

REAL EARNINGS MANAGEMENT UNDER COMPANY LIFE CYCLE: EVIDENCE FROM EGYPTIAN PHARMACEUTICAL MANUFACTURING COMPANIES

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***Abstract** This study investigates the dynamics of real earnings management (REM) practices based to both an abnormal decrease in spending on research and development, an abnormal decrease in spending on selling, general and administrative expenses, and an abnormal decrease in cost of goods sold due to overproduction. within the context of the company life cycle based to cash flow components. the study examines the extent to which Egyptian pharmaceutical companies engage in REM and whether the patterns of earnings management vary across different stages of the company life cycle. By employing a comprehensive dataset for seven companies spanning from 2001 to 2022; the study contributes to the literature by shedding light on the specific dynamics of REM in a unique industry and geographic context. Our findings reveal nuanced patterns of REM practices, providing valuable insights for regulators, investors, and policymakers aiming to ensure transparency and accountability in financial reporting practices within the Egyptian exchange. the Company's life cycle under company size and financial leverage, contributes to 72% of the variation in real earnings management in Egyptian pharmaceutical manufacturing sector according to cross-sectional analysis. On other hand the study found that the company's life cycle contributes to 41.4% of the variation in real earnings management in Egyptian pharmaceutical manufacturing sector without under company size and financial leverage according regression analysis.*

Keyword: Real Earnings Management, Company Life Cycle, Egyptian Pharmaceutical Industry, Financial Reporting.

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Introduction

Real earnings management, often contrasted with accrual-based earnings management, represents a set of tactics employed by companies to influence their reported financial performance through actual business operations and transactions. Unlike accrual-based earnings management, which primarily manipulates accounting estimates and provisions, real earnings management involves tangible actions that can impact a firm's cash flows and economic reality (Choi et al., 2022; Enomoto et al., 2015; Sohn, 2016).

Graham et al. (2005) A survey of financial executives revealed that around 80% of executives would "consider undertaking earnings-generating actions, provided that they comply with Generally Accepted Accounting Principles (GAAP) and do not entail excessive personal sacrifices." In accordance with this, Roychowdhury (2006) Establishes metrics for various forms of real-activity-based earnings management and provides evidence that firms employing such practises avoid reporting losses. Gunny (2010) Future operating performance exhibits a positive correlation with companies that employ real-activity-based earnings management to evade reporting losses. This finding indicates that the practise of real-activity-based earnings management does not constitute exploitation. Despite this, Cohen and Zarowin (2010) establish a negative correlation between real-activity-based earnings management and the future operating performance of companies that have issued seasoned equity offerings; this indicates that real-activity-based earnings management is probably a strategic manoeuvre. By conducting a comprehensive analysis of real-activity-based earnings management at each stage of a company's life cycle, we aim to ascertain whether or not it is opportunistic.

The stages of a company's life cycle are introduction, growth, maturity, and decline (see Dickinson, 2011; Drake, 2015). Spence (1977, 1979, 1981) elucidates the operations of corporations at every phase. We contend that companies in the introduction stage are improbable to employ real-activities-based earnings management as a means of evading loss reporting. This is because they are unlikely to possess significant discretionary spending authority to implement discretionary reductions in innovation and marketing expenditures. From the demand side, capital providers are expected to anticipate losses from companies during their introductory phase, also known as the burn rate. This expectation is expected to diminish the motivation for companies to engage in earnings management based on actual activities in order to meet earnings benchmarks.

On the contrary, organisations in the growth and mature phases are more likely to possess the capacity and incentive to partake in earnings

management based on actual activities as a means to satisfy earnings benchmarks. Hence, the study posits the hypothesis that firms in their nascent or mature stages are more likely to employ real-activity-based earnings management as a means to evade disclosing losses, while firms in their expansion and maturity stages are more likely to engage in such practises in order to meet earnings benchmarks. Additionally, the study posits the hypothesis that future operating performance will be positively (negatively) influenced by companies that employ real-activity-based earnings management to evade reporting losses, Assuming that organisations in the expansion and maturity phases exercise prudent management in curtailing non-essential expenditures.

The study can formulate the research gap in defining a role of company's life cycle real-on activity-based earnings management in Egypt as one of emerging markets. Is there a similarity to this role as in Western markets?

On the basis of the descriptive analytical approach, through quantitative analysis of income and cash flow statements, the study investigates the phenomenon of real-activity based earnings management in the context of the Egyptian Exchange (EGX) and its association with the Company life cycle. Real-activity based earnings management involves the manipulation of operational activities to influence reported earnings, and understanding its dynamics within the context of a company's life cycle is crucial for both investors and regulators. This study examines the extent and nature of real-activity based earnings management across different stages of the Company life cycle in the EGX-listed companies.

The study's contribution that it covers accounting practices during the company's life cycle on the Egyptian Exchange, which supports investors' ability to effectively analyze the company's performance and their decisions in the long term.

Literature reviews

Company Life Cycle

The Company life cycle is a concept that describes the various stages a company goes through during its existence. Understanding the Company life cycle can help businesses and investors make strategic decisions and manage their resources effectively (Khuong et al., 2022).

The hypothesis of the Company life cycle may be traced back to writings in organisational science. The traditional Company life cycle model holds that businesses undergo predictable transitions in strategy, organisational structure, and operational focus as they age from start-up to sunset (Grey and Ariss, 1985; Hasan et al. 2015; Jenkins et al., 2004; Miller

and Friesen, 1980; Miller and Friesen, 1984; O'Connor and Byrne, 2015; Owen and Yawson 2010; Quinn and Cameron, 1983).

Dickinson (2011) The life cycle of a company is hypothesised to comprise discrete phases that are influenced by external and internal factors, respectively. External factors include managerial ability, financial resources, and strategy selection. She establishes a correlation between earnings persistence and the Company's life cycle stages by utilising cash flow from operating, investing, and financing activities to construct a measure of the Company's life cycle stages. Furthermore, she illustrates that the correlation between profitability and efficiency metrics as well as prospective profitability differs throughout the various stages of the life cycle.

Drake (2015) utilises the life cycle stage proxy that the organisation has devised Dickinson (2011) and explains why disparities in book-tax treatment are associated with earnings persistence (see Hanlon, 2005) and future earnings expansion (Lev and Nissim, 2004). Drake (2015) According to this theoretical framework, it is proposed that companies undergo fundamentally distinct transactions at different phases of their life cycle, leading to distinct book-tax differences over the course of the life cycle. Consequently, she formulates a hypothesis and subsequently ascertains that the previous findings regarding book-tax differences, earnings persistence, and development are contingent upon the company's life cycle. Similarly, she hypothesises that the fundamental differences between the life cycle stages of a company provide companies with varying incentives and capabilities to engage in activity-based management; and therefore confirm Roychowdhury's (2006) Analysis of the opportunistic nature of real-activity-based earnings management utilising an extensive sample size.

Earnings Management

The dialectic of earnings management is one of the issues that has attracted the attention of academics and professionals, due to the direct repercussions of these practices on evaluating the performance of companies, in addition to the repercussions on investment and credit decisions.

According to Habib et al., (2022) which examines the determinants of REM, classifying them as follows: financial reporting, auditing, governance and controls, capital market incentives, and regulatory determinants; a theoretical framework for REM; and the development of REM measures. There are many motivations for real earnings management; that includes (A) Managerial Compensation: One of the primary motivations for real earnings management is to influence executive compensation. Executives often receive bonuses, stock options, or other performance-based incentives tied to financial metrics. By manipulating earnings, they can

increase their compensation (Rahman et al., 2013). (B) Debt Covenant Compliance: Companies with debt agreements often have to meet specific financial ratios or earnings thresholds. Real earnings management can help them avoid violating these covenants, which could lead to costly consequences like higher interest rates or debt acceleration. (C) Market Expectations: Managing earnings to meet or beat market expectations can help maintain or enhance a company's stock price and shareholder confidence. Companies may resort to real earnings management to avoid negative reactions from investors and analysts.

Prior research indicates that in order to achieve earnings objectives, managers reduce discretionary expenditure. Expenses associated with human resource development, marketing, and innovation must be classified as period costs and expensed in the period in which they are incurred, in accordance with accounting principles. These expenditures on innovation, marketing, and human resource development are likely to yield long-term rather than short-term returns. In practise, it will likely be several years before we can determine the long-term benefits of reducing expenditure on these items. As a result, corporations have the ability to strategically curtail expenditures on human resource development, marketing, and innovation in order to fulfil their earnings reporting obligations; this is known as "real-activity based earnings management."

Baber et al. (1991) Companies who avert losses or negative growth spend less on research and development. Dechow and Sloan (1991) demonstrate that Companies expend less on research and development during the final years of a CEO's tenure. Bens et al. (2002) To meet earnings benchmarks, Companies whose earnings per share are diluted by the exercise of stock options must reduce research and development and capital expenditures. Darrough and Rangan (2005) Find evidence that Companies reduce research and development expenditure prior to an initial public offering in order to increase the offer price. This body of evidence is consistent with Graham et al. (2005) The findings of their survey among financial executives indicate the following, "Robust evidence suggests that managers engage in tangible economic activities in order to preserve accounting appearances." Specifically, 80% of survey respondents indicate they would reduce discretionary expenditure on R&D, advertising, and maintenance to meet a revenue goal. Even if it meant a slight reduction in value, over half of respondents (55.3%) say they would postpone the launch of a new venture in order to meet a profit target.

In line with the preceding findings, Roychowdhury (2006) Real-activity based earnings management is defined as " Engaging in activities that deviate from customary business procedures, with the principal aim of

deceiving specific stakeholders into believing that earnings targets have been achieved as part of regular operations." As a result, he formulates the subsequent metrics for activities that depart from routine operations: (a) implementing strategies to boost sales by means of early recognition or lenient credit terms; (b) increasing production levels to decrease cost of goods sold; and (c) minimising general and administrative, research and development, and sales expenditures. He validates the measures by demonstrating a positive correlation between Companies that reduced expenditure relative to the normal benchmark and Companies that avoided reporting losses. Siriviriyakul (2014) The validity of the large sample real-activity-based earnings management measure is called into question created by Roychowdhury (2006). Consequently, By examining whether real-activity-based earnings management differs across life cycle stages, this study aims to bolster the validity of the large sample measure.

Cohen and Zarowin (2010) Show that the operating performance of Companies that engage in real-activity based earnings management is worse after a seasoned equity offering than the operating performance of Companies that did not engage in such earnings management. This demonstrates that earnings management based on actual activity is opportunistic and has tangible economic repercussions in the form of subsequent years of poor performance.

Bushee (1998) and Roychowdhury (2006) Illustrate the opportunistic nature of real-activity-based earnings management through indirect evidence: the involvement of institutional investors., especially those with a long-term perspective, divest their holdings in such companies.

According to Bansal et al., (2021), It has been observed that investors allocate distinct weights to various forms of REM, contingent upon their perception of the level of risk associated with each form. This information can be incorporated by managers into their immediate and long-term corporate planning.

According to the research conducted by Al-Shattarat (2022), when companies manipulate operating activities including sales, discretionary expenditures, and production costs in order to meet earnings benchmarks, it has a noteworthy positive impact on the subsequent operating performance of the companies and serves as an indicator of favourable future performance. Additionally, it was discovered in this research that companies whose operating activities are manipulated when they fail to meet earnings benchmarks suffer a subsequent deterioration in their operating performance.

But Chang et al., (2022) discovered that firms with greater union membership are more likely to engage in abnormal production as the

predominant form of real earnings management, as opposed to accrual-based earnings management.

Gunny (2010) Conducts an analysis of the correlation between earnings management based on actual performance and future results by constructing evidence-based arguments that support the claim that companies whose earnings benchmarks are met exhibit superior future performance. There is a positive correlation between companies that avoid reporting losses through real-activity-based earnings management and their future operating performance, suggesting that such practises are not opportunistic in nature (she provides supporting evidence). Therefore, While prior research indicates a positive correlation between reducing spending on innovation, marketing, and human resource development and achieving earnings targets,, the evidence is inconclusive as to whether these measures result in improved or degraded future performance. Consequently, The objective of this research endeavour is to examine the frequency of real-activity-based earnings management and the correlation between it and the subsequent performance of a company throughout its life cycle.

Derivation of the study hypothesis

In order to create market acceptability, Startups and introductory-stage businesses are likely to allocate significant resources towards innovation and marketing endeavours in proportion to their market share or sales (Bain, 1956; Caves, 1972; Scherer, 1970). These investments are regarded as expenditures and are included in the operating cash flow. In the growth stage, Companies attain a specific degree of market penetration and persist in making substantial investments in innovation, market branding, and equipment with the aim of augmenting their market share (Bain, 1956; Caves, 1972; Scherer, 1970). Companies in the mature stage focus on enhancing efficiency and generating profits/returns for capital providers (Selling and Stickney, 1989). Due to technological disruptions, Companies in the decline stage are likely to be in that state (Christensen, 2003), therefore engage in divestment and restructuring (Kimberly, 1980; Miller and Friesen, 1984; Quinn and Cameron, 1983).

Due to two factors, Companies in the introductory phase are unlikely to use real-activity based earnings management. First, In contrast to investments in market branding and innovation, demand-side investors are improbable to prioritise short-term earnings proportionally. Consequently, managers are unlikely to be under pressure to disclose profits.⁴ Therefore, Companies in their introductory phase may not find the criterion of avoiding losses relevant. Second, From the supply side, it is improbable that early-stage companies will reduce investing in marketing or innovation initiatives,

or overproducing to meet earnings targets. This is because the discretionary component of such expenditures might be negligible, if not nonexistent (see Knott and Posen, 2005). In accordance with this theory, Research indicates that entrepreneurial companies or those in their nascent stages function with relatively small capital investments. (for example see Castanias and Helfat, 2001). In general, marketing and innovation expenditures are essential for startups as they lay the groundwork for the organization's future opportunities. Therefore, it is unlikely that these companies have the discretion to reduce these expenditures.

Due to the need for external/internal financing to expand operations, To meet earnings benchmarks, growth-stage companies are likely to implement real-activity earnings management (Jovanovic, 1982). Moreover, during the growth phase, company founders are likely to exit, or cash out (Amit et al., 1998; Granlund and Taipaleenmaki, 2005). Similarly, Companies in the mature stage are likely to experience pressure from the capital market to meet earnings targets (Burgstahler and Dichev, 1997). These demand-side factors are expected to incentivize real-activity-based earnings management by managers of both mature and growth companies. On the supply side, Organisations in the growth and mature stages are inclined to possess a portfolio of projects, of which a portion may be less prospective, which grants them greater discretion to divest from unproductive marketing initiatives and innovations (Hamilton and Chow, 1993; Hitt et al., 1996; Hoskisson and Hitt, 1994); or postpone investment in new innovation and marketing (Hitt et al., 1996). Real-activity-based earnings management is likely to occur in mature and growth-stage Companies., given the incentive and discretion to meet earnings benchmarks. The following hypothesis is supported by these arguments.

Importantly, Real-activity-based earnings management for declining companies has not been hypothesised. Companies in the decline phase are unlikely to have the discretion to manage actual activities in order to control reported earnings. In response to emerging disruptive technologies, these corporations undertake a process of repositioning through divestment and restructuring (see Christensen, 2003). Therefore, Companies in the decline stage are unlikely to be able to reduce expenditure on innovation and marketing (for example, see Sudarsanam and Lai, 2001). Effectively, disinvestments and earnings management based on actual activity will be indistinguishable. Consequently, we abstain from postulating real-activity-based earnings management for declining companies.

On other hand; Gunny (2010) Considering the presence of real-activity-based earnings management during the mature and growth stages, we analyse subsequent performance to determine whether these cuts in discretionary spending are advantageous. On the one hand, we anticipate that companies whose future performance will be negatively correlated with the benchmark for earnings by merely avoiding losses through expenditure cuts, if these cuts are opportunistic (see for example Matsunaga and Park, 2001).

Alternatively, if these cuts are not opportunistic, We expect there to be a positive correlation between the future performance of a company and its ability to narrow losses through expenditure cuts in order to narrowly meet the earnings benchmark.

Bartov et al. (2002) illustrating the correlation between companies that merely meet earnings benchmarks and their subsequent operating performance, and proposing that benchmark meeting enhances a company's reputation and shields it from legal action. In addition, attaining such benchmarks demonstrates managerial competence. Consistent with the arguments presented later, Gunny (2010) Findings indicate that Future performance of a company is positively correlated with the number of earnings points it barely meets by preventing losses through expenditure reductions.

Due to their need to raise capital to support development, An incentive to achieve the earnings objective of loss avoidance is more probable for companies in the growth phase. While this argument parallels the Cohen and Zarowin's (2010) The life cycle stage serves as an ex ante metric for assessing the likelihood of capital requirements within the framework of real-activity-based earnings management.

The study hypothesis can be formulated in the form of the null hypothesis as follows:

There is not significant effect of Company's life cycle on the real earnings management under company size and financial leverage.

Study variables

The study includes three types of variables: the dependent variable, which is Real Earnings Management (REM) actual, versus the independent variable, the Company life cycle, while the third variables are the supervisory variables. According to Gunny (2010) that Real-activity based earnings management, RM, is measured as the sum of the following components: (a) an abnormal decrease in spending on research and development, RD; (b) an abnormal decrease in spending on selling, general and administrative expenses, SGA; and (c) an abnormal decrease in cost of

goods sold due to overproduction. The abnormal RD, SGA, and PROD levels are computed by subtracting the normal values using the following estimation models in Gunny (2010) Where (j) represent the company and (t) represents time.

$$RD_{j,t} = \beta_0 + \beta_1 [1/ASSET_{j,t-1}] + \beta_2 \text{Log}(\text{MKT_VAL}_{j,t}) + \beta_3 \text{TOBIN's_Q}_{j,t} + \beta_4 \text{INT}_{j,t} + \epsilon_{j,t} \quad \text{Equation no (1)}$$

$$SG_{j,t} = \beta_0 + \beta_1 [1/ASSET_{j,t-1}] + \beta_2 \text{Log}(\text{MKT_VAL}_{j,t}) + \beta_3 \text{TOBIN's_Q}_{j,t} + \beta_4 \text{INT}_{j,t} + \beta_5 \text{CH_SALE}_{j,t} + \beta_6 \text{NEG} \times \text{CH_SALE}_{j,t} + \epsilon_{j,t} \quad \text{Equation no (2)}$$

$$PROD_{j,t} = \beta_0 + \beta_1 [1/ASSET_{j,t-1}] + \beta_2 \text{Log}(\text{MKT_VAL}_{j,t}) + \beta_3 \text{TOBIN's_Q}_{j,t} + \beta_4 \text{SALE}_{j,t} + \beta_5 \text{CH_SALE}_{j,t} + \beta_6 \text{CH_SALE}_{j,t-1} + \epsilon_{j,t} \quad \text{Equation no (3)}$$

On other hand, Dickinson (2011) that use cash flow components to classify the Company's life cycle stages. Intro enterprises are classified as having negative cash flows from operating and investing activities and positive cash flows from financing activities. The growth phase Organisations that generate cash flow from investing activities while maintaining positive cash flow from operating and financing activities are considered companies. Mature companies are characterised by a positive cash flow from operating activities and a negative cash flow from investing and financing activities. All other businesses are classified as being in the Decline stage.

The study uses two control variables, which are the size of the Company and financial leverage. The following table displays these variables.

Table No. (1): Study variables

No.	Variables	Previous Study
1	dependent variable Real Earnings Management (REM)	Gunny (2010)
2	independent variable Company life cycle	Dickinson (2011)
3	control variable Company size	Kim and An (2018)
4	control variable financial leverage	Zamri et al (2013)

There is general acceptance of company size as a monitoring variable in many accounting studies, but the importance of financial leverage according to the results was Zamri et al (2013).

Zamri et al (2013) reveal a significant inverse relationship between financial leverage and Real Earnings Management (REM) activities. Real Earnings Management (REM) is less prevalent in leveraged firms, as shown by this finding. This lends credence to the notion that leverage restricts Real Earnings Management (REM) activities, which could have an impact on the integrity of accounting earnings.

Study data

The study included Egyptian pharmaceutical manufacturing companies during the period from 2001 to 2022, These companies must be listed at the Egyptian Exchange (EGX) as it included seven companies as shown in Table No. (2)

Table No. (2): Study sample

No.	COMPANY NAME	REUTERS	ISIN CODE	LISTING DATE	\$/LE
1	Alexandria Pharmaceuticals	AXPH.CA	EGS38341C011	27/02/1995	L.E
2	Arab Pharmaceuticals	ADCI.CA	EGS38321C013	06/02/1996	L.E
3	Cairo Pharmaceuticals	CPCI.CA	EGS38391C016	09/04/1996	L.E
4	Egyptian International Pharmaceuticals (Eipico)	PHAR.CA	EGS38081C013	27/09/1995	L.E
5	El-Nile Co. for Pharmaceuticals and Chemical Industries	NIPH.CA	EGS38331C012	27/02/1995	L.E
6	Glaxo Smith Kline	BIOC.CA	EGS38171C012	23/10/1985	L.E
7	Memphis Pharmaceuticals	MPCI.CA	EGS38351C010	27/09/1995	L.E

From the above, the number of observations is 700 observations obtained over a period of twenty years through seven pharmaceutical manufacturing companies in Egypt.

Data analysis and hypothesis testing

Testing the stability of time series

In the study, extreme data at the 2% level were excluded, which support the results of the statistical analysis. Then, the stability of the time series was tested by using the unit root test, where the data was stable at a significance level of 5%. In addition to the Tau-statistic, the Z-statistic criteria were at a significance level of less than 5%.

Study model

The study used cross-sectional analysis to investigate the impact of Company Life Cycle on Real Earnings Management. Function No. (1) expresses the directness relation Company Life Cycle on Real Earnings Management,

$$\text{Real Earnings Management} = \int \text{Company Life Cycle}$$

Function No.1

Equations (4) were drafted to test these hypotheses. Where (j) represent the company and (t) represents time. But REM represents Real Earnings Management as a dependent variable. On other hand CLC represents Company Life Cycle as a dependent variable

$$\text{REM}_{j,t} = \beta_0 + \beta_1 \text{CLC}_{j,t} + \beta_2 \text{CZ}_{j,t} + \beta_3 \text{FL}_{j,t} + \varepsilon_{j,t}$$

Equation No.(4)

That under CZ and FL represents company size and financial leverage as control variables, respectively. β_0 is a constant term addition to β_1 the population parameters but ε_{jt} represents the random error term (unobservable).

The study uses cash flow components to classify the Company's life cycle stages. Negative cash flows from investing and operating activities and positive cash flows from financing activities characterise intro enterprises (it takes the value of 1). The growth phase Organisations that have positive cash flow from operating and financing activities but negative cash flow from investing activities are considered to be companies (It takes the value 2). Mature companies are characterised by a positive cash flow from operating activities and a negative cash flow from investing and financing activities (It takes the value 3). All other businesses are classified as being in the Decline stage (It takes the value 4) according to Dickinson (2011).

Real-activity based earnings management, RM, is measured as the sum of the following components: (a) an abnormal decrease in spending on research and development, RD; (b) an abnormal decrease in spending on selling, general and administrative expenses, SGA; and (c) an abnormal decrease in cost of goods sold due to overproduction - see equations 1, 2, and 3- according to Gunny (2010).

Testing through cross-sectional units

The study hypothesis can be formulated in the form of the null hypothesis as follows:

There is not significant effect of Company's life cycle on the real earnings management under company size and financial leverage.

The following table displays the outputs of the inferential analysis that for Fixed-effects, Included 7 cross-sectional units, within Time-series length was 20 based on Robust (HAC) standard errors

According to Table No. 3- see appendix. the estimated value of the coefficient (t-ratio) for financial leverage was significant at the (1%) level but for Company's life cycle was significant at the (5%) level, addition to company size was significant at the (10%) level. this mean has an effect of Company's life cycle on the real earnings management under company size and financial leverage; according to Within R-squared, the Company's life cycle under company size and financial leverage, contributes to 72% of the variation in real earnings management as a dependent variable. Now, the study rejects the null hypothesis and accepts the following alternative hypothesis:

There is not significant effect of Company's life cycle on the real earnings management under company size and financial leverage.

Testing hierarchical regression analysis

The study carried out a confirmatory test through hierarchical regression analysis. Table (4) shows the importance of the model

Table No. 3: ANOVA outputs

ANOVA^c

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.500	1	12.500	99.284	.000 ^a
	Residual	17.374	138	.126		
	Total	29.874	139			
2	Regression	13.040	3	4.347	35.114	.000 ^b
	Residual	16.834	136	.124		
	Total	29.874	139			

a. Predictors: (Constant), CLC

b. Predictors: (Constant), CLC, FL, CZ

c. Dependent Variable: REM

the estimated value of the coefficient (F) was 99.284 for first model but was 35.114 for second model; the model as all was significant at the (1%) level. As for the significant of the model's parametric see table no. (4).

Table No. 4: the model's parametric

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.263	.067		-3.941	.000
	CLC	.296	.030	.647	9.964	.000
2	(Constant)	-.386	.634		-.608	.544
	CLC	.826	.586	1.808	1.411	.161
	CZ	-.166	.141	-1.514	-1.180	.240
	FL	-.271	.150	-.370	-1.814	.072

a. Dependent Variable: REM

According to Table (4), there is significant to the company's life cycle according to the first model, but when adding the control variables, it became insignificant. The study can explain this based to the weak efficiency of the Egyptian exchange (EGX), as it is one of the emerging markets without the level of efficiency.

On other hand the study found that the Company's life cycle contributes to 41.4% of the variation in real earnings management in Egyptian pharmaceutical manufacturing sector without under company size and financial leverage

Conclusion

Real earnings management (REM) refers to the manipulation of a company's operational activities and decisions to achieve specific financial reporting objectives, such as meeting earnings targets or managing perceptions about the firm's financial performance. The practice of REM can significantly impact financial statements and subsequently influence investors' decision-making processes. While previous studies have extensively examined REM in various industries and countries, there is a gap in the literature regarding the specific context of the Egyptian pharmaceutical manufacturing sector.

Egypt's pharmaceutical industry has experienced substantial growth and transformation over the years, contributing significantly to the country's economy. However, the complexities and competitive nature of the sector may create incentives for companies to engage in REM practices, raising concerns about the transparency and reliability of financial information. Understanding how REM varies across different stages of the company life

cycle in this industry is crucial for assessing the effectiveness of corporate governance mechanisms and regulatory frameworks.

Real earnings management is measured as the sum of the following components: (a) an abnormal decrease in spending on research and development, RD; (b) an abnormal decrease in spending on selling, general and administrative expenses, SGA; and (c) an abnormal decrease in cost of goods sold due to overproduction - see equations 1, 2, and 3- according to Gunny (2010) on one hand.

The study investigates Real earnings management throughout the life cycle of a company. The study classifies a company's life cycle based on its capital flow components according to Dickinson (2011) on other hand. Dickinson proposed a comprehensive company life cycle model that outlines the different stages a typical business may go through during its existence. This model typically includes the following phases: Introduction Stage (This phase involves the initial launch of the company, where the focus is primarily on product development and establishing a market presence. Companies in this stage often face challenges related to market acceptance and may experience slow initial growth.) Growth Stage (During this phase, the company experiences a significant increase in sales and market share. The business begins to solidify its position within the market and may explore expansion opportunities and new product development. The focus shifts towards building a strong customer base and maximizing market share.) Maturity Stage (At this point, the company has achieved a stable position within the market, with steady sales and a well-established customer base. During this phase, the focus is on maintaining market share, improving product quality, and exploring ways to differentiate the company's offerings from competitors), and Decline Stage (In this phase, the company experiences a decline in sales and market share, often due to factors such as changes in consumer preferences, increased competition, or technological advancements. Businesses in this stage may need to reevaluate their strategies, consider diversification or restructuring, and make necessary adjustments to remain competitive.)

This study aims to fill the gap in the literature by examining the patterns and determinants of REM within the context of the company life cycle in the Egyptian pharmaceutical manufacturing sector. By analyzing a comprehensive dataset from a sample of companies operating in this industry, the study seeks to provide empirical evidence on the prevalence of REM.

The literature on REM highlights various motives and strategies employed by firms to manage their earnings. Studies have identified different approaches to REM, including revenue recognition, discretionary

expenses, and production and investment-related manipulations. While some companies may engage in REM to signal their financial health and stability to investors, others may use it to conceal poor performance or meet market expectations, thereby enhancing their stock prices and overall market value.

Using a sample of Egyptian pharmaceutical companies, the study examines the extent to which these companies engage in REM and whether the patterns of earnings management vary across different stages of the company life cycle. By employing a comprehensive dataset for seven companies spanning from 2001 to 2022; the study contributes to the literature by shedding light on the specific dynamics of REM in a unique industry and geographic context. Our findings reveal nuanced patterns of REM practices, providing valuable insights for regulators, investors, and policymakers aiming to ensure transparency and accountability in financial reporting practices within the Egyptian exchange. The Company's life cycle under company size and financial leverage, contributes to 72% of the variation in real earnings management in Egyptian pharmaceutical manufacturing sector according to cross-sectional analysis. These results are consistent with Zamri et al (2013) .

But according to hierarchical regression analysis; the study found that the Company's life cycle contributes to 41.4% of the variation in real earnings management in Egyptian pharmaceutical manufacturing sector without under company size and financial leverage. but when adding the control variables (company size and financial leverage), it became insignificant. The study can explain this based to the weak efficiency of the Egyptian exchange (EGX), as it is one of the emerging markets without the level of efficiency.

Recommendations to investors

Investors in the Egyptian Exchange must have a careful follow-up of real earnings management practices, as there are more such practices in the Egyptian business environment, especially for companies that are experiencing stability.

Recommendations to mechanisms for minimizing Real earnings management activities:

Minimizing real earnings management (REM) activities is crucial for promoting transparency, accountability, and investor confidence in financial reporting. Various mechanisms can be implemented to discourage opportunistic behavior and ensure the integrity of reported earnings. Some effective strategies for minimizing REM activities include:

1. ***Strengthening Corporate Governance***: Enhance the effectiveness of corporate governance mechanisms, such as independent board oversight, transparent executive compensation policies, and stringent internal control systems. Encouraging the presence of independent directors and establishing diverse board committees can promote ethical decision-making and reduce the likelihood of earnings manipulation.
2. ***Promoting Regulatory Compliance***: Implement and enforce stringent regulatory frameworks that promote accurate and transparent financial reporting. Regular monitoring, strict enforcement of accounting standards, and penalties for non-compliance can deter firms from engaging in REM practices.
3. ***Enhancing Disclosure Requirements***: Require companies to provide comprehensive and transparent disclosures of their financial activities, including detailed explanations of accounting policies, methodologies, and significant estimates. Enhanced transparency in financial reporting can reduce the scope for opportunistic REM activities.
4. ***Encouraging Ethical Culture***: Foster an ethical organizational culture that emphasizes integrity, honesty, and accountability. Promote ethical training programs and establish clear codes of conduct to ensure that employees, managers, and executives understand the importance of ethical behavior in financial reporting.
5. ***Strengthening Auditing Practices***: Enhance the quality and independence of external auditors to ensure rigorous and unbiased financial statement audits. Encouraging the rotation of audit firms, promoting audit committee oversight, and implementing stringent auditing standards can help minimize the potential for collusion and fraudulent activities.
6. ***Educating Stakeholders***: Increase awareness among investors, analysts, and other stakeholders about the risks associated with REM and the importance of relying on transparent and reliable financial information. Educated stakeholders are better equipped to identify potential signs of earnings manipulation and make informed investment decisions.
7. ***Conducting Independent Reviews***: Establish mechanisms for independent reviews of financial statements and internal control systems to identify any irregularities or potential REM activities. Regular internal and external audits can provide an additional layer of assurance and reduce the likelihood of fraudulent financial reporting.

8. **Encouraging Whistleblowing:** Establish confidential reporting systems that encourage employees and stakeholders to report any suspected cases of earnings manipulation or unethical behavior. Protecting whistleblowers and providing appropriate channels for reporting can help uncover potential REM activities and prevent them from escalating.

By implementing these mechanisms, regulators, policymakers, and companies can work collaboratively to foster a financial reporting environment that prioritizes integrity, transparency, and long-term value creation, thereby minimizing the prevalence of REM activities.

Recommendations to future studies

Analyzing real earnings management (REM) throughout the life cycle of a company is a complex and dynamic area of research that requires comprehensive and multifaceted approaches. Future studies in this domain could focus on several key areas to deepen the understanding of REM practices and their implications across different stages of a company's life cycle. Some potential avenues for future research include:

- 1- **Longitudinal Case Studies:** Conduct in-depth longitudinal case studies of specific companies across various industries to track and analyze their REM practices from inception to maturity and potential decline. Such studies can provide valuable insights into the evolving nature of REM and the underlying motivations behind earnings management decisions at different stages of the company life cycle.
- 2- **Integrated Quantitative and Qualitative Approaches:** Combine quantitative analyses of financial data with qualitative insights from interviews, surveys, and focus groups to gain a comprehensive understanding of the motivations, strategies, and impacts of REM throughout the company life cycle. Integrating both quantitative and qualitative methodologies can provide a more holistic and nuanced understanding of the complexities and nuances of REM practices.
- 3- **Impact on Stakeholders:** Investigate the impact of REM on various stakeholders, including investors, creditors, employees, and regulatory bodies, throughout different stages of the company life cycle. Assess the implications of REM for stakeholder trust, market stability, and the overall financial ecosystem, considering the perspectives and interests of different stakeholders involved.
- 4- **Technological Advancements and REM:** Examine the role of technological advancements, such as artificial intelligence, big data analytics, and blockchain, in influencing REM practices at different stages

of the company life cycle. Investigate how technological innovations impact firms' earnings management strategies, transparency, and accountability in financial reporting.

5- Dynamic Regulatory Frameworks: Evaluate the effectiveness of evolving regulatory frameworks in curbing REM practices and promoting transparent financial reporting throughout the company life cycle. Assess the impact of regulatory changes on firms' REM behaviors and the effectiveness of regulatory interventions in fostering a culture of ethical financial reporting practices.

6- Investor Decision-making and Market Reactions: Investigate how investors' decision-making processes and market reactions are influenced by firms' REM practices at different stages of the company life cycle. Analyze the implications of REM for stock prices, investor confidence, and market volatility, considering the interplay between REM activities and investor perceptions of firm performance and value.

By exploring these avenues for future research, scholars can contribute to a more nuanced and comprehensive understanding of the dynamics of REM throughout the life cycle of a company, thereby informing policymakers, regulators, and practitioners in their efforts to promote transparency, integrity, and sustainable financial practices.

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Appendix (A): cross-sectional units analysis

Model 1: Fixed-effects, using 140 observations Included 7 cross-sectional units Time-series length = 20 Dependent variable: REM Robust (HAC) standard errors					
	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	0.523487	0.295096	1.774	0.1264	
CLC	0.557692	0.201505	2.768	0.0325	**
CZ	-0.0941011	0.0407678	-2.308	0.0604	*
FL	-0.690642	0.0600210	-11.51	<0.0001	***
dt_2	0.00000	2.52613e-09	-2.780e-007	1.0000	
dt_3	-0.105347	0.143427	-0.7345	0.4903	
dt_4	-0.879517	0.0211394	-41.61	<0.0001	***
dt_5	-0.972914	0.0209439	-46.45	<0.0001	***
dt_6	-1.06631	0.0247103	-43.15	<0.0001	***
dt_7	-1.13011	0.0357024	-31.65	<0.0001	***
dt_8	-1.12879	0.0372143	-30.33	<0.0001	***
dt_9	-0.549401	0.239345	-2.295	0.0615	*
dt_10	-0.0995149	0.0402059	-2.475	0.0481	**
dt_11	-0.0783861	0.0408674	-1.918	0.1035	
dt_12	-0.0349809	0.0519039	-0.6740	0.5254	
dt_13	-0.0260908	0.0618792	-0.4216	0.6880	
dt_14	-0.0250942	0.0573849	-0.4373	0.6772	
dt_15	-0.0281457	0.0568583	-0.4950	0.6382	
dt_16	-0.0271078	0.0588792	-0.4604	0.6614	
dt_17	-0.0260908	0.0618792	-0.4216	0.6880	
dt_18	-0.0250942	0.0573849	-0.4373	0.6772	
dt_19	-0.0281457	0.0568583	-0.4950	0.6382	
dt_20	-0.0226250	0.0591675	-0.3824	0.7154	
Mean dependent var	0.330622		S.D. dependent var	0.463594	
Sum squared resid	2.369172		S.E. of regression	0.146095	
LSDV R-squared	0.720694		Within R-squared	0.720130	
Log-likelihood	86.88573		Akaike criterion	-115.7715	
Schwarz criterion	-30.46383		Hannan-Quinn	-81.10499	
Rho	-0.005210		Durbin-Watson	1.997440	

Joint test on named regressors -
Test statistic: $F(3, 6) = 140.131$
with p-value = $P(F(3, 6) > 140.131) = 6.06277e-006$

Robust test for differing group intercepts -
Null hypothesis: The groups have a common intercept

Test statistic: Welch $F(6, 58.9) = 0.633534$
 with p-value = $P(F(6, 58.9) > 0.633534) = 0.702824$

Appendix (B): hierarchical regression analysis

Regression

Variables Entered/Removed^p

Model	Variables Entered	Variables Removed	Method
1	CLC ^a	.	Enter
2	FL, CZ ^a	.	Enter

a. All requested variables entered.

b. Dependent Variable: REM

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.647 ^a	.418	.414	.3548
2	.661 ^b	.436	.424	.3518

a. Predictors: (Constant), CLC

b. Predictors: (Constant), CLC, FL, CZ

ANOVA^c

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.500	1	12.500	99.284	.000 ^a
	Residual	17.374	138	.126		
	Total	29.874	139			
2	Regression	13.040	3	4.347	35.114	.000 ^b
	Residual	16.834	136	.124		
	Total	29.874	139			

a. Predictors: (Constant), CLC

b. Predictors: (Constant), CLC, FL, CZ

c. Dependent Variable: REM

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.263	.067		-3.941	.000
	CLC	.296	.030	.647	9.964	.000
2	(Constant)	-.386	.634		-.608	.544
	CLC	.826	.586	1.808	1.411	.161
	CZ	-.166	.141	-1.514	-1.180	.240
	FL	-.271	.150	-.370	-1.814	.072

a. Dependent Variable: REM

Excluded Variables^b

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	CZ	-1.323 ^a	-1.026	.307	-.087	2.534E-03
	FL	-.350 ^a	-1.720	.088	-.145	.100

a. Predictors in the Model: (Constant), CLC

b. Dependent Variable: REM

Table No. (3): cross-sectional units outputs

Model 1: Fixed-effects, using 140 observations Included 7 cross-sectional units Time-series = 20; Dependent variable: REM; Robust (HAC) standard errors					
	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
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Robust test for differing group intercepts -

Null hypothesis: The groups have a common intercept

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with $p\text{-value} = P(F(6, 58.9) > 0.633534) = 0.702824$