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The Effect of Risk Management Assurance by The External Auditor on Investment Efficiency: A Survey Study

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Abstract

Purpose - This paper aims to investigate the effect of risk management assurance by the external auditor on investment efficiency.

Design/methodology/approach - The researcher conducts a survey study using 389 closed-ended questionnaires directed to the stakeholders and the auditors of the Egyptian listed firms.

Findings - The results of the survey study demonstrated a significant positive effect of risk management assurance on investment efficiency where risk management assurance significantly and negatively affects both overinvestment and underinvestment.

Originality - To the best of the researcher's knowledge, this study is the first to investigate the effect of risk management assurance on investment efficiency. Therefore, this study will contribute to the voluntary nonfinancial assurance literature and narrows the existing research gap regarding risk management assurance.

Keywords - Risk Disclosure; Risk Management Assurance; Investment Efficiency

1. Introduction

Risk disclosure (RD) is a vital non-financial disclosure that supports stakeholders' investment decisions (Nahar et al., 2016; Bozzolan & Miihkinen, 2021; Khan et al., 2021). It helps reduce information asymmetry and agency conflicts (Tan et al., 2017), supports investor protection (Ali & Konishi, 2005), and improves company reputation and access to finance (Linsley & Shrives, 2006).

However, concerns arise due to RD being mostly voluntary, narrative, and unaudited, making it prone to managerial manipulation (Bozzolan & Miihkinen, 2021). Without external assurance, such disclosures may mislead stakeholders (García-Osma & Guillamón-Saorín, 2011; Chen et al., 2017), as managers may under- or over-disclose risks to protect firm value or influence investor perception (Verrecchia, 2001; Elshandidy et al., 2013; Campbell et al., 2014). Agency theory supports the need for independent assurance to limit opportunistic behavior (Isiaka, 2019). Assurance improves credibility, enhances stakeholder confidence, and strengthens corporate governance (Gould, 2017; Quick & Gauch, 2021).

Despite the relevance of International Standard on Assurance Engagements (ISAE) 3000, risk management disclosures (RMD) in countries like Egypt remain largely unaudited (Ramadan, 2021; Al-Abadi et al., 2023), and RD often appear scattered across reports without a dedicated assurance report (Dobler, 2005).

Assurance of RD can reduce information asymmetry, limit managerial opportunism, and thus improve investment efficiency by preventing over- or underinvestment (Jensen, 1986; Biddle et al., 2009; Gao & Yu, 2020). Yet, no study has directly examined the effect of external assurance on investment efficiency in the context of RMD.

Accordingly, this study aims to fill this gap by examining how external assurance on RMD affects investment efficiency, contributing to the literature on voluntary nonfinancial assurance and investor decision-making.

2. Literature Review and Hypotheses Development

2.1 Risk disclosure and Investment Efficiency

Al-Hahi et al., (2017) found a significant negative relationship between market risk disclosure and both under- and over-investment, suggesting that disclosure improves investment efficiency by reducing information asymmetry, especially during economic downturns, Li et al., (2018) indicated that more frequent risk disclosure in annual reports enhances investment efficiency, particularly when the tone is positive and investment-related keywords are used, Smith (2018) argued that, contrary to expectations, risk disclosure increases information asymmetry and reduces liquidity, ultimately lowering investment efficiency, Mohammadi and Ebrahimi (2020) showed a positive and direct relationship between risk disclosure in financial statements and investment efficiency among Iranian firms, with firm size also playing a role, Firmansyah and Triastie (2020) concluded that while tax avoidance negatively affects investment efficiency, risk and CSR disclosures have no significant effect. Moreover, corporate governance failed to moderate these relationships effectively.

Based on these insights, the firs hypothesis is formulated as follows:

H1: There is a significant positive effect of risk disclosure on the investment efficiency.

2.2 Risk management assurance and Investment Efficiency

Considering that no studies have addressed the potential effect of risk management assurance by the external auditor on investment efficiency, to the best of the researcher knowledge, the researcher will fill this gap and elucidate the theory that support the relationship between risk management assurance and investment efficiency as follows:

Percy (1997) confirmed that assurance on nonfinancial disclosure is an integral part of corporate governance, Sarens and Beelde (2006) and Coetzee (2016) confirmed that risk management assurance by internal auditors is considered a cornerstone of sound governance

principles and provides guidance to internal auditing on its responsibilities in risk management, Steinmeier and Stich (2017) confirmed that sustainability assurance can complement other governance mechanisms, Quick and gauch (2021) indicated that risk management assurance is considered an essential element for strong corporate governance, Lois (2021).

Cheung and Chan (2004) also explained that sound corporate governance contributes in monitoring management decision making to ensure that it is in line with shareholder interests and motivating managerial behavior that increase shareholder value, Standard and Poor (2009) indicated that corporate governance system has played a positive role in constraining managerial opportunism and protecting investors' rights, Jin and Yu (2018) confirmed that corporate governance mitigates information asymmetry by enhancing the effectiveness of internal and external supervision of companies, thereby restricting opportunistic behavior by managers.

Watts and Zimmerman (1983) and Wallace (1987) indicated that independently audited information plays a relevant role in improving the credibility and quality of reported information and reducing the information asymmetry between shareholders and managers, Zahra and Pearce (1989) recognize the monitoring role of an external audit as mechanism to mitigates agency conflicts and control management opportunistic behaviors, Solomon (2007) claimed that the external audit represents a crucial element of a firm's internal control system and that it provides a check and balance system that helps shareholders to monitor and control the management's activities, Coram *et al*. (2009) confirmed that providing assurance on voluntary nonfinancial disclosures decreases uncertainty, enhances disclosure's informativeness and credibility and mitigates information asymmetry, (Edgely *et al*., 2010; Zamora *et al*., 2012) confirmed that professional assurance service about corporate disclosure of sustainability and non-financial information supports the company's reputation by preventing misleading information, improving the internal control systems and managing reputational risks, enhances investor confidence in the firm's management and positively affects investors decisions, thus attracting more debt and equity investors and allowing financially constrained companies to obtain more capital, Cheng *et al*. (2015) found that assurance on environmental, social, and governance reporting is perceived as a positive signal by investors thus increases their willingness to invest more, Steinmeier and Stich (2017) confirmed that sustainability assurance is used by investors in their decision-making because it enables them to more effectively monitor managers thus mitigating information asymmetry between managers and investors, Cuadrado-Ballesteros *et al*. (2017) confirmed that

assurance boosts information credibility regardless of whether the information is financial or non-financial, reduces information asymmetry, enhancing the credibility and accuracy of sustainability reporting and improving its value relevance and confirmed that assured sustainability reporting reduces the level of information asymmetry to a greater extent than non-assured reporting, positively impact investors decisions and reduces the external cost of capital.

García-Osma and Guillamón-Saorín (2011) and Chen *et al*. (2017) confirmed that the monitoring and disciplining role of governance mechanisms enhances the credibility of voluntary non-financial disclosure thus contributes to improving investment efficiency by facilitating and improving the control exerted over managers, limiting managerial opportunism, ensuring that management acts in the interest of investors and enhances investors' protection against expropriation by management in terms of promoting transparency and truth-telling.

García-Sánchez and García-Meca (2018) emphasized that enhancing and strengthen investor protection mechanisms contributes in solving underinvestment problem by reducing agency costs of monitoring and controlling the management behavior as well as encouraging investors to provide their money to companies, which in turn helps managers better accessing to more external financial resources, implementing profitable projects and thus, improving investment efficiency.

Bzeouich *et al*. (2019) find that firms with more effective governance have better information disclosure, less asymmetric information and fewer agency problems, leading to more efficient investment decisions.

Al-Jazzar (2020) confirmed that risk management assurance by external auditors enhances financial reports relevance which in turn improves financial reporting quality.

In accordance with the signaling theory, Badawy (2021) demonstrates that non-professional investors place a significant value on cybersecurity risk management assurance as they perceive such assurance as a signal of managers commitment and transparency which influences their perception and decisions, reduces information asymmetry and positively impact on investors' willingness to invest and their stock valuation.

Kashani and Shiri (2022) indicated that sound corporate governance can reduce agency conflict, information asymmetry, agency costs and information search costs and increase information transparency and allows investors to experience fewer investment errors, ensure that while a company's managers have the incentive to make their own profits, they attempt to

increase the interests of investors and the firm value and finally positively affects investment efficiency.

Jiang *et al*. (2023) proved that creating a separate risk management committee as an essential element of effective governance mechanism integrates the traditional governance mechanisms and is positively related to investment efficiency as risk management committee experience and knowledge in the field of risk management qualify them to be more capable to monitor agency problems such as free cash flow agency problems and restrict wasting companies' resources in losing projects when there is excess cash flows and thus reduce overinvestment as well as facilitating capital constraints and thus mitigating underinvestment, finally resulting in high investment efficiency.

Financial reporting quality is positively associated with investment efficiency by mitigating information asymmetry, adverse selection, ethical risks, improves liquidity and facilitating financing long - term and high - return investment projects Verrecchia (2001), Lambert et al. (2007), Chang et al. (2009), Biddle et al. (2009), Chen et al. (2011), Zhang et al. (2013), Boubaker et al. (2014), Hewitt et al. (2014), Houcine et al. (2022).

According to the literature review, the researcher hypothesizes that risk management assurance indirectly improves investment efficiency through the following aspects:

1) Governance Function: Risk management assurance serves as a proxy for corporate governance by enhancing oversight over managerial actions, aligning management behavior with shareholders' interests, limiting opportunistic behavior, and guiding investments toward value-creating projects, thereby reducing overinvestment.
2) Credibility and Transparency: Assurance improves the credibility of risk disclosures, reduces information asymmetry, and helps investors make informed decisions based on reliable risk information. This builds investor confidence, supports stock valuation, lowers the cost of capital, and enables firms to secure funding for profitable long-term projects, thus reducing underinvestment.

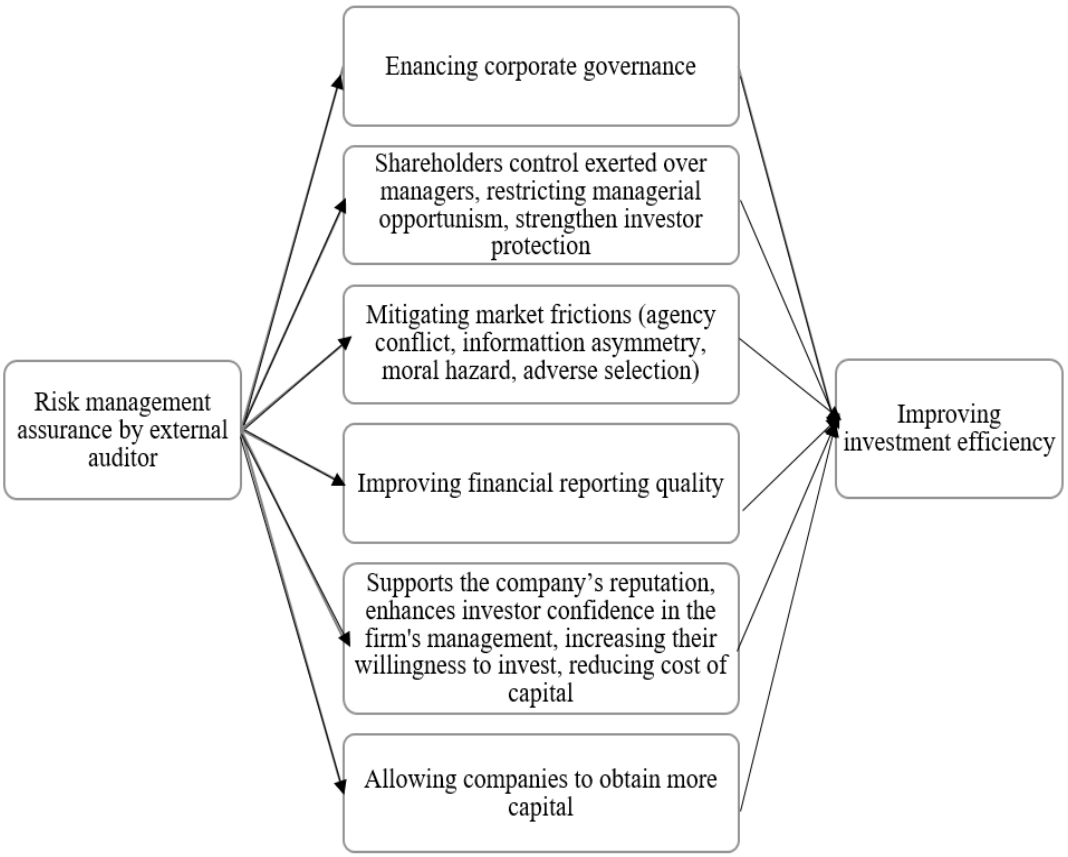

Figure No. (1): The impact of risk management assurance on investment efficiency

Source: prepared by the researcher

Given this theoretical explanation, the researcher formulate his hypotheses as follows:

H2: There is a significant positive effect of external auditor's assurance over risk management disclosure on investment efficiency.

This hypothesis is divided into two sub-hypotheses as follows:

H2.a There is a significant negative effect of external auditor's assurance over risk management disclosure on overinvestment.

H2.b There is a significant negative effect of external auditor's assurance over risk management disclosure on underinvestment.

3. Research Design

The researcher conducts two types of studies, the first is an archival study which is interested in the relationship between the risk disclosure and investment efficiency using a sample of 376 observation from Egyptian firms listed on EGX100 between 2017 and 2022. The second is a survey study interested in the relationship between the assurance on voluntary risk

management disclosure and investment efficiency using 389 closed-ended questionnaires directed to the stakeholders of the Egyptian listed firms.

3.1 The Archival Study

3.1.1 Variables Measurement

The archival study aims to test the effect of risk disclosure on the investment efficiency. The researcher can show the measurement tools of archival study variables as follow:

The independent variable: Risk Disclosure

Risk disclosures is measured by content analysis, dividing the number of actual risk disclosure items by the number of standard risk disclosure items, the researcher follows Abdallah *et al*. (2015) by using their index for corporate risk disclosure, because it include 45 types of risks that may be existed and applicable for all firms included in the EGX100 as shown in appendix A.

The dependent variable: Investment Efficiency

Richardson's (2006) model was used in this study. Measures of growth prospects, leverage, cash balance, firm age, firm size, stock return, industry-fixed effects, and annual fixed effects were among the investment factors. The residuals between total investment and expected investment were used to calculate unexpected investment which expresses either overinvestment or underinvestment .

$$I_t = \alpha + \beta_1 Q_{t-1} + \beta_2 Leverage_{t-1} + \beta_3 Cash_{t-1} + \beta_4 Age_{t-1} + \beta_5 Size_{t-1} + \beta_6 Stock\ Return_{t-1} + \beta_7 I_{t-1} + \sum Year\ Indicator + \sum Industry\ Indicator + \varepsilon_t \quad (1)$$

Where I_t is total investment expenditure computed as the sum of total capital expenditure ($CAPEX_t$), research and development expenditures (RD_t), and acquisitions expenditures ($Acquisition_t$) minus cash receipt from the sale of property, plant and equipment ($Sale\ PPE_t$) scaled by total assets at the beginning of period.

Q_{t-1} represents the preceding year's growth prospects as expressed by Tobin's Q, $Leverage_{t-1}$ is the previous year's financial leverage, expressed as the ratio of total debt to total assets, $Cash_{t-1}$ is the deflated balance of cash and short-term investments divided by total assets at the beginning of period, $Age_{t-1} +$ is the company's age since listing, $Size_{t-1}$ is the company size, given as a natural logarithm of total assets at the beginning of the year, $Stock\ Return_{t-1}$ is the rate of stock returns for the year preceding the investment year. The dummy variables are industry and year. Richardson (2006) classified corporate total investment into expected and

unexpected investment. Overinvestment and underinvestment are examples of inefficient investment.

OverINV is overinvestment, which signifies inefficient investment. It is determined as the difference between total investment and expected investment from the side of positive residuals, minus the bottom 25%.

UnderINV is the absolute value of the negative residuals between total investment and projected investment, minus the bottom 25%.

3.1.2 Population and Sample Size

The population of the archival study related to the Egyptian firms listed on EGX100. Consequently, the researcher depends on intended sample from these listed firms in the time period 2017-2022 in order to avoid the negative effects of inflation in the Egyptian market. By scanning the Egyptian stock market on Egypt, it is obvious that there are 71 listed firms in this time period after excluding the banking sector and insurance companies due to their special accounting nature. So, the final sample of the archival study is 426 firm year-observations in the predetermined time period (71 firms × 6 years), by excluding 38 observations omitted values and 12 observations extreme values the final sample will be 376 firm-year observations.

3.1.3 Design testing model

The archival study aims to examine the effect of risk disclosure on the investment efficiency. In this regard, the researcher can develop the testing model of H1 as follow:

$$\text{INV (OverINV and UnderINV)} = \beta 0 + \beta 1\ \text{RD} + \beta 2\ \text{Size} + \beta 3\ \text{Lev} + \beta 4\ \text{Tobin's Q} + \beta 5\ \text{Age} + \varepsilon \quad (2)$$

Where INV (OverINV and UnderINV) is the investment decisions otherwise over or under, RD stands for risk disclosure, Size is defined as the natural logarithm of total assets, Lev is defined as financial leverage, CAP stands for total capital expenditure multiplied by total assets, finally Tobin's Q can be measured by dividing market value on the book value.

3.1.4 Data Analysis and Results of the Archival Study

3.1.4.1 Descriptive Statistics

Table (1) shows the descriptive statistics for all research variables where the investment efficiency score is 0.000. In the other side, if Tobin's Q is greater than 1 this means that firms can create value, so in this research it is equal 192.375 so these firms can create value

successfully, moreover the mean of overinvestment is 0.078 and -0.093 for the underinvestment this result indicate that investment efficiency is so weak.

Variable	Obs	Mean	Std. Dev.	Min.	Max.
RD	376	0.385	0.159	0.086	0.612
INV	374	0.000	0.171	-1.542	1.405
Over-Invest	203	0.078	0.144	0.001	1.405
Under-Invest	171	-0.093	0.152	-1.542	0.000
Size	376	9.406	0.738	7.228	11.142
Lev	376	0.555	0.511	0.005	7.015
Tobin's Q	376	192.375	1268.753	0.089	17333.130
Age	376	19.614	8.450	2.000	38.000

Table (1): Summary statistics

3.1.4.2 Correlation Matrix

Panel A: Pairwise correlations for total sample						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) RD	1.000					
(2) INV	0.014	1.000				
(3) Size	-0.186*	0.000	1.000			
(4) LEV	0.039	0.000	0.187*	1.000		
(5) Tobin's Q	0.149*	0.000	-0.274*	-0.051	1.000	
(6) Age	-0.001	0.000	-0.145*	-0.070	0.091	1.000
Panel B: Pairwise correlations for OverINV						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) RD	1.000					
(2) INV	0.543*	1.000				
(3) Size	-0.184*	-0.029	1.000			
(4) LEV	0.027	-0.045	0.205*	1.000		
(5) TobinsQ	0.122	0.190*	-0.072	-0.041	1.000	
(6) Age	-0.019	-0.006	-0.106	-0.107	0.049	1.000
Panel C: Pairwise correlations for UnderINV						

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) RD	1.000					
(2) INV	-0.547*	1.000				
(3) Size	-0.202*	0.179*	1.000			
(4) LEV	0.079	0.032	0.221*	1.000		
(5) TobinsQ	0.176*	-0.119	-0.495*	-0.079	1.000	
(6) Age	0.030	-0.104	-0.170*	0.003	0.155*	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Table (2): Correlation Matrix

According to the results in table (2), panel A revealed a positive relationship between risk disclosure and total investment score, besides a significant negative relationship between size and risk disclosure, and significant positive relationship between the risk disclosure and Tobin's Q, these results indicate that increasing the risk disclosure lead to increasing in the investment score and Tobin's Q.

In another vein, panel B revealed that the relationship between overinvestment and risk disclosure is so strong and significant and positive, so the researcher concludes that increasing the risk disclosure increases the overinvestment and wasting the firm resources.

Finally, Panel C ensure a significant negative relationship between the risk disclosure and underinvestment, so the researcher concludes that increasing the risk disclosure decreases the underinvestment.

Furthermore, there was no strong correlation (all coefficients < 0.8) between the independent variables. As the correlation coefficients were relatively small, the researcher could consider that our model did not suffer from collinearity problems and the researcher will ensure this result by using variation inflation factor (VIF) analysis in the regression testing models.

3.1.4.3 Regression Results (effects of risk disclosure on the investment efficiency)

Based on equation (2), the first and second column of table 3 show the results of relationship between risk disclosure and overinvestment depending on baseline model and the

full model which including the control variables. Consistent with the previous studies (Bhuiyan and Hooks, 2019; Arianpoor and Mehrfard, 2023), the researcher found that risk disclosure has a significant positive effect on overinvestment where (β = 0.443; T = 7.64 > 2). Furthermore, the full model ensure this result where the risk disclosure also has a significant positive effect on overinvestment where (β = 0.461; T = 7.69 > 2). Also, the control variables related to size and Tobin's Q have positive significant effect on overinvestment where (β = 0.030, 0.000 respectively; T = 2.15, 3.26 > 2 respectively), while leverage has negative significant effect on overinvestment where (β = -0.023; T =-2.46)

Moreover, the third and fourth column of table 3 show the results of relationship between risk disclosure and underinvestment depending on baseline model and the full model which including the control variables. Consistent with the previous studies (Aksar, *et al*., 2022; Arianpoor and Mehrfard, 2023), the researcher found that risk disclosure has a significant negative effect on underinvestment where (β = -0.552; T = -6.95 > 2). Furthermore, the full model ensure this result where the risk disclosure has a significant negative effect on underinvestment where (β = -0.543; T = -7.01 > 2). Also, the control variables are not significant.

Variables	(1)	(2)	(3)	(4)
	Over investment		Under investment	
RD	0.443***	0.461***	-0.552***	-0.543***
	(7.64)	(7.69)	(-6.95)	(-7.01)
Size		0.030**		0.012
		(2.15)		(0.91)
LEV		-0.023**		0.051
		(-2.46)		(1.23)
TobinsQ		0.000***		0.000
		(3.26)		(0.55)
Age		-0.001		-0.003*
		(-0.64)		(-1.69)
Year fixed effect	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included
_cons	-0.101***	-0.383**	0.046	-0.066

	(-2.79)	(-2.52)	(0.82)	(-0.49)
N	203	203	171	171
R^2	0.39	0.42	0.32	0.35
adj. R^2	0.33	0.35	0.25	0.26

Table (3): Regression analysis results

Moreover, adjusted R^2 equal to 33%, 35%, 25% & 26% respectively, which means a good indicator about our model where the F–statistic is significant. Furthermore, we found that VIF (MAX) of the variables was 2.533 & 2.169 respectively, indicating that multi collinearity was not a serious problem in this study.

Finally, these results ensure the positive relationship between the risk disclosure and investment efficiency, where risk disclosure increase the overinvestment and decrease the underinvestment, which indicate the adverse relationship between the overinvestment and underinvestment. Consequently, the researcher can accept the first hypothesis.

3.2 The Survey Study

The survey study interested in the relationship between the assurance on voluntary risk management disclosure and investment efficiency using a final sample of 389 closed-ended questionnaires (shown in appendix B) directed to the stakeholders of the Egyptian listed firms.

The questionnaire is classified into three main sections. Firstly, section1 addresses assurance on risk management disclosure. This section is divided into three main parts; the first part contains 6 items covering the first dimension of the assurance on risk management disclosure which is called auditor's opinion (Unqualified vs Qualified). The second part involves 6 items related to the second dimension of the assurance on risk management disclosure which is called assurance provider (Big4 vs Non-big 4). The third part involves 6 items related to the third dimension of the assurance on risk management disclosure which is called assurance level (Reasonable vs Limited assurance).

Secondly, section 2 encompasses 12 items and covers the investment efficiency otherwise over or under (INV (OverINV & UnderINV)).

Finally, section 3 is designed to obtain information about stakeholders' firms. Such information includes gender, place of residence, experience and income. These questions are closed-ended, so the respondents are required to choose only one answer.

The constructs employed in this study are measured by five-point Likert scale with choices ranging from "1=strongly disagree" to "5=strongly agree".

The researcher can show the procedure of collecting from the following table:

	Distributed Questionnaires	Received Questionnaire	percentage of received to distributed	Non Received Questionnaire	percentage of non-received to distributed	Questionnaire without response	uncompleted Questionnaire	Final Sample	percentage of Final Sample to distributed
Investors	147	131	89.12%	16	10.88%	2	5	124	84.35%
Creditors	128	106	82.81%	22	17.19%	5	2	99	77.34%
Customers & Suppliers	111	93	83.78%	18	16.22%	3	4	86	77.48%
Governmental Agencies	94	85	90.43%	9	9.57%	2	3	80	85.11%
Total	480	415	86.46%	65	13.54%	12	14	389	81.04%

Table No. (4): Sampling Procedures

3.2.1 Questionnaire Reliability

Dimensions	**Measurement Item**	**corrected item-total correlation**	**Cronbach's Alpha if item deleted**	**Reliability**	
				No. of Questions	**Total Cronbach's Alpha**
Auditor's opinion (Unqualified vs qualified)	Q1	0.510	0.695	6	0.821
	Q2	0.566	0.708		
	Q3	0.635	0.719		
	Q4	0.576	0.686		
	Q5	0.509	0.736		
	Q6	0.570	0.722		

Assurance provider (Big4 vs non-big 4)	Q7	0.673	0.709	6	0.841
	Q8	0.695	0.692		
	Q9	0.634	0.744		
	Q10	0.617	0.741		
	Q11	0.597	0.718		
	Q12	0.500	0.690		
Assurance level (reasonable vs limited assurance)	Q13	0.477	0.722	6	0.836
	Q14	0.620	0.702		
	Q15	0.678	0.713		
	Q16	0.649	0.800		
	Q17	0.731	0.764		
	Q18	0.780	0.759		
The Independent Variable: Assurance on risk management disclosure				**18**	**0.845**
Over investment	Q19	0.669	0.772	6	0.812
	Q20	0.663	0.807		
	Q21	0.742	0.825		
	Q22	0.761	0.824		
	Q23	0.746	0.823		
	Q24	0.641	0.828		
Under investment	Q25	0.720	0.822	6	0.833
	Q26	0.729	0.801		
	Q27	0.708	0.816		
	Q28	0.688	0.801		
	Q29	0.720	0.804		
	Q30	0.544	0.821		
The dependent Variable: Investment Efficiency				**12**	**0.847**

Table (5): Corrected Item-Total Correlation and Cronbach's Alpha for all variables

Table (5) shows some results for all variables as follow:

- For the independent variable, assurance on risk management disclosure, the Cronbach's alpha is 0.845 which represents a good indicator of the reliability of this construct. While the Cronbach's alpha is 0.821, 0.841, 0.836 for the three dimensions respectively (Auditor's opinion (unqualified vs. qualified), Assurance provider (big4 vs. non-big 4), Assurance level (reasonable vs. limited assurance)) which also means high level of reliability for all dimensions.
- For the dependent variable, investment efficiency, the Cronbach's alpha is 0.847 which represents a good indicator of the reliability of this construct. While the Cronbach's alpha is 0.812, 0.833 for the two dimensions respectively (overinvestment & Underinvestment) which also means high level of reliability for all dimensions.
- Additionally, the value of corrected item- total correlation of all items exceeds 0.3 which constituted good internal consistency.

3.2.2 Descriptive analysis

Dimensions	**Measurement Item**	**Mean**	**Std. deviation**	**Skewness**	**Kurtosis**
Auditor's opinion (unqualified vs qualified)	Q1	3.841	1.221	-1.068	0.394
	Q2	4.018	1.144	-1.289	1.129
	Q3	3.857	1.21	-1.108	0.533
	Q4	4.06	1.091	-1.333	1.484
	Q5	3.836	1.206	-0.94	0.222
	Q6	3.914	1.258	-1.198	0.54
Assurance provider (big4 vs non-big 4)	Q7	4.109	1.039	-1.386	1.81
	Q8	3.906	1.358	-1.187	0.199
	Q9	4.146	1.057	-1.628	2.521
	Q10	4.036	1.039	-1.28	1.533
	Q11	4.164	0.898	-1.286	2.259
	Q12	4.258	0.89	-1.869	4.598
Assurance level (reasonable vs limited assurance)	Q13	3.974	1.33	-1.303	0.494
	Q14	3.398	1.493	-0.571	-1.066

	Q15	4.211	1.009	-1.598	2.539
	Q16	3.948	1.177	-1.191	0.764
	Q17	4.003	1.083	-1.295	1.468
	Q18	3.984	1.181	-1.347	1.17
The independent variable: Assurance on risk management disclosure		3.981	0.839	-1.112	1.03
Over investment	Q19	3.948	1.177	-1.191	0.764
	Q20	3.914	1.258	-1.198	0.54
	Q21	3.826	1.228	-1.161	0.543
	Q22	4.018	1.261	-1.323	0.764
	Q23	3.935	1.238	-1.302	0.838
	Q24	4.003	1.083	-1.295	1.468
Under investment	Q25	3.836	1.206	-0.94	0.222
	Q26	3.521	1.348	-0.7	-0.58
	Q27	3.878	1.219	-1.137	0.457
	Q28	3.724	1.307	-0.986	-0.033
	Q29	4.031	1.131	-1.369	1.386
	Q30	3.737	1.225	-0.961	0.217
The dependent variable: Investment efficiency		3.906	0.948	-1.144	0.856

Table (6): Descriptive statistics (N=389)

According to Blanca *et al*. (2013) the normal distribution of data can be achieved when the absolute values of skewness range between −2.49 and 2.33, and the values of kurtosis range between −1.92 and 7.41. Therefore, according to table (6), these two conditions are satisfied and the data are normally distributed.

Furthermore, the means of all items are greater than 3 which means tending the respondents to approval, so their answers were (Agree, Strongly agree). Consequently, there are no negative responses for all respondents about all items.

3.2.3 Assessing the Measurement Model

3.2.3.1 Exploratory factor analysis

The study Used EFA for conducting Kaiser-Meyer-Olkin (KMO) scale as it is shown in table (7) as follow:

Variables	**Dimensions**	**Kaiser-Meyer-Olkin**	**Bartlett's Test of Sphericity**	
			Chi Square	**Sig.**
Independent Variable: Assurance on Risk Management Disclosure	Auditor's opinion (unqualified vs qualified)	0.779	1152.744	0.000
	Assurance provider (big4 vs non-big 4)	0.682	666.040	0.000
	Assurance level (reasonable vs limited assurance)	0.631	300.665	0.000
Independent Variable: Assurance on Risk Management Disclosure		0.881	5645.629	0.000
Dependent Variable: Investment Efficiency	Overinvestment	0.857	1414.075	0.000
	Underinvestment	0.891	2586.025	0.000
Dependent Variable: Investment Efficiency		0.910	9089.516	0.000

Table No. (7): KMO & Bartlett's Test for all variables

As illustrated in table (7), KMO scale for all variables is greater than 0.5. Additionally, Bartlett's test is significant for all variables, therefore the data are high quality and dependable for structure equation model.

3.2.3.2 The Model Fit of the Measurement Model

The study utilized the most common indices to evaluate the model fit as it is shown in table (8) as follow:

Measure	Estimate	Threshold	Interpretation
GFI	0.972	Closer to 1	Accepted
RMR	0.036	Closer to 0	Accepted
CFI	0.965	Closer to 1	Accepted
TLI	0.981	Closer to 1	Accepted
RMSEA	0.032	Less Than 0.08	Accepted

Table (8): The indices of model fit for the measurement model

The value of CFI is 0.965 which is accepted as it is greater than 0.95. Furthermore, the value of RMR index is also satisfied because it is lower than 0.05. Similarly, RMSEA equals 0.032 which lies under 0.08 as proposed by (Byrne, 2010). The value of GFI which equals 0.972 is accepted as it is higher than 0.8 (Byrne, 2010). Therefore, the measurement model fits the data collected from the stakeholders.

3.2.3.3 The Construct Validity of the Measurement Model

Dimensions	Factor Loading and Reliability			Convergent Validity	
	Questions	Factor Loading	Cronbach's Alpha	AVE	CR
Auditor's opinion (Unqualified vs qualified)	Q1	0.796	0.821	0.698	0.716
	Q2	0.775			
	Q3	0.787			
	Q4	0.581			
	Q5	0.564			
	Q6	0.683			
Assurance provider (Big4 vs non-big 4)	Q7	0.635	0.841	0.726	0.759
	Q8	0.872			
	Q9	0.883			
	Q10	0.534			
	Q11	0.704			

	Q12	0.728			
Assurance level (reasonable vs limited assurance)	Q13	0.630	0.836	0.734	0.726
	Q14	0.796			
	Q15	0.702			
	Q16	0.757			
	Q17	0.725			
	Q18	0.791			
Over investment	Q19	0.705	0.812	0.705	0.732
	Q20	0.763			
	Q21	0.697			
	Q22	0.792			
	Q23	0.617			
	Q24	0.656			
Under investment	Q25	0.670	0.833	0.723	0.803
	Q26	0.638			
	Q27	0.826			
	Q28	0.861			
	Q29	0.723			
	Q30	0.621			

Table No. (9): The validity and reliability of the measurement model

According to table (9), the values of Cronbach's alpha are higher than 0.6 which are accepted. Further, the values of AVE are greater than 0.5 composite reliability values are higher than 0.6 which can be accepted according to Fornell and Larcker (1981). Furthermore, discriminant validity is assessed in table (9). This table presents the Correlations between the factors and the square roots of AVEs and also shows that the values of the square root of AVE are higher than the inter-constructs correlations (Fornell and Larcker, 1981). Therefore, the discriminant validity is achieved. Finally, the measurement model has satisfied all factors used to assess validity and reliability.

Table (10): Construct Correlations and Square Root of Average Variance Extracted

	Auditor's opinion (unqualified vs qualified)	Assurance provider (big4 vs non-big 4)	Assurance level (reasonable vs limited assurance)	Overinvestment	Underinvestment
Auditor's opinion (unqualified vs qualified)	0.836				
Assurance provider (big4 vs non-big 4)	0.661	0.852			
Assurance level (reasonable vs limited assurance)	0.681	0.647	0.857		
Overinvestment	0.614	0.646	0.632	0.840	
Underinvestment	0.666	0.625	0.660	0.677	0.850

Finally, after investigating the validity and reliability and the model fit of the measurement model, the measurement model was developed as illustrated in figure (2). The measurement model contains five main constructs namely, Auditor's opinion (unqualified vs qualified), Assurance provider (big4 vs non-big 4), Assurance level (reasonable vs limited assurance), Overinvestment and Underinvestment.

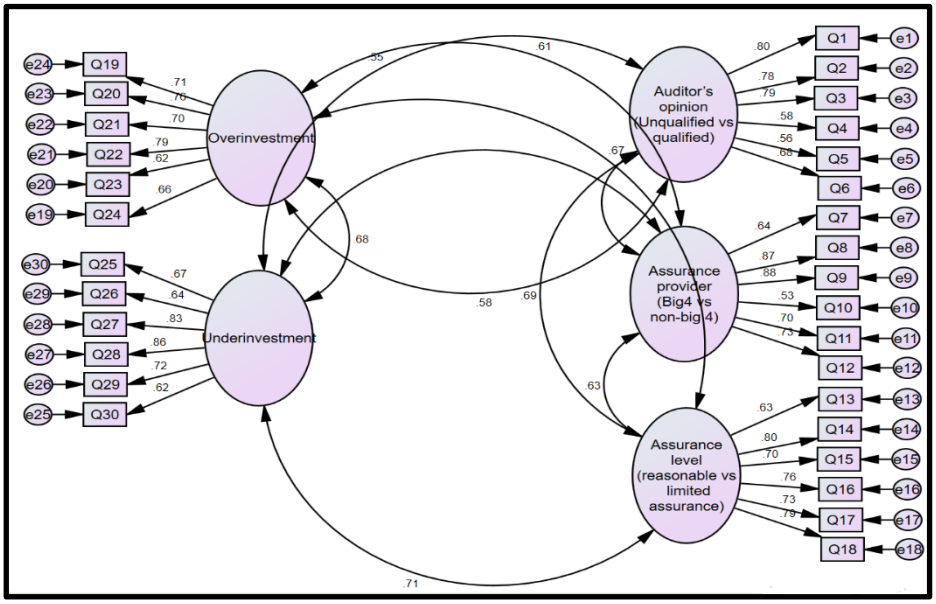

Figure (2): The measurement model

3.2.4 Assessing the correlation coefficients among variables' dimensions

	Auditor's opinion (Unqualified vs qualified)	Assurance provider (Big4 vs non-big 4)	Assurance level (reasonable vs limited assurance)	Overinvestment	Underinvestment
Auditor's opinion (Unqualified vs qualified)	1				
Assurance provider (Big4 vs non-big 4)	.582**	1			
Assurance level (reasonable vs limited assurance)	.597**	.637**	1		
Overinvestment	-.634**	-.642**	-.652**	1	
Underinvestment	-.747**	-.943**	-.944**	.929**	1

Table (10): Pearson correlation Matrix

The results included in this table ensure a positive significant relationship among all dimensions for each variable. Additionally, the results ensure a negative significant relationship between all dimensions of independent variable which are auditor's opinion (unqualified vs qualified), assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) and the both dimensions of investment efficiency which are overinvestment and underinvestment.

3.2.5 Assessing the structural model and hypotheses testing

Structural model is utilized to present the causal relationships between research constructs. It is also used to test the hypothesized research model (Byrne, 2010). Table (11) involves the indices used to test the fit structural model as follow:

Measure	Estimate	Threshold	Interpretation
GFI	0.968	Closer to 1	Accepted
RMR	0.054	Closer to 0	Accepted
CFI	0.975	Closer to 1	Accepted
TLI	0.984	Closer to 1	Accepted
RMSEA	0.042	Less Than 0.08	Accepted

Table (11): The indices of model fit for the structural model

The value of CFI is 0.968 which is accepted as it is greater than 0.95. Furthermore, the value of RMR index is also satisfied because it is lower than 0.05. Similarly, RMSEA equals 0.042 which lies under 0.08 as proposed by (Byrne, 2010). The value of GFI which equals 0.975 is accepted as it is higher than 0.8 (Byrne, 2010). Therefore, the measurement model fits the data collected from stakeholders.

Therefore, based on the above indices, the structural model utilized in the current study shows an acceptable degree of fitness. The structural model is presented in figure (3).

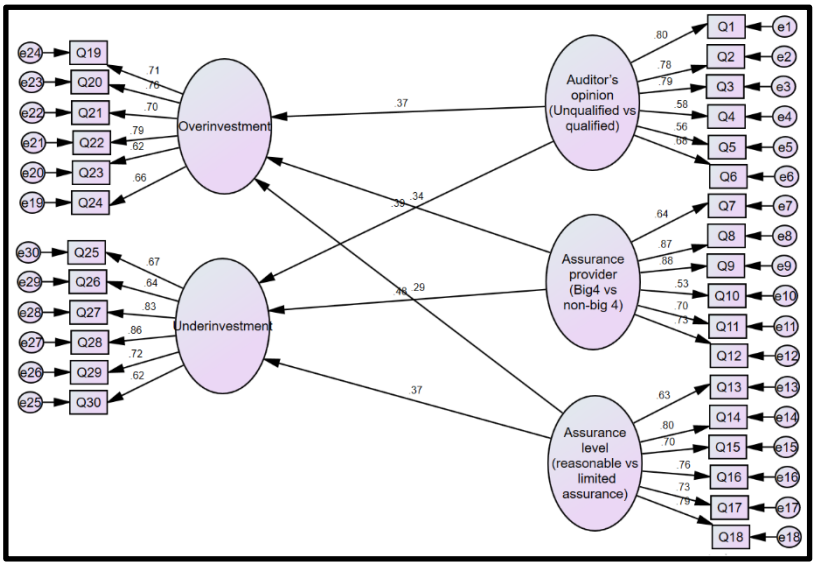

Figure (3): The structural model

3.2.6 The results of testing research hypothesis

Hypotheses were tested using SEM with AMOS 23. Hypothesis H2.a (i-ii-iii) proposed that auditor's opinion (unqualified vs qualified), assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) have a negative impact on overinvestment, while Hypothesis H2.b (i-ii-iii) posited that auditor's opinion (unqualified vs qualified),

assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) negatively affect underinvestment. Table (12) illustrates the results of testing these research hypotheses as follow:

Hypothesis		**Hypothesis direction**			**Estimate**	**Sig.**	**hypothesis result**
H2.a	H2.a.i	Auditor's opinion (Unqualified vs qualified)		Overinvestment	-0.365	0.000	accepted
	H2.a.ii	Assurance provider (Big4 vs non-big 4)			-0.336	0.000	accepted
	H2.a.iii	Assurance level (reasonable vs limited assurance)			-0.285	0.001	accepted
H2.b	H2.b.i	Auditor's opinion (Unqualified vs qualified)		Underinvestment	-0.386	0.031	accepted
	H2.b.ii	Assurance provider (Big4 vs non-big 4)			-0.479	0.002	accepted
	H2.b.iii	Assurance level (reasonable vs limited assurance)			-0.365	0.004	accepted

Table (12): The results of testing research hypothesis

The effect of Assurance on risk management disclosure dimensions on overinvestment

According to table (4.15), it is clear that auditor's opinion (unqualified vs qualified), assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) have a significant negative impact on overinvestment where (β = -0.365, -0.336, -0.285, $P < 0.05$)

respectively. Therefore, H2.a which represents the negative effect of assurance on risk management disclosure dimensions on overinvestment is accepted.

The effect of Assurance on risk management disclosure dimensions on underinvestment:

According to table (4.15), it is clear that auditor's opinion (unqualified vs qualified), assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) have a significant negative impact on underinvestment where (β = -0.386, -0.479, -0.365, $P < 0.05$) respectively. Therefore, H2.b which represents the negative effect of assurance on risk management disclosure dimensions on underinvestment is totally accepted.

Consequently, the researcher can accept the whole H2 that there is a significant positive effect of external auditor's assurance over risk management disclosure on investment efficiency.

4. Conclusion

In this study, the researcher investigates whether external auditor's assurance on companies risk management disclosures has an influence on the investment efficiency in the Egyptian environment. Further, the study questions are whether there is an association between risk disclosures and investment efficiency as well as whether there is an association between external auditor's assurance on risk management disclosures and investment efficiency.

The results of the archival study demonstrated a significant positive relationship between the risk disclosure and investment efficiency, where risk disclosure increase the overinvestment and decrease the underinvestment. Consequently, the researcher can accept the first hypothesis. Furthermore, the results of the survey study ensure a negative significant relationship between all dimensions of independent variable which are auditor's opinion (unqualified vs qualified), assurance provider (big4 vs non-big 4), assurance level (reasonable vs limited assurance) and the both dimensions of investment efficiency which are overinvestment and underinvestment indicating that risk management assurance positively affect investment efficiency. Consequently, the researcher accepts the second hypothesis with its two subcomponents.

5. Recommendations

1- There is a significant importance of enhancing the separation of risk disclosures from other disclosures in a self-contained report in order to facilitate stakeholders' access to risk

information, avoid the current deficiencies in risk disclosures as well as enhancing stakeholders decisions.

2- There is a need to assure risk management report by an independent, external auditor in order to enhance risk disclosures confidentiality and reliability.

3- The necessity for the Egyptian Financial Supervisory Authority (EFSA) to issue a guideline model for preparing the risk management report at the level of the industrial, financial and service sectors in order to avoid the informational deficit of risk disclosures.

4- Standards setters have to develop and design a clear and proper professional standard specified for assuring risk disclosures (rather than the general International Standard of Assurance Engagement (ISAE 3000) to reduce or eliminate any leeway.

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