throughout the sectors from one to seven equals 0.1247, 0.0993, 0.0441, 0.0590, 0.5388, 0.1322 and 0.1045 respectively. In same context, the average of unstandardized residual through the sectors from one to seven equals -.07661, -.02069, -.00295, -.03858, .26200, -.07213 and .04682 individually.

Table (1) :Descriptive Statistics of real earnings managements

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Absolute values of residuals	180	7.12	.00	7.12	.1323	.53652	12.509	.181	163.307	.360
Unstandardized Residuals	180	7.9286	-.80759	7.12107	.00000	.55267	12.032	.181	156.239	.360

Absolute values of residuals	18	.79	.02	.81	.1274	.17698	3.704	.536	14.724	1.038
Unstandardized Residuals	18	.95094	-.80759	.14336	-.07661	.20562	-2.768-	.536	10.072	1.038
a. Sector = 1 Communication										

Absolute values of residuals	36	.53	.00	.53	.0993	.10272	2.653	.393	8.595	.768
Unstandardized Residuals	36	.74271	-.53018	.21252	-.02069	.14232	-1.712-	.393	3.895	.768
a. Sector = 2 Foods										

Absolute values of residuals	18	.11	.01	.12	.0441	.03439	1.288	.536	.739	1.038
Unstandardized Residuals	18	.17574	-.11631	.05944	-.00295	.05681	-1.153-	.536	.194	1.038
a. Sector = 3 Travel										

Followed- Table (1) :Descriptive Statistics of real earnings managements

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Absolute values of residuals	54	.26	.00	.26	.0590	.06266	1.709	.325	2.232	.639
Unstandardized Residuals	54	.31209	-.26097	.05112	-.03858	.07718	-1.213-	.325	.799	.639
a. Sector = 4 Real estate										

Absolute values of residuals	18	7.11	.01	7.12	.5388	1.64613	4.213	.536	17.823	1.038
Unstandardized Residuals	18	7.47687	-.35580	7.12107	.26200	1.71593	4.208	.536	17.795	1.038
a. Sector = 5 Chemical										

Absolute values of residuals	18	.63	.00	.63	.1322	.18908	2.250	.536	4.278	1.038
Unstandardized Residuals	18	.76941	-.63205	.13737	-.07213	.220775	-1.950-	.536	3.204	1.038
a. Sector = 6 Basic Resources										

Absolute values of residuals	18	.52	.00	.52	.1045	.12478	2.456	.536	6.977	1.038
Unstandardized Residuals	18	.78265	-.51903	.26362	.04682	.1575	-2.796-	.536	10.760	1.038
a. Sector = 7 Personnel and home										

Table (2) shows the results of Kruskal –Wallis test to examine the differences between listed firms regarding the real earnings management that measured according to the unstandardized residual of regression and absolute values of residuals. As shown in the table the results refer that the significance value equals 0.000 and this indicate that there is a significant difference among listed firms in the Egyptian Stock Exchange. Accordingly, the fifth hypothesis is accepted.

	Sector	N	Mean Rank	Sig.
Absolute values of residuals	Communication	18	110.44	,000
	Foods	36	100.81	
	Leisure and travel	18	64.22	
	Real estate	54	69.94	
	Chemical	18	128.61	
	Basic Resources	18	93.94	
	Personnel and home	18	96.33	
	Total	180		
Unstandardized Residuals	Communication	18	76.06	,000
	Foods	36	103.64	
	Leisure and travel	18	100.11	
	Real estate	54	80.13	
	Chemical	18	50.78	
	Basic Resources	18	92.72	
	Personnel and home	18	137.67	
	Total	180		

5. Conclusions

The research aims to examine the differences among listed companies in the Egyptian Stock Exchange concerning real earnings management practices through the period 2012-2020. The sample includes 180 observations within seven industries which are Communication, Foods, Travel, Real estate, Chemical, Basic Resources and Personnel and home during the period. Real earning management was measured according to the absolute values of residuals and unstandardized residuals that derived from the regression model of production costs.

The results revealed that there is a significant differences among companies listed in different sectors in the Egyptian Stock Exchange concerning the prevalence of real earnings management practices within these sectors. According to the results of absolute values of residuals the highest average appeared in companies listed in the sector of chemicals by 0.5388 whereas the lowest average noticed in the companies listed in the sector of leisure time and travel by 0.0441. In the same context, the biggest average of unstandardized residuals was noticed in the companies listed in the sector of chemicals by 0.26200 and the smallest average was appeared in companies listed in the sector of leisure and travel by -.00295.

Practical implications can be derived from this study as it provides empirical evidence from Egyptian context regarding the motivations of real earnings management practices. Further research can discuss the impact of managerial ability on the possibility of real earnings management prevalence in Egyptian listed companies or another emerging market. Moreover, further research may examine the relationship between real earnings management and financial distress.

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