

**The impact of Earnings Quality on the stock performance in the stock exchange market: Evidence from Egypt**

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**Abstract:**

The purpose of the paper is to measure impact of three determinants on the firm performance using the earnings quality as an intermediary variable. The three determinants measured in this research are firm specific return volatility, earnings management, and the corporate governance. The research is applied in the Egyptian stock exchange market, using the constituents of its most active index that is the EGX30 during the time frame 2010-2017. The data have been analyzed by using statistical techniques, like the Jarque-Bera Test, Pearson correlation, and structure equation modeling. The results of the statistical analysis approved the research hypotheses by proving the association among firms' specific return volatility, earnings management, corporate governance, on firms' stock performance in the Egyptian stock exchange market, using the earning quality as an intermediary variable.

**Methodology**– The researchers conducted a scan of the literature regarding the research variables and used the secondary data from the annual reports of the 30 most active companies included in EGX30 index in order to extract data and to supplement the results.

**Research limitations/implications** – The research is applied over the period 2010-2017. This period was chosen to cover different stages of the Egyptian economy and stock market. The sample selected is limited to the companies in EGX30 index.

**Practical implications** – The research provided an insight for portfolio managers, and investors to understand the impact of earning quality factors related to firms' stock price volatility, and help firm managers to enhance the earnings quality.

**Keywords:** Earnings quality, firm performance, corporate governance, return volatility, Egypt

## **Introduction:**

Due to the economic conditions all over the world, many **researches have been conducted to test the variables** that affect the performance of the firms in the stock exchange markets through enhancing the quality of the financial reporting (Siagian, et al. 2013, Klai, & Omri, 2011). For example, corporate governance and earnings management and their effect on the financial reporting quality was studied by (Katmon, & Al Farooque, 2017). Bajra, & Cadez (2017) explored the association between corporate governance quality and the earnings management and the impact on the firm performance. Firm-specific return volatility variable was the interest for another group of researches for example (Bollerslev, et al., 2017; Durnev, et al., 2003).

This research is trying to fill the gap represented by the lack in the literature regarding the research variables. The research tried to identify the relation among the variables of the research (firm-specific return volatility, the corporate governance and the earnings managements) and their impact on firm performance in the stock market using the earnings quality as an intermediary variable.

Therefore, we are exploring the earnings quality as an intermediary variable to link the firm-specific return volatility, the corporate governance and the earnings managements on the firm performance measured by the stock prices.

### **Research objectives:**

The research has the following objectives:

- 1- To examine the impact of firm-specific return volatility on the earnings quality.
- 2- To examine the impact of corporate governance on the earnings quality.
- 3- To examine the impact of earnings management on the earnings quality.
- 4- To examine the impact of the earnings quality on the firm's performance in the stock exchange market.

### **Research hypotheses:**

**H1:** There is a significant association between firm-specific return volatility and the earnings quality.

**H2:** There is a significant association between corporate governance and the earnings quality.

**H3:** There is a significant association between earnings management and the earnings quality.

**H4:** There is a significant association between earnings quality and companies performance in the stock exchange market.

The hypotheses of the research can be illustrated through the following figure.

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Figure (1): Illustration of the research hypotheses

**Table (1): The research hypothesizes, constructs and measurements**

<u>Hypotheses</u>	<u>Independent variable &amp; Measurement</u>	<u>Dependent variable</u>
<b>H1:</b> There is a significant association between firm-specific return volatility and the earnings quality.	<i>firm-specific return volatility</i>  <b>Measurement</b> <i>Auto regressive moving average generalized Least Squares</i>	<i>earnings quality</i>  <b>Measurement:</b> $\frac{\text{Cash flow from operation}}{\text{net income}}$
<b>H2:</b> There is a significant association between corporate governance and the earnings quality.	corporate governance  <b>Measurement</b> <i>Board Size</i> <i>CEO Duality</i> <i>Board Independence</i>	<i>earnings quality</i>  <b>Measurement</b> $\frac{\text{Cash flow from operation}}{\text{net income}}$
<b>H3:</b> There is a significant association between earnings management and the earnings quality.	earnings management  <b>Measurement:</b> <i>Modified Jones Model</i>	<i>earnings quality</i>  <b>Measurement:</b> $\frac{\text{Cash flow from operation}}{\text{net income}}$

<p><b>H4:</b> There is a significant association between earnings quality and market performance of the share in the stock exchange market.</p>	<p>earnings quality</p> <p><b>Measurement:</b></p> <p><i>Cash flow from operation</i>  <hr/> <i>net income</i></p>	<p>Market performance of the share in the stock exchange market</p> <p><b>Measurement:</b></p> <p>Change in Stock prices</p>
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**Research design and variables measurement:**

The research hypotheses will be tested and verified by using two regression models derived from the data collected from the annual reports of 30 companies listed in the Egyptian stock exchange market index EGX30. The data will be statistically analyzed to examine the impact of firm-specific return volatility, corporate governance and the earnings management on the earnings quality.

The second regression model will test the impact of the earnings quality on the firm share performance measured by the stock price of the firms.

**First model,** to examine the association between firm-specific return volatility, corporate governance and the earnings management on the earnings quality, the following regression model is used:

$$EQ_{it} = \alpha + \beta FSR_t + \beta CG_t + \beta EM_t + \varepsilon_{it}$$

**Where:**

**FSR**= firm-specific return volatility

**EQ** = Earning Quality, measured using cash flow from operation

divided by net income

**CG<sub>t</sub>** = Corporate governance

**EM<sub>t</sub>** = Earnings managements measures by jones model using Discretionary accruals that is calculated through total accruals minus nondiscretionary accruals (accruals that are related to sales growth, receivables, and property, plant, and equipment)

**it** = i denotes the cross-sectional dimension and t represent the time period.

**α** = Denotes the fixed effect on firm-specific return volatility

**β** = Coefficients of the independent variables.

**ε** = Random error-term.

**Second model**, to examine the impact of the earnings quality on the firm performance the following formula is used:

$$\text{Firm performance(FP)} = \alpha + \beta \text{EQ}_t + \varepsilon_{it}$$

**Where:**

**FP** = Firm performance measured by the stock prices of the companies

**EQ** = Earning Quality, measured using cash flow from operation divided by net income

**it** = i denotes the cross-sectional dimension and t represent the time period.

**α** = Denotes the fixed effect on Investors Sensitivity.

$\beta$  = Coefficients of the independent variables.

$\varepsilon$  = Random error-term.

### **Earnings Quality (EQ):**

The definition of Earnings Quality EQ may be traced in history to Bernstein, & Sigel, (1979) as they defined EQ as the degree of the earning of the current year is benefiting form the previous earning or “borrow from future earnings”, however in our opinion EQ only gained its popularity with (Lev, 1989) as he was trying to explain the unexpected results of his research about why the relationship between earnings and return would have so low R2, his answer was by questioning the reported earning quality numbers. Therefore, the EQ can be defined as the degree of the accuracy by which the earning are truly reflecting the true value of a company (Dechow, & Schrand, 2004). In the definition the focus is on the accountability. There is another approach, focusing on usefulness as a benchmark of quality. Dechow, et al. (2010) defined quality of earning “broadly to be decision usefulness in any decision by and decision maker”. By the word broadly the definition wanted to cover all possible interested parties that might uses earnings in the decision-making process, so it would include equity valuation, rating of debts, and the future earning power, among many others.

On the other hand, the question is, why would managers manipulate intentionally the quality of earnings. According to Kamel, & El-Banna, (2009) they do that to enhance the creditworthiness when applying for a loan from a bank to keep within the last year’s profitability levels to reach a higher

valuation, and of course loss-reporting avoidance. So, generally this would hide the deterioration earnings, and the whole firm's performance. Such risk if not discovered, would hurt market participants and the market efficiency. Sloan (1996) noticed that a trend of increasingly accruals can be a leading indicator for drop in earnings and stock price. Richardson, et al. (2001) later confirmed and extended these results to indicate a deterioration in the efficiency of all asset.

To avoid such risk, it is important to measure EQ. However, there are no conclusive agreement over one approach to measure EQ and what makes it even more difficult is that researchers have examined and showed that using different EQ measures would lead to different results (Abdelghany, 2005).

For example, Dee et al. (2002) used total and discretionary accounting, while Richardson, et al. (2001) used total accruals as measure of earnings quality. Also, the persistence of earnings is considered to be a key measure of earnings quality according to Richardson, et al. (2001). More recently, Kim & Yasuda (2017) measured EQ depending on persistence, earnings benchmarks and accruals. Paoloni et al. (2017) was more comprehensive by measuring EQ using two dimensions, the decision usefulness was measured by persistence and value relevance, while the second dimension was EQ as stewardship or accountability and it was measured as conservatism and accrual quality.

Some other researchers used a wider number of variable to measure EQ, such as Huynh (2018) who suggest seven different attributes “(1) Accrual quality, (2) Persistence, (3) Predictability

and (4) Smoothness as well as (5) Value relevance, (6) Timeliness and (7) Conservatism”.

Generally, the cash component is the most important factor in measuring EQ, the more the cash component in the earnings figure, the higher the earnings’ quality. Researchers also found that companies with excess cash reserves are perceived by investors as sign of high earning quality.

There are other factors that may affect the EQ, such as the political connection of the company. Al-Dhamari, & Ismail (2015) findings show that politically connected firms are perceived as low quality. This could be especially important for emerging countries.

In our research, we are testing a group of critical variables that would have a direct relationship with EQ. These variables are earning management, corporate governance, and firm-specific return volatility

Earnings Management EM is defined by Schipper, (1989) as the process of intentional intervention and manipulating the firm’s earnings in order to reach targeted earnings that achieve a purposive interest of the management, therefore EM is described as the misuse of accounting where management try to show desired earnings rather than true financial performance (Levit, 1998). Similarly, Healy and Wahlen (1998) defined earning management as the action occurring by the managers by using their judgmental opinion in reporting and structuring the financial reports, with the aim to mislead their stakeholders

regarding the company's performance.

Companies may depend on different methods to manipulate their earnings, some of the most used methods are; inadequately reported provisions, inadequately capitalize expenses, manipulating the value of inventory, these approaches are considered popular among Egyptian companies (Kamel, & ElBanna,2009). EM can be classified into: First, reporting earnings aggressively through delayed recording recognition of expenses and losses, and accelerating the recognition of income and returns. Second, avoiding reporting losses, and third, smoothing the earnings by using of accounting policies to hide the shocks in the firm's performance.

The incentives for earning management have been document by several analysts, such as Healy & Wahlen, (1999) who recognized that managers would apply earning management techniques mainly to match their performance with the analyst's estimates also they found EM is high at periods around important transactions such as buyouts. It is the financial data that financial analyst and investment bankers depend only to calculate their future estimates and valuations; therefore, managers would have a strong incentive to manipulate their earnings with the aim to meet analysts' estimates or to raise their company's value.

Literature applied on Egyptian market found similar results, Motives for earnings adjusting among the Egyptian executives include meeting expectations of stack-holders (shareholders, creditors, and employees), also to meet the stock market rules (Nargis, 2017).

Many researchers linked EQ to EM such as Dee et al., (2002); Schipper, (1989) and Dechow & Schrand, (2004) they asserted that the key of the predictive ability of earnings is essentially related to the type of accruals, if it is an application of the revenue recognition principles or an adjustment to the values of both assets items and liabilities. If the majority earnings are nonoperation accruals, then the predictable value of the earnings will deteriorate. These results confirmed an earlier research by (Penman & Sougiannis,1998) whose results concluded that the approaches using forecasting GAAP accrual earnings, will have lower valuation errors, when compared to approaches using forecasting dividends or forecasting cash flows. More recently Al-Attar and Maali (2017) showed the negative relationship between EM and EQ.

### **Corporate governance (CG):**

Corporate governance, is very important factor for both EQ and the firms' value in general, Latif and Raheman (2017) described EQ and the link between CG and the higher firms value, his argument based on high CG leads to a higher EQ, which in turn reduces information asymmetry, reduce information risk, and eventually increases firm's value. His findings were concluded that in addition to that CG improve the value of firm directly, I can also improve the value indirectly through earning quality. These findings are not unique as it were in line with Niu (2006) who found evidence of negative relationship between corporate governance quality and abnormal accruals as a measure of earning quality.

Similarly, Jiang and Anandarajan (2008) find that only companies with the highest corporate governance, improved quality of their earnings, also Kent et al. (2016) findings support the relations between applying governance requirements and a higher earnings quality. Other researchers went deeper to analysis the CG components such as Chen & Komal (2018); Sultana et al. (2003); and Waweru (2018) all found a positive relationship between EQ and CG specifically they confirmed the important and significant role of the audit committee as an important contributor to the CG in improving the EQ. On the other hand, Ariefiara & Utama (2018) even suggested that EQ and CG have a simultaneous effect. On the Egyptian market, El-Sayed, (2013) found that adoption of corporate governance by Egyptian companies has enhanced the perceived earning quality of the Egyptian companies.

To measure CG, there are many variables to be used, for example, Marrakchi et al. (2001) measured the corporate governance practices using the audit committee and board of directors' characteristics. Shahwan (2015), measure CG using four dimensions; "disclosure and transparency, composition of the board of directors, shareholders' rights and investor relations and ownership and control structure.". Ali and Desoky (2017) used also six variables "board shareholding, board independence, audit committee, external auditor on earnings quality, board size and board leadership."

### **Firm-specific return volatility (FSRV):**

The association between EQ and the FSRV was tested by Mitra

(2016) and Francis et al. (2008), they found that after controlling systematic risk, there are an inverse relationship that the higher the EQ the lower the FSRV.

FSRV was measured by Kommunuri, (2013) using CAPM or Capital asset pricing Model, his findings showed that poor EQ is associated with greater FSRV, at the same line Rajgopal & Venkatachalam (2011) found that earnings quality has a strong association with high firm-specific returns volatility. Gangopadhyay et al. (2014) have also found an inverse relationship between FSRV and future stock returns. Mitra (2016) after controlling for systematic risk; found that higher EQ is associated with lower FSRV.

Generally, research found that FSRV has many sources including informed trading, noise trading (Roll, 1988), but more specifically it is related to insider trading (Gangopadhyay et al., 2014).

Traditionally  $R^2$  is interpreted as a measure of price informativeness (Morck, et al., 2000), where low  $R^2$  or synchronicity means that price incorporate a higher degree of firm specific information. Despite this, some other researchers such as Kelly, (2014) have criticized the efficiency of  $R^2$ , and suggested that price high idiosyncratic volatility is driven by some other factors.

### **The Earnings quality and the performance of the firms:**

Traditionally market participants and analysts give high importance to the earnings quality as they perceive it associated

with high level of predictability (Briker, et al.,1995). Generally, market financial analysts and portfolio managers prefer cash flow in their stock valuations, as they assume that it has higher the persistence and it is less volatile than earnings and that therefore cash is more associated with stock performance. Dechow, & Schrand, (2004) interestingly found that over a sample of 56,940 company for the period between 1987 to 2002, operating income, pretax income, sales all have a significantly higher persistence compared to cash measures; ; namely cash from operation, free cash flow, cash flow from financing actives, and cash flow from investment activists.

To answer the question regarding the importance of accounting earnings generally and to compare it with other financial data such as cash flows for financial analyst, Block (1999) measure market analysts and portfolio managers to rank the importance of different financial data, he found that earnings came first, compared to other data such as cash flow, book value, and dividends. Also, analysts and portfolio managers depend more on valuation models that use earnings as its primary data mostly they use P/E multiple, DDM, and residual income model which all of them depend on earnings in calculation.

Dechow (1994) investigated the circumstance where accruals would improve the ability of earnings to measure performance of the stock returns. Findings show that, cash is not necessarily a better measure of the company's performance measured by stock returns, that under the circumstances of short measurement interval, a high working capital volatility, a long operating cycle, and a volatile investment and financing actives. Under any one of

these circumstances accounting earnings have a better ability to reflect the firm's performance. Also, the results show that for forecasting future cash flow over the mid and long term, using cash flow and earnings are equally useful.

On the other hand, a more recent study by Al-Attar and Maali (2017) provides an evidence of the superiority of cash flows over earnings, especially in developing countries, also his findings show the negative relationship between EM, and EQ, which "affect the predictably of earnings".

The importance of EQ even increases during the business cycles turning points, Navarro & Madrid (2017) noticed a progressive deterioration in the earning quality at the times of market bubble where assets value are unjustifiably high, they even found that the EQ will continue to decline after the bubble has finally bursts. On the other hand, Ma (2017) found a significant evidence that high EQ reduces the company's systematic market related risks

Literature about the relationship between EQ and stock market have focused on two sides of the relationship, the first is the effect of EQ on the value of the stocks, the second focused on effect of the EQ on stock return such as excess returns and accrual anomaly.

Gaio and Raposo (2011) show that there are a significantly positive relationship between earnings quality and firms value, that the higher the earnings quality the higher the firm's market value.

On the other hand, and interesting result Hoffmann and Rodrigo (2017) found that as earnings manipulation increase, markets are more and more attractive for trading and investors.

A pioneer study in the relationship between EQ and stock return, was the contribution of Sloan, (1996) he tested if the market prices reflect the information regarding future earnings contained in accrual component and cash flow component in the current earnings. Findings show that investors failed to use information contained in current earnings components both the accrual and cash flow, therefore they reflect naïve expectations about fundamental value attributed in earnings. Also, he found that abnormal return is possible by exploiting investor's failure to distinguish between cash flow and accrual components,

Using his words "a long position in firms reporting low levels of accruals relative to cash flows and a short position in firms reporting high levels of accruals relative to cash flows should yield positive abnormal stock returns" as there was a negative relationship between stock-portfolios ordered by accruals and the abnormal returns of these portfolios, and lastly, he concluded that the market efficiency can be tested by trading returns using the accruals earnings component.

Following that Chen et al. (1997) explained that the higher the quality of the information, the quicker the stock price adjustment, leading to a smaller earnings surprise and excess returns, also Chan, et al. (2001) show that there are negative association between accruals and the future stock returns, and therefor they concluded that accruals can predict stock returns.

Overall researchers have documented a negative relationship between accruals and future returns Bandyopadhyay, et al., (2017); Papanastasopoulos, et, al., (2016), therefore firms with low reported accruals, tend to show higher stock returns, leading to abnormal returns.

**Statistical part:**

The statistical analysis had been divided into main parts, the first part was to calculate the firm specific return volatility and to test the validity and reliability of the data used in the analysis, the second part was to apply the statistical techniques on the data collected of EGX 30 firms listed in the Egyptian stock exchange market to verify the research hypotheses.

**Part one:**

The researchers used Volatility auto regressive moving average Generalized Least Squares (Gauss-Newton) to calculate the return volatility for each company within the sample individually illustrated in the following table:

**Table (2): auto regressive moving average generalized Least Squares for calculating the return volatility of each firm within the sample**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001217	0.014636	-0.083129	0.9338
AR(1)	-0.741719	0.062292	-11.90704	0.001***
AR(2)	-0.431454	0.062710	-6.880108	0.001***

R2=40.1% F-test= 71.3 sig=0.001*** AIC =1.33 SC= 1.37 HQC= 1.35 RMSE=∙.46 U= 0.73 DW=2.24
Jarque-Bera Test=3.28 sig=0.19 Breusch-Godfrey F-test=1.41 sig=0.07 Heteroskedasticity ARCH: F-test =0.71 sig=0.41

Table (2) indicated the significance of t-statistic of the return volatility at a level less than 0.001 with R-squared value 40% from total variation of the level of the firm’s average annual return. Since the significance value of the test statistic in terms of Jarque-Bera test, Breusch-Godfrey Serial Correlation LM Test, and Heteroskedasticity Test: ARCH (>0.05), then we would not reject the null hypothesis, according to the following model:

$$D(AVERAGEA) = -0.00121663048852 + [AR(1)=-0.741718608288,AR(2)=-0.43145391866]$$

**The Jarque-Bera Test:**

Jarque–Bera test has been used to measure the normality distribution of the exogenous and endogenous variables.

**Table (3) Descriptive statistics for exogenous and endogenous variables**

	ST	AAR	RV	BS	LN_NDA	E_Q
Mean	5.66	0.04	0.04	10.94	12.00	0.93
Median	5.22	-0.01	0.01	10.00	12.03	0.86
Maximum	15.38	1.05	0.64	22.00	14.27	3.15

Minimum	0.10	-0.78	-0.43	3.00	9.61	-1.31
Std. Dev.	3.70	0.40	0.22	5.41	0.85	0.90
Skewness	0.40	0.45	0.31	0.44	0.14	0.27
Kurtosis	2.30	2.58	2.60	2.15	3.22	2.93
Jarque-Bera	10.29	8.80	4.84	13.51	1.16	2.77
Probability	0.01	0.01	0.09	0.00	0.56	0.25
Observations	217	217	214	217	217	217

Table (3), the reveals the following:

Since the significance value of the test statistic of Jarque-Bera ( $>0.05$ ), in terms of return volatility, LN\_NDA, earning quality, then we would not reject the null hypothesis. We conclude that the observed distribution corresponds to or equal the theoretical distribution, i.e. the observed residuals are normally distributed.

Since the significance level of the test statistic of Jarque-Bera ( $<0.05$ ), in terms of stock price average, average annual return, and Board Size, then we would reject the null hypothesis, i.e. the observed residuals are not normally distributed.

This means that the sample selected from return volatility, earnings management and earnings quality are normally distributed. On the other hand, the sample of data in relation to stock price average and the average annual return and the board size are not normally distributed. The results of the research may be impaired by the non normality of the aforementioned data but the researchers considered that by using the nonparametric

version of the test to validate the data.

**Group unit root test:**

The Unit root test is used to ensure the invariant of the mean and variance over time, and the value of the covariance between two time periods depends only on the distance between the two time periods and not the actual time at which the covariance is computed based on the following statistical techniques: Fisher Chi-square (PP), Augmented Dickey-Fuller (ADF), Levin, Lin & Chu t and Im, Pesaran and Shin W-stat.

**Table (4): Group unit root test**

Tests	Statistic	Prob.	Decision
Levin, Lin & Chu t	- 13.0502	0.001***	Reject Ho
Im, Pesaran and Shin W-stat	- 17.8185	0.001***	Reject Ho
ADF - Fisher Chi-square	277.483	0.001***	Reject Ho
PP - Fisher Chi-square	271.231	0.001***	Reject Ho

\*\*\*Significant at level less than 0.001

From table (4), it can be concluded that the stationary of the time series in terms of the exogenous and endogenous variables indicators are at level 1 ~ (0) according to the individual intercept level, through to the following criteria: PP, ADF, at a significant level less than (0.001).

Based on these results the researchers reject the null hypotheses, which give more validity to the hypotheses of the research.

**Engle Granger test (co- integration test):**

The researchers used Engle Granger test, to measure the long-run equilibrium relationships existence among non-stationary time series variables of the exogenous and endogenous variables. This test is trying to give the indication about the intersection of the different variables on the long-term period where it indicates the reliability and the co-integration of the variables among each other's.

**Table (5): tau-statistic and z-statistic**

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
ST-Stock price average	-5.973564	0.0013	-60.53279	0.0012
AAR	-15.74372	0.0000	-229.4356	0.0000
RV-Return volatility	-7.719353	0.0000	-93.11023	0.0000
CG-Corporate governance	-4.570513	0.0832	-38.21433	0.0745
LN_NDA-Earnings management	-5.870475	0.0019	-59.13808	0.0016
E_Q-Earnings quality	-8.205570	0.0000	-103.6625	0.0000

From table (5), researchers can conclude that there are long-term equilibrium relationships among the exogenous and endogenous variables, according to the Tau-statistic, Z-statistic criteria at a significant level less than (0.05) except for corporate governance (board size) as at a significant level greater than (0.05)

The descriptive analysis shows the significant and normality of the variables measures used by the researchers. The researchers can conclude that the measures selected is valid to test the relation among variables and to verify the hypotheses of the research.

**Part two: Testing of hypotheses:**

The researchers used the Pearson correlation, structure equation model, path analysis techniques to verify the research hypothesizes.

**Pearson correlation:**

The researchers used the Pearson correlation matrix to test the relation among the variables. As it is apparent from the matrix correlation table that all the variables **have significant relations among each other.**

**Table (6) Correlation matrix of corporate governance and capital structure**

Dimensions	Stock price average	Return volatility	Board Independence	Board Size	CEO Duality	Auditor Type	Earnings managements	Earnings quality
Stock price average	1.000							
Return volatility	0.612**	1.000						

Board Independence	0.307**	0.422**	1.000					
Board Size	0.425**	0.492**	0.508**	1.000				
CEO Duality	0.176**	0.125	-0.082	-0.003	1.000			
Auditor Type	0.091	0.135*	0.345**	0.154*	-0.203	1.000		
Earnings managements	-0.487**	-0.637**	-0.457**	-540**	-0.177	-0.265**	1.000	
Earnings quality	0.559**	0.696**	0.473**	0.590**	0.216**	0.221**	-0.787	1.000

\*\*Correlation is significant at the (.01) level

\*Correlation is significant at the (.05) level

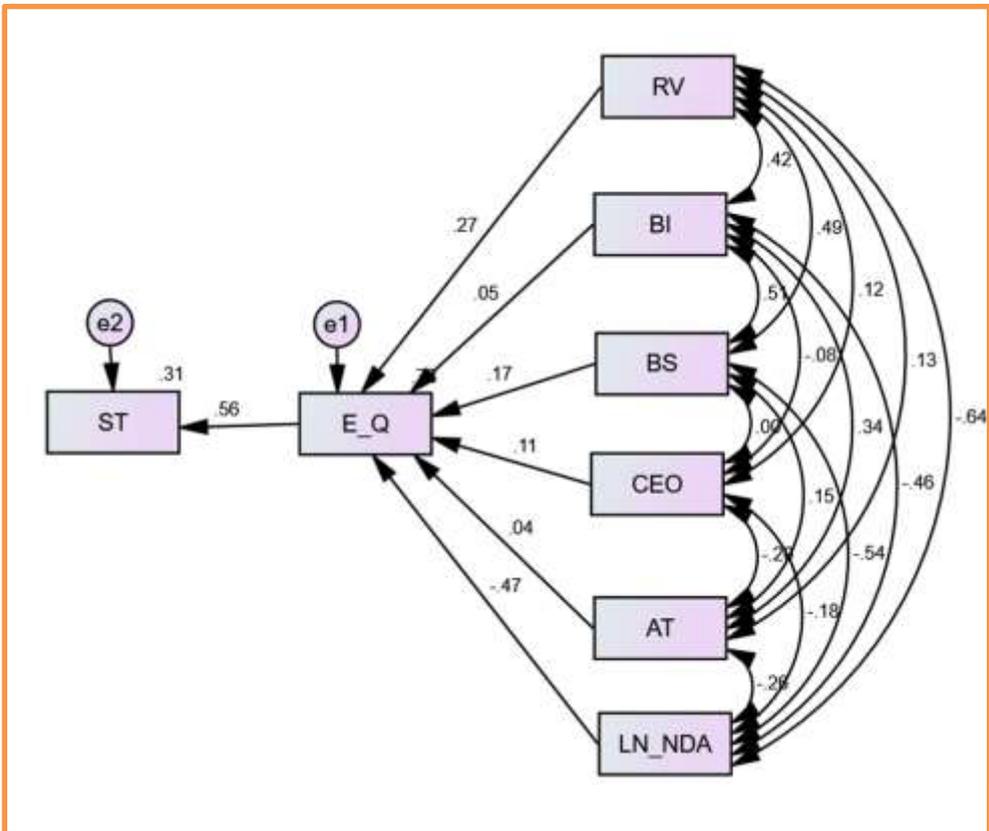
### According to correlation Matrix in Table (6):

There are significant positive and negative linear relationships among the variables of corporate governance and the earnings quality **at significant** less (0.01) and (0.05) except for the CEO duality.

From table (6) it can be concluded that there is a strong relationship between the corporate governance variables and the earnings quality and the risk volatility. The correlation matrix results indicated that the stock price average has a positive relationship with all the variables except for earnings management where it has a negative relationship. The return volatility has a positive relationship with all the variables except for earnings management. The earnings quality has a positive relationship with all variables except for earnings management where it has a negative relationship.

**Structure equation modeling analysis:**

The effect of exogenous on the stock price through a mediator variable which is the earnings quality. The path analysis indicating the direction of impact among the research variables. It indicates that risk volatility, corporate governance and earnings management have an impact on the earnings quality, then the earnings quality has an impact on the company performance. This relation can be identified through the coefficients shown in the path analysis figure.



**Figure (2): Illustrating the SEM values for the exogenous and endogenous variables**

The researchers performed two runs of the statistical technique (structure equation model) in order to eliminate the insignificant variables and to show the importance of the remaining variables.

**Table (7) SEM values for the exogenous and endogenous variables(original run)**

Path			Standardized Estimate	Unstandardized Estimate	S.E.	C.R.	P-value
Earnings quality	<---	Board independence	.053	.038	.033	1.150	.250
Earnings quality	<---	Board size	.170	.135	.037	3.622	***
Earnings quality	<---	CEO Duality	.111	.100	.035	2.876	**
Earnings quality	<---	Auditor type	.039	.045	.047	.958	.338
Earnings quality	<---	Earnings management	-.467	-.383	.043	-8.847	***
Earnings quality	<---	Return volatility	.274	.262	.047	5.604	***
Stock price	<---	Earnings quality	.559	.640	.065	9.908	***

\*\* Significant at level less than (0.01)

\*\*\* Significant at level less than (0.001)

The original run of the data resulted in findings of table (7) where there is a significant positive effect of the constructs of CG in terms of Board size, and CEO Duality on the earning quality and insignificant impact of CG in terms of the Board independence

and the Auditor type. The main constructs of research which are corporate governance constructs, earnings management and the return volatility earnings quality showed positive significant values at level less than (0.01) (0.001) respectively except for the earnings management which has a negative linear relationship with the earnings quality at significant level less than (0.001) . the structure equation models can be presented as follows:

Earnings quality = - 0.053 Board independence +0.170 Board size+0.111 CEO Duality + 0.039 Auditor type -0.467 Earnings management +0.274 Return volatility Stock price = 0.556 Earnings quality

The power of explanation represented through  $R^2$  for the first run equations is 71.6% and 31.2% for the second equation this results are validating the hypotheses of the research where the three main variables represented by risk volatility, corporate governance, and earnings management are explaining 71.6 % of the variability of the earnings quality and on the same time earnings quality are explaining 31.2% of the variability of the firm performance represented by the stock price in the stock exchange market taking into consideration the distortion in the results due to the insignificance of the board independence and the auditor type variables.

The goodness of fit results is shown in table (8) to measure the quality of the models presented by the original run of the data by measuring the goodness of fit of the SEM models.

**Table (8): The goodness of fit indices of the SEM models**

Chi-Square (CMIN)	37.063	Normed Fit Index (NFI)	.949
Degree of Freedom	6	Relative Fit Index (RFI)	.764
Level of Significance (P)	.000	Incremental Fit Index (IFI)	.957
Normed Chi-Square (CMIN/DF)	6.177	Tucker Lewis Index (TLI)	.794
Root Mean Square Residual (RMR)	.068	Comparative Fit Index (CFI)	.956
Goodness of Fit Index (GFI)	.962	Root Mean Square Residual Approximation (RMSEA)	.155
Adjusted Goodness of Fit Index (AGFI)	.772		
R2: Earnings quality = 71.6%		R2: Stock price = 31.2%	

Table (8) shows the statistical results of measuring the goodness of fit of the first hypothesis SEM model (original run). The researchers reached the following results:

All the goodness of fit measures of the model indicate that all indicators at acceptable limits or greater than cut-off values, especially GFI, NFI, RFI, IFI, TLI, and CFI close to one. The fit measures indicate the goodness of fit of the final structural model and its ability to measure the effect of the share value creation on the earnings management.

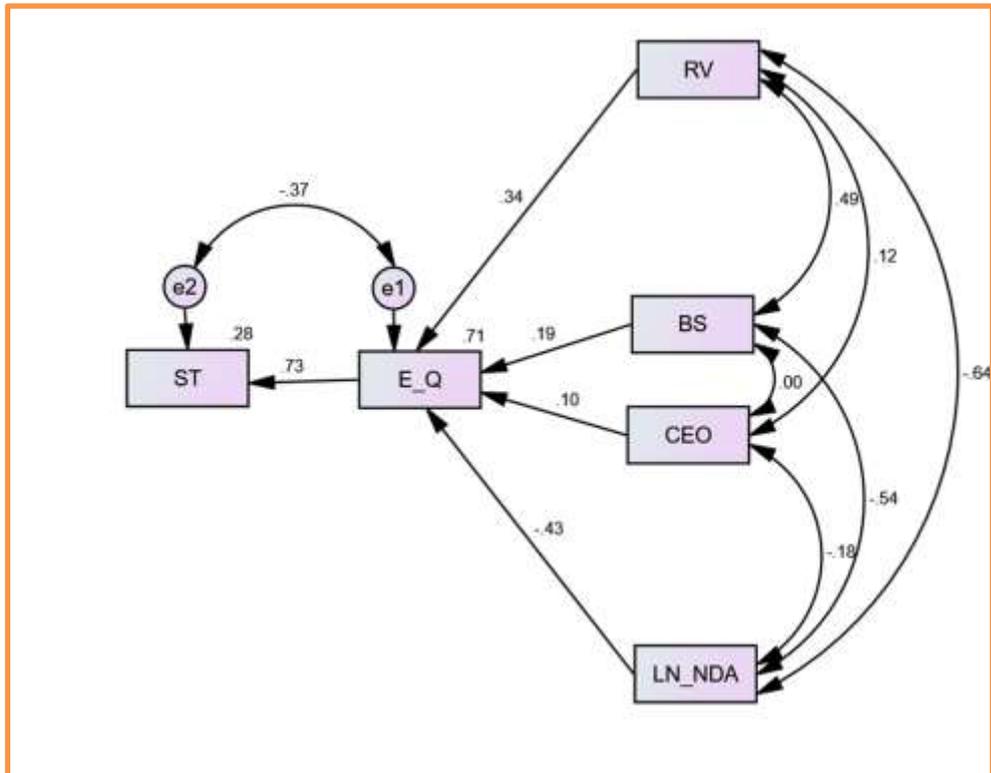
The **constructs** of the return volatility, corporate governance, and management earnings on the earnings quality and stock price are showing significant R2 values of 71.6%, and 31.2% respectively.

This means that the SEM (Structure equation modeling) explain nearly (31.2-71.6%) from total variation of **dependent** on the stock price using the earnings quality as a mediator, and the **rest percent** is due to the random error in the regression or other variables that were not included in the study.

The researchers can conclude that the SEM analysis and the goodness of fit results validate the research hypothesizes. These results validate the association between the Return volatility, corporate governance, and management earnings on the stock price using the earnings quality as an intermediary variable.

### **Revised SEM analysis:**

The researchers tried to enhance the quality of the models by rerunning the structured equation model technique after excluding the insignificant variables, which are Board independence and auditor type. This resulted in an **alternation** in the model as it is shown in the figure 3.



**Figure (3): Illustrating the SEM values for the exogenous and endogenous variables**

Table (9) shows the results of the structure equation model in the second run.

**Table (9) SEM values for the exogenous and endogenous variables(Rerun)**

SEM			Standardized Estimate	Unstandardized Estimate	S.E.	C.R.	P-value
Earnings quality	<---	Board size	.189	.150	.033	4.492	***
Earnings quality	<---	CEO Duality	.102	.092	.031	2.915	.004
Earnings quality	<---	Earnings management	-.429	-.352	.039	-8.927	***
Earnings quality	<---	Return volatility	.342	.327	.044	7.480	***
Stock price	<---	Earnings quality	.728	.834	.078	10.651	***

\*\* Significant at level less than (0.01)

\*\*\* Significant at level less than (0.001)

From table (9) the researchers can conclude that there are significant positive linear relationships between the **constructs** of corporate governance constructs except this time for the CEO Duality, earnings management and the return volatility earnings quality values at significant level less than (0.01) (0.001) respectively except for the earnings management which has a negative linear relationship with the earnings quality at

significant level less than (0.001).

Earnings quality = .189 Board size+.102 CEO Duality -.429 Earnings management +.342Return volatility

**Stock price** = .728 Earnings quality

A remark from the results in table (9) that a shift happened in the significance of the CEO duality by Being insignificance in the second run of the statistical technique and the researchers can accept that as the CEO duality is highly Correlated with the board independence, so after eliminating the board independence that affected the significance of the CEO duality. The researchers can conclude from table (9) that the exclusion of the insignificant variables enhanced the standard estimate value of the earnings quality on the stock price of the firms. This can verify the hypotheses of the research with a better result.

The SEM modeling equation is illustrated graphically in figure (3) showing the relation, and impact or relation (Wight) between earning management, corporate governance (board size and the ×{ duality) on the stock performance using the earnings quality as a mediator. Table (10) shows the statistical results of measuring the goodness of fit of the SEM model.

**Table (10): The Goodness of Fit Indices in the SEM (Rerun)**

Chi-Square (CMIN)	16.038	Normed Fit Index (NFI)	.973
Degree of Freedom	3	Relative Fit Index (RFI)	.865
Level of Significance (P)	.001	Incremental Fit Index (IFI)	.978
Normed Chi-Square (CMIN/DF)	5.346	Tucker Lewis Index (TLI)	.888

Root Mean Square Residual (RMR)	.041	Comparative Fit Index (CFI)	.978
Goodness of Fit Index (GFI)	.977	Root Mean Square Residual Approximation (RMSEA)	.089
Adjusted Goodness of Fit Index (AGFI)	.837		
R2: Earnings quality = 71%		R2: Stock price = 28.4%	

From table (10), the researchers noticed the following:

All the goodness of fit measures of the model indicate that all indicators at acceptable limits or greater than cut-off values, especially GFI, NFI, RFI, IFI, TLI, and CFI close to one. The fit measures indicate the goodness of fit of the final structural model and its ability to measure the effect of earning management, corporate governance (board size and the CEO duality) on the stock performance using the earnings quality as a mediator.

The **constructs** of the earning management, corporate governance (board size and the CEO duality) on earnings quality showing significant **R2** values of 71%. On the other hand, showing significant **R2** values of 28.4% of the earnings quality as a mediator on the stock performance and the **rest percent** is due to the random error in the regression or other variables that were not included in the research. The results showed that the impact of earning management, corporate governance (board size and the CEO duality) on the stock performance is stronger than the impact earnings quality as a mediator on the stock performance.

The researchers can conclude that there is a positive significant

relation among the research variables except for the negative association between the earnings management and the earnings quality, which validate the research hypotheses. The results are very logic since the earnings management is affecting negatively the quality of the earnings and the price of the stock in the market.

## CONCLUSION

As a result of the importance of the financial reporting quality represented here by the earnings quality within the local and international economy, the researchers had been motivated to conduct that research in order to participate in the trend of enhancing the financial reporting quality. The research addressed these variables in the Egyptian market in order to cover the gab in the application in the developing countries like Egypt.

The research has four objectives that had been used to test the **relation and the impact** of the firm specific return volatility, corporate governance, earnings management on the stock price performance of the firms using the earnings quality as an intermediary variable in the Egyptian stock exchange market. The sample selected is covering the most active 30 firms as listed in the EGX30 in the Egyptian stock exchange market.

The research used the Jarque-Bera Test to test the validity and the reliability of the collected data. The researchers tested the attributes of the corporate governance, earnings management and the firm return volatility and their impact on the earnings quality, the results of that are that there is a positive association among all the variables except for the earnings management that show

negative association with the earnings quality as presented in the results of the Pearson correlation test.

The research conduct two runs of the **structure equation** modeling analysis, the first run indicated the insignificance of two variables within the corporate governance **construct** which are the board independence and the auditor type, and the second run had been conducted to enhance the results of the regression model by eliminating the two insignificant variables which resulted in enhancement in the coefficient of the earnings quality of the stock price of the firms within the regression model. In the same time the variables provided high  $R^2$  values between 31 and 71 % of explanation power in the first run, while in the second run the  $R^2$  value almost remained constant as between 28.4 and 71% with a new insignificant variable with is the CEO duality.

Finally, the researchers reached to the conclusion of validating all the research hypotheses by proving the significance of the variables proposed and eliminating the insignificance variables to reach for the most optimal regression model that reflect the associations and the impact among variables of the research in the Egyptian stock exchange market.

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## **Appendices**

EGX 30 index, previously named CASE 30 Index, is designed and calculated by Egyptian stock exchange. EGX started disseminating its index on 2 February 2003 via data vendors, its publications, web site, newspapers etc. The start date of the index was on 2/1/1998 with a base value of 1000 points.

EGX 30 index values are calculated in local currency terms and denominated in US dollars since 1998. EGX started publishing its dollar denominated index on 1st of March 2009.

EGX 30 index includes the top 30 companies in terms of liquidity and activity.

EGX 30 Index is weighted by market capitalization and adjusted by the free float. Adjusted Market capitalization of a listed company is the number of its listed shares multiplied by the closing price of that company multiplied by the percent of freely floated shares.

For a company to be included in EGX 30 index, it must have at least 15% free float. This ensures market participants that the index constituents truly represent actively traded companies and that the index is a good and reputable barometer for the Egyptian market.