

## THE IMPACT OF ENTERPRISE RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE: CASE OF EGYPT AN EMPIRICAL STUDY

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### ABSTRACT

In recent years, enterprise risk management (ERM) has attracted a lot of attention. Because it affects their ability to survive and thrive as a business, the majority of firms emphasize how important risk management is. This study's major objective is to explore and conduct an empirical investigation into the variables that affect a company's decision to implement an Enterprise Risk Management (ERM) system in Egypt. The current study concentrates on a sample of three leading companies that are traded on the "Egyptian Stock Exchange." To examine the hypotheses, a quantitative research strategy and regression analysis are developed. The results suggest that indicators such as return on equity (ROE), return on assets (ROA), and price-to-sales (P/S) valuation ratio might be used to assess profitability. Corporate governance (being listed on the S&P/EGX ESG index) and membership in the industrial sector may be favorable factors for the implementation of ERM. However, there is a negative correlation between ERM involvement and earnings before interest, taxes, depreciation, and amortization, or EBITDA. Unlike previous studies, the current study showed that profitability and liquidity had a favorable influence on the corporation's decision to use an ERM system. The following constitutes the current paper's originality. It contributes to the body of research on the factors that influence the use of ERM. Additionally, a context that has not before been explored in the literature is used to evaluate these reasons in Egypt.

*Keywords: Enterprise risk management, return on asset, return on equity, financial performance.*

## 1. Introduction

In recent years, enterprise risk management (ERM) has attracted a lot of attention. The majority of businesses emphasize how crucial risk management is since it affects their ability to survive and thrive as a business. Risk management is therefore essential to fostering financial success. The enterprise risk management system is becoming more widely used. However, some businesses still need to consider putting ERM plans into place. Unlike traditional risk management, which involves businesses controlling concerns separately, enterprise risk management (ERM) enables businesses to manage risk as part of an enterprise-wide framework. The most extensively used enterprise risk management (ERM) framework globally was developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). For a company to have a reasonable level of confidence that it will accomplish its overall goal, the ERM process was created to identify every scenario that could potentially have an impact on an organization and manage risk down to an acceptable level. According to COSO, an organization's culture is its internal environment, which serves as a foundation for the development and sustainability of other components. Additionally, it serves as a crucial foundation for deciding the company's risk management strategy, which places a strong emphasis on personnel quality. If management does not hold the ERMS accountable and promote it, it will fail. Therefore, management must establish rules, objectives, and strategies for risk management and specify the acceptable risk level for the firm in order to create a positive internal atmosphere in their company. Additionally, the procedure must be in line with current practices. In order for management to effectively manage risk and ensure that their staff is aware of its significance, management must support it, take part in it, and communicate its processes.

### 1.1 Research Problem

The current study examines the impact of enterprise risk management (ERM) on Egyptian firms' performance. Also, the current study will provide evidence of the impact of ERM of financial performance measures; ROA, ROE, P/S, and EBITDA.

### 1.2 Research Purpose

Executive decisions about risk management that may or may not be in the best interests of a specific segment but that maximize for the company as a whole can be made by senior managers thanks to Enterprise Risk Management (ERM).

Corporations must not only determine which risks to actively manage (as other forms of risk management may require) and identify all the hazards they face, but ERM also compels them to take those actions. The main objective of ERM is to increase shareholder value. First, it does so through increasing capital efficiency by giving corporations an objective basis for resource allocation. It is able to accomplish this by spending less on immaterial risks and taking advantage of natural hedges.

Second, ERM can aid in making informed decisions by highlighting high-risk areas and recommending risk-based improvements. Thirdly, ERM will help build investor confidence by establishing a process which, through its activities, can stabilize financial results and demonstrate

to all stakeholders that the organization practices sound risk stewardship.

### **1.3 Research Questions**

Enterprise-wide Risk Management, or ERM, is predicated on the fundamental premise that all participants in the political, economic, and social spheres are aware of the risks that arise within the scope of their authority or when a risk to the organization manifests itself for the first time while they are in charge of it.

- 1-What is the impact of ERM on the financial performance of companies in Egypt?
- 2-Does ERM increase profitability
- 3-Does the implementation of ERM in Egypt and publicly traded companies positively affect their financial performance?

### **1.4 Research Scope**

Enterprise risk management ideas are described using a variety of terminology. For instance, the terms risk, threat, hazard, and peril are all used synonymously in the insurance industry, yet this frequently leads to serious confusion. Some nations and organizations have tried to create standards for enterprise risk management language in an effort to control this. The Australian/New Zealand Standard is an illustration of one of these standards. Similar criteria have also been produced in other nations like the UK, Canada, South Africa, and Egypt. IRM and the standards were also established by certain renowned risk management firms. This includes the International Standardization Organization, ALARM, and AIRMIC (ISO). It is important to note that risk is frequently viewed negatively by people, who associate it with a danger to a certain purpose or ambition. However, risk is the cornerstone of business and without it, there would be no

chance to gain money, which is typically seen as a reward for taking a risk. Enterprise risk management acknowledges that an integrative approach to risk management is frequently the best. There are many different types of business risk, and these types frequently change. For instance, laws change, competition grows, and technology become obsolete.

## 2. Literature Review and Theoretical Base

Enterprise Risk Management (ERM) has been a subject of interest in Egyptian corporate contexts. Research indicates that factors such as company size, profitability, liquidity, and corporate governance positively influence ERM adoption in Egyptian firms [5]. While ERM implementation shows a positive but insignificant relationship with firm value in both public and private sectors, private companies tend to prioritize ERM and risk disclosure more than their public counterparts [2]. The presence of a risk management committee is positively associated with firm performance and risk disclosure, with committee independence playing a significant role [2]. ERM implementation can help companies identify and assess various risk levels, enabling better decision-making for sustainability [10]. Enterprise Risk Management (ERM) has been shown to positively impact financial performance in various contexts. Studies on Islamic banks in the Gulf Cooperation Council countries found that ERM implementation improved short-term accounting performance but not long-term market performance [2]. [11] explores the key drivers behind the adoption of Enterprise Risk Management (ERM) within Egyptian firms, revealing that elements like company size, profitability, and the strength of corporate governance play a significant role in promoting ERM practices. Recent studies have examined the impact of Enterprise Risk Management (ERM) on firm performance across various contexts. ERM has been found to positively influence financial performance in Vietnam [9] and Sri Lanka's apparel industry [3]. Enterprise risk management has a positive impact on the financial, customer, internal processes, and learning/growth performance of private higher education institutions in Malaysia [12]. ERM enhances firm profitability and value, with advanced ERM implementation significantly improving firm performance [7]. Enterprise risk management and investment decisions, along with firm size, leverage, and managerial ownership, simultaneously affect firm value during the COVID-19 pandemic [6]. Global economic crises and complexities in the business environment have flawed the traditional risk management system. These have provided lessons to business leaders and enhanced the popularity of Enterprise Risk Management (ERM). ERM is the holistic approach to managing the overall risks of an organization to achieve its strategic goals.

Despite its relevance, the question about the appropriate measurement for ERM and the performance of ERM remains [7]. Enterprise risk management (ERM) is a process that manages all risks in an integrated, holistic fashion by controlling and coordinating any offsetting risks across the enterprise [4].

[8] ERM consists of risk governance and risk aggregation. These are sets of mechanisms that address the agency and information problems, respectively. Enterprise risk management (ERM) is an integrated approach to manage the risks of companies. Despite the wide adoption of ERM into companies' organizational processes, there are neither clear standards for ERM nor ground based theories about the outcome of it. Through interviews, observations, and a review of documents, [5] employ an interpretative qualitative research approach to collect data from insurance businesses in Egypt. They discovered that the institutionalization of ERM challenges the conventional workplace and organizational culture, resulting in heterogenic activities that alter the. companies' current control structure and employee resistance.

These studies collectively highlight the growing importance of ERM in Egyptian businesses and its potential impact on financial performance and risk management practices.

## **2.1 Fundamentals in Enterprise Risk Management**

Enterprise-wide Risk Management, or ERM, is predicated on the fundamental premise that all participants in the political, economic, and social spheres are aware of the risks that arise within the scope of their authority or when a risk to the organization manifests itself for the first time while they are in charge of it. The goal of management is to manage risk, but it is also a key tool that can have a big impact on and make it possible to attain ideal performance. Therefore, it is crucial that each professional has a set of effective tools at their disposal to manage risk. Since risk culture exists in every firm, whether intentionally or accidentally, it is crucial to build an efficient risk culture and include it into the intended corporate culture. The intended outcome from doing this will be to provide every manager the ability to manage and "own" risks. To increase the likelihood that the organization's objective will be realized, the key to "successful risk management" is to incorporate risk management competencies into the current organizational culture.

## **2.2 The Importance of Enterprise Risk Management**

**1-** The current financial crisis and the collapse of some of the biggest private firms in the world have highlighted the critical importance of enterprise risk management as a method for dealing with major risks and handling them within reasonable parameters. Even while enterprise risk management was first used in the commercial sector, public organizations, such as the United Nations, are becoming more and more interested in how to apply it to their operations.

**2-**Enterprise risk management is to empower the business to achieve its goals by ensuring its long-term viability. The creation of policies is a component of enterprise risk management. The link provides a common foundation for its execution and is cross-organizational. The subject of risk management has been discussed for a while now. Unlike earlier fragmented approaches in this subject, the notion that the management the entire organization is impacted by the risk management process. No organization or institution, whether private or public, can operate in a risk-free environment.

## **2.3 Objective of enterprise risk management**

What is currently known as enterprise risk management has long been used by organizations (ERM). It has also been normal practice to treat risks by transferring them through insurance or other financial instruments. Corporate risk management, however, has significantly increased in recent years and now encompasses a variety of hazards, including operational risk, reputational risk, and most recently, in addition to insurance and financial exposure hedging, there is strategic risk. These days, the risk management position is usually supervised by a senior executive holding the title of Chief Risk Officer (CRO). In rare firms, the Chief Financial Officer (CFO) also reports to the board of directors, although in most cases, he reports to the CEO or CFO.

The main objective of ERM is to increase shareholder value. First, it does so through increasing capital efficiency by giving corporations an objective basis for resource allocation. It is able to accomplish this by spending less on immaterial risks and taking advantage of natural hedges.

Second, ERM can aid in making informed decisions by highlighting high-risk areas and recommending risk-based improvements. Thirdly, by creating a procedure that can stabilize financial outcomes and show to all stakeholders that the firm maintains appropriate risk stewardship, ERM will assist increase investor confidence.

**Based on the literature review the following hypotheses examined:**

**For ROA**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROA**

**For ROE**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROE**

**For P/S**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by P/S**

**For EBTIDA**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by EBTIDA**

**Study strategy**

The quantitative research approach, which emphasizes quantification in data collection and analysis, was used in the current study. The current study hypotheses serve as the basis for the use of quantitative strategy.

**The current study hypothesis includes:**

**For ROA**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROA**

**And the ROA model examined is as follows:**

$$ROA_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROE_{it} + \beta_3 P/S_{it} + \beta_5 EBTIDA_{it} + e_{it}$$

**For ROE**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROE**

**And the ROE model examined is as follows:**

$$ROE_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROA_{it} + \beta_3 P/S_{it} + \beta_5 EBTIDA_{it} + e_{it}$$

**For P/S**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by P/S**

**And the P/S model examined is as follows:**

$$P/S_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_5 EBTIDA_{it} + e_{it}$$

**For EBTIDA**

**H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by EBTIDA**

**And the EBTIDA model examined is as follows:**

$$EBTIDA_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 P/S_{it} + e_{it}$$

- The following variables are measured in each of the study's models:
- The return on assets (**ROA**) of a company.
- The firm's return on equity is known as **ROE**.
- **ERM**: such as hiring a CRO, having a risk committee, or having a

risk management department. The underlying rationale behind this method is that, because ERM is an integrated and difficult process, organizations that implement it must have a specific person (e.g., a CRO) or a group of people (e.g., risk committee or risk department) in charge of it (Beasley et al., 2008). (Beasley et al., 2008).

The current study uses data from 3 firms to assess the influence of ERM on firm performance. According to Hanafy (2022), a total of 33 firms were found to have an ERM program.

The first regression model, which uses ROA as a dependent variable and ERM, ROE, P/S, and EBITDA as independent variables, is examined in order to analyze the impact of enterprise risk management on firms' performance.

The second part of the study looks at the second regression model, which has ERM, ROA, P/S, and EBITDA as independent variables and ROE as a dependent variable. **Finally**, the

study looks at the third regression model, which uses P/S as a dependent variable and ERM, ROA, ROE, and EBTIDA as independent variables (EBTIDA as a dependent variable and ERM, ROA, ROE as independent variables).

### 3. Research design

#### 3.1 Sample and Data Description

The study data span a 3-year period, from 2019 to 2021. The sample excludes banks and financial institutions traded on the Egyptian Stock Market because they are committed to different accounting standards and practices. Study data are collected from:

- 1- Egyptian Stock market.
- 2- Egyptian Financial Supervisory Authority.
- 3- Egypt for Information Dissemination – EGID.
- 4-

Table (1) shows a summary of the sample composition

**Table (1) Sample composition**

| N | Company                                      | Sector      |
|---|----------------------------------------------|-------------|
| 1 | Madinet Nasr For Housing & Development       | Real estate |
| 2 | Southern Valley for Cement                   | investment  |
| 3 | Heliopolis Company for Housing & Development | Real estate |

#### 3.2 Statistical Analysis and Empirical Results:

##### 3.2.1 Descriptive Statistics:

Descriptive statistics provide simple summaries of the sample and the observations are provided by descriptive statistics, which are also used to characterize the starting features of the data and provide background information on the study's data [13].

**Table (2): Descriptive Statistics**

| Variables | Minimum      | Maximum     | Mean        | Std. Deviation |
|-----------|--------------|-------------|-------------|----------------|
| ROA       | -0.217       | 0.253       | 0.0297      | 0.1299         |
| ROE       | -0.1248      | 0.584       | 0.177       | 0.203          |
| EBITDA    | -403198214   | 3850051769  | 334801592.7 | 1018037475     |
| P/S       | 0.0000000018 | 31.10834050 | 2.536727845 | 7.962600166    |
| ERM       | 0            | 1           | 0.60        | 0.507          |

The descriptive statistics of the variables used in the analysis are presented in table. ROA which is the return on assets -the first independent variable- has a mean value of (0.0297847187), which gives an impression of an acceptable level of ROA. Standard deviation (0.1299496449); the maximum value is ( -0.217), while the minimum value is (0.253).

ROE, which is the second first independent variable has a mean value of (0.177). Standard deviation is (0.203); maximum value is (0.584), while the minimum value is ( -0.1248).

EBITDA which is the second first independent variable has a mean value of (334801592.7). Standard deviation is (1018037475); maximum value is (385005176), while the minimum value is ( -403198214).

And finally, ERM which is the dependent variable has a mean value of (0.60). Standard deviation is (0.507); maximum value is (1), while the minimum value is (0).

### 3.2.2 Empirical results:

It is clear that the regression model as a whole is significant, which means that at least one of the independent variables has a significant effect on the dependent variable (Return on Assets ROA); where (F-value=7.6, P-value= 0.005)

In light of the previous point; which indicates the significance of F- test, the researchers tempted to use T-test to determine which of the independent variables have an effect on firm financial performance; where P-value respectively equals to (0.3, 0.1, 0.0, and 0.04).

### 3.3 Hypothesis tests

Based on the previous point, hypotheses results are as follow:

**For ROA; H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROA**

**Table (3) ROA Model**

| Model (1) ROA= $\beta_0+\beta_1\text{ERM}_{it} +\beta_2\text{ROE}_{it}+ \beta_3 \text{P/S}_{it}+ \beta_3\text{EBTIDA}_{it}+ e_{it}$ |              |               |                |            |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|----------------|------------|
| Independent Variables                                                                                                               | Significance | t-value       | Standard Error | B          |
| ROE                                                                                                                                 | 0.004        | 3.761         | 0.106          | 0.4        |
| EBITDA                                                                                                                              | 0.94         | -0.073        | 0.000          | -1.584E-12 |
| P/S                                                                                                                                 | 0.772        | -0.297        | 0.003          | -0.001     |
| ERM                                                                                                                                 | 0.024        | -2.664        | 0.047          | 1.125      |
| F                                                                                                                                   | Sig. = 0.004 | F-Value = 7.6 |                |            |
| Adjusted R Square                                                                                                                   | 0.655        |               |                |            |

Adjusted R<sup>2</sup> = (0.65%) which means that (65%) of the variation in the dependent variable is explained by the independent variables right side of the model, while (35%) is due to other random factors not included in the model.

Standard Error of Estimate; as it is shown in the figure shown below has a small value close to zero.

**For ROE; H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by ROE**

**Table (4) ROE Model**

| Model (2) $\text{ROE}_{it} = \beta_0 + \beta_1 \text{ERM}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{P/S}_{t+i} + \beta_4 \text{EBTIDA}_{it} + e_{it}$ |              |                 |                |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|----------------|-----------|
| Independent Variables                                                                                                                                      | Significance | t-value         | Standard Error | B         |
| ROA                                                                                                                                                        | 0.004        | 3.761           | 0.389          | 1.463     |
| EBITDA                                                                                                                                                     | 0.650        | 0.467           | 0.000          | 1.915E-11 |
| P/S                                                                                                                                                        | 0.672        | 0.436           | 0.005          | 0.002     |
| ERM                                                                                                                                                        | 0.017        | 1.478           | 0.107          | 1.157     |
| F                                                                                                                                                          | Sig. = 0.028 | F-Value = 4.281 |                |           |
| Adjusted R Square                                                                                                                                          | 0.484        |                 |                |           |

Adjusted R<sup>2</sup> = (0.48%) which means that (48%) of the variation in the dependent variable is explained by the independent variables right side of the model, while (52%) is due to other random factors not included in the model.

Standard Error of Estimate; as it is shown in the figure shown below has a small value close to zero.

**For P/S H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by P/S**

**Table (5) ROE Model**

| Model (3) $P/S_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{t+i} + \beta_4 EBTIDA_{it} + e_{it}$ |              |                 |                |           |
|-------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|----------------|-----------|
| Independent Variables                                                                                                   | Significance | t-value         | Standard Error | B         |
| ROA                                                                                                                     | 0.077        | -0.297          | 34.889         | 1.375     |
| EBITDA                                                                                                                  | 0.626        | -0.503          | 0.000          | -1.192E-9 |
| ROE                                                                                                                     | 0.067        | 0.436           | 18.157         | 1.212     |
| ERM                                                                                                                     | 0.024        | -1.247          | 6.342          | 1.908     |
| F                                                                                                                       | Sig. =0.006  | F-Value = 0.605 |                |           |
| Adjusted R Square                                                                                                       | 0.430        |                 |                |           |

Adjusted R<sup>2</sup> = (0.43%) which means that (43%) of the variation in the dependent variable is explained by the independent variables right side of the model, while (57%) is due to other random factors not included in the model. Standard Error of Estimate; as it is shown in the figure shown below has a small value close to zero

**For EBTIDA; H<sub>0</sub>: ERM implementation is positively related to firm financial performance measured by EBTIDA**

**Table (6) EBITDA Model**

| Model (4) $EBTIDA_{it} = \beta_0 + \beta_1ERM_{it} + \beta_2ROA_{it} + \beta_3ROE + \beta_4P/S_{t+i} + e_{it}$ |              |                 |                |             |
|----------------------------------------------------------------------------------------------------------------|--------------|-----------------|----------------|-------------|
| Independent Variables                                                                                          | Significance | t-value         | Standard Error | B           |
| ROA                                                                                                            | 0.943        | -0.073          | 4614649116     | -337398962  |
| P/S                                                                                                            | 0.626        | -0.503          | 41136619.87    | -20680741.3 |
| ROE                                                                                                            | 0.650        | 0.467           | 2388326864     | 1116497213  |
| ERM                                                                                                            | 0.050        | -0.777          | 872020286.9    | -677267494  |
| F                                                                                                              | Sig. = 0.002 | F-Value = 0.425 |                |             |
| Adjusted R Square                                                                                              | 0.510        |                 |                |             |

Adjusted  $R^2 = (0.51\%)$  which means that (51%) of the variation in the dependent variable is explained by the independent variables right side of the model, while (49%) is due to other random factors not included in the model.

Standard Error of Estimate; as it is shown in the figure shown below has a small value close to zero.

### 3.4 Hypothesis tests results

The overall results from the analysis indicate the following results

| Research Hypotheses                                                                                             | Result              |
|-----------------------------------------------------------------------------------------------------------------|---------------------|
| <b>H<sub>1</sub>: ERM implementation is related to firm financial performance measured by ROA</b>               | Accepted<br>(0.004) |
| <b>H<sub>2</sub>: ERM implementation is positively related to firm financial performance measured by ROE</b>    | Accepted<br>(0.28)  |
| <b>H<sub>3</sub>: ERM implementation is positively related to firm financial performance measured by P/S</b>    | Accepted<br>(0.006) |
| <b>H<sub>4</sub>: ERM implementation is positively related to firm financial performance measured by EBTIDA</b> | Accepted<br>(0.002) |

#### **4. Summary and Conclusion**

This study investigates the effect of ERM on firm performance for companies listed on the Egyptian stock exchange. Four multiple linear cross-sectional regression models were conducted using a sample of 3 companies from the year 2019 until 2021 in order to investigate the effect of ERM on firm performance- measured by ROA, ROE and, finally by EBITDA. Study results revealed that the ERM, (the independent variable), has significant effect on firms' financial performance-whether it was measured using ROA, ROE, P/S, and EBITDA.

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#### **Conflict of Interest**

This study is totally free from any conflict of interest.

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