Evaluating the effects of conventional and modern performance metrics on shareholder value.

Comparison analysis

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Abstract

This study intends to analyze the influence of modern financial performance indicators on shareholder value and compare this effect with the effect of traditional financial performance measures, using a sample of 161 firms from 2014 to 2018 in the Egyptian stock market. The study used shareholders' value as the dependent variable and six independent variables including Economic Value Added (EVA), Market Value Added (MVA), and Tobin-Q ratio (Market Price to Book Value Ratio) as modern financial performance measures, and three traditional financial measures (Rate of return on average assets (ROA), Rate of return on owners' equity (ROE), and Earnings per share (EPS)). Using Pooled regression analysis, the research reveals that the rate of return on average assets (ROA) and the economic value added (EVA) showed a high correlation with shareholders' value.

Introduction

In order to ensure the company's long-term sustainability, public shareholding corporations attempt to maximize the wealth of their owners by maximizing the market value of their shares. If this objective is not reached, the failure of the company's management could lead to its demise (Panigrahi et al., 2014). Performance measurements and shareholder value have been heavily debated in financial literature for a very long time, but no suitable performance measurement tool that can be correlated with shareholder value has been developed. Due to the inability of the revealed financial statements to determine the company's true value, many analysts focused on the disparity between the market value and book value of the enterprise (Othman et al., 2012).

Numerous academics had an interest in financial performance metrics. Many of these indicators have undergone a substantial shift in their use as performance indicators throughout time, from a concentration on accounting revenue and profits to a focus on metrics that circumvent criticism of accounting revenue and profits, such as asset and equity returns (Alkhalialeh, 2004). There is much debate as to whether traditional accounting measures such as earnings per share (EPS), return on average assets (ROA), and return on owners' equity (ROE) are adequate or appropriate, particularly in light of criticisms regarding their impact on stock market value and their failure to reflect the real

value of the company (Vijayalakshmi, 2014) and their reliance on estimates in the measurement of financial reporting standard deviation (Abu Wadi & Saqfal-Hait, 2016).

As a result of the impact of profits on various accounting systems, the usage of new performance indicators has evolved into a new trend. The economic value added (EVA) developed by the American consulting firm Stern and Stewart Co. is the most significant new metric. The difference between a company's net operating earnings and its cost of capital is its economic value added.

In addition, there is the Market value-addedadded, which is calculated by subtracting the market value from the book value of a stock, and the Tobin-Q ratio, which is a well-known current financial indicator. According to studies, economic value added is superior to traditional accounting assessments in terms of its perceived influence on shareholder value (Wet, 2005). The ratio of a company's economic value added to its market value is determined by transforming accounting profits into economic profits, thus boosting the owner's wealth (al-Sheikh, 2012).

Comparing the impact of economic value-added, market value-added, and the Tobin-Q ratio with the impact of traditional accounting measures on Egyptian public company shareholders' value maximization is the target of this research, which aims to fill a gap in the financial literature and identify the most comprehensive and significant measure of shareholder value.

Research Question

Conventional accounting financial measures have received widespread criticism, particularly for their inaccuracy in reflecting a company's underlying value. Numerous accounting rules and indicators exist, but none of them can explain why the stock price of a company has changed (Vijayalakshmi, 2014). In the absence of an adequate performance assessment tool to assist shareholders in evaluating the returns on their investments in business shares, traditional accounting rules may be one of the causes of weak corporate performance when used to quantify earnings or value for shareholders (AbdulRazzaq et al., 2008). It is essential to determine whether economic indicators can better explain the change in shareholder value than traditional metrics, as well as the extent to which they correlate with and have a global impact on that wealth. Based on the abovementioned, this study seeks to answer the following questions:

1. How do conventional performance metrics (ROA, ROE, and EPS) affect the value of shareholders?
2. What effect do modern performance measures (EVA, MEV, and Tobin-Q) have on the value of shareholders?
3. Which performance measures, conventional or modern, have a major effect on maximizing shareholder value?

Research aims and objectives

The primary purpose of this study is to examine the effect of economic value-add, market value-added, and Tobin-Q ratios on maximizing shareholder value in the Egyptian stock market relative to traditional financial performance indicators.

The study's objectives can be summarized as follows:

1. Determine the effect of traditional performance measures on maximizing shareholder value in the Egyptian stock market.
2. Examine the impact of modern performance measures on maximizing shareholder value in the Egyptian stock market.
3. Determine the significance of computing the Economic value-added, Market value-added, and Tobin-Q ratios for analyzing financial performance
4. Evaluating the correlation between shareholder value and financial metrics

Literature Review

Numerous previous studies have examined the relationship between contemporary financial performance, traditional financial performance, and shareholder value.

Al-Awawdeh and Al-Sakini (2018), examined the influence of economic value-added, market value-added, and traditional accounting measures on the shareholders' value of Jordanian commercial banks during the period 2010-2016, using a sample of 13 banks. The shareholders' value was employed as the dependent

variable, along with five independent variables: Economic Value Added (EVA), Market Value Added (MVA), and three classic accounting measures: rate of return on assets (ROA), rate of return on equity (ROE), and Earnings per share (EPS) (EPS). Using common regression analysis, the study found that the rate of return on assets (ROA) and the economic value added (EVA) had a positive and statistically significant effect on maximizing shareholders' value, whereas traditional accounting standards and market added value had no significant effect. The conclusion of the study was that traditional accounting standards continue to be a significant factor in evaluating shares and maximizing shareholder value alongside current performance evaluation criteria, including economic value added. The paper recommended that banks' performance be evaluated using two criteria: the rate of return on assets and the economic value added.

During the years 2003 to 2012, a study (Panigrahi, 2017) studied the association between performance monitoring tools and shareholder value in a sample of Malaysian public share construction enterprises. The study found that despite public criticism, a significant number of Malaysian enterprises continue to employ traditional metrics. The study also revealed that traditional accounting standards and economic measures may not effectively reflect a company's genuine value. The study revealed that the value of stocks is an indicator of performance. According to the conclusions of the study, dividends have a crucial role in

stock profitability, economic value-added, and dividend distribution. The study found a negative link between market value-added and equity value, contradicting the idea that equity value increases in tandem with the market value of the shares.

According to (Bognárová, 2017), economic value added (EVA) is one of the most significant current performance metrics, and the key difference between EVA and old accounting standards is that EVA covers the costs of debt or equity financing and mitigates some accounting distortions. In addition, the research revealed that economic value-added and additional market value gave a more accurate evaluation of the company's financial success. The study examined the usage of economic value added in a sample of Slovak enterprises between 2010 and 2015 using a case study technique. The study indicated that when evaluating improvements in market value-added, modern performance indicators such as economic value added surpass older performance criteria like profits and share profitability.

The objective of Abu Wadi & Saqf al-Hait, (2016) study was to analyze traditional accounting performance indicators (rate of return on owners' equity) and modern performance assessment indicators (economic value added) for Jordanian commercial banks from 2000 to 2013, as well as to identify the indicators of these standards as performance assessment indicators and their application to interpret the market added value. There is a statistically significant direct relationship between the rate of return on owners' equity and the

market value added of Jordanian banks, as well as between the economic value-added and the market value added of Jordanian banks; however, the economic value-added indicator produced better results than the return on owners' equity indicator.

Fayed and Dubey (2016) investigated three unique sets of performance metrics, including traditional accounting measures, market-based measures, and value-based metrics, with a focus on economic value contributed. Between 2008 and 2013, the study analyzed a sample of public shareholding companies listed on UAE stock exchanges. The investigation found that while economic value and value-based metrics provided little new information content, the multiplier of market value to book value-added a substantial quantity of information that dominated the other measures.

Comparing the value-added indicator to standard accounting measures of financial success and the market value added indicator, (Saifi & Bin Amara, 2015) investigated the extent to which the value-added indicator may be utilised to measure financial performance. The analysis is based on a sample of companies listed on the CAC40 index of the Paris Stock Exchange from 2008 to 2013. The findings of the study suggested that market value added is superior to other performance metrics, including the economic value-added indicator, for understanding dividends.

Panigrahi et al. (2014) assessed the significance of economic value added for maximising shareholder value. Economic value added (EVA) is a performance-based indicator that indicates the friction between managers and shareholders, according to the study. Using a sample of 28 public shareholding companies listed on the Malaysian Stock Exchange from 2003 to 2012, the study found a positive and strong relationship between economic added value and shareholder value maximization. In addition, the statistics suggested that the shareholder value increased with the economic value-added.

The study by (al-Muhtadi, 2014) examined the application of economic value-added and traditional measures (including earnings per share (EPS), return on investment, operational cash flow, and return on owners' equity) to determine the change in the market value of Bank of Palestine stock prices between 2004 and 2012. The study found that the market value of Bank of Palestine shares was significantly correlated with standard performance evaluation indicators when used together, and much more so when used individually to measure the change in the market value of the shares. In addition, the analysis determined that economic value added was the best suitable metric for measuring the change in the market value of Bank of Palestine shares.

Bhasin and Shaikh (2013) analyzed the value-creation strategies of a sample of Indian companies by analyzing if economic value added (EVA) effectively reflects the market worth of these companies when compared to traditional performance indicators.

The study examined economic value-added and traditional performance metrics such as earnings per share, return on capital employed, and return on net value using trend analysis and regression analysis. The outcomes of the study suggested that there was insufficient evidence to imply that economic value added has a stronger link with market value-added than traditional performance indicators.

In the study conducted by Kaddoumi et al. (2012), the relationship between economic value added (EVA) and traditional accounting metrics, as well as the relationship between share market value and EVA, was investigated. Standard accounting metrics included return on average assets (ROA), return on equity (ROE), operational cash flow, earnings per share (EPS), dividends per share (DPS), and book value. The study studied 31 publicly traded Amman Stock Exchange companies. The study found that the market value of equities is more closely related to traditional performance indicators than to economic value-added and that traditional performance metrics are capable of interpreting a larger magnitude of market value change.

Using a sample of Tehran Stock Exchange-listed Iranian enterprises, (Kootanaee et al., 2012) analyzed performance indicators to establish the most precise measure of enterprise performance. The relationship between profitability, operating cash flow, economic value contributed, and share market value was explored. The analysis

found a significant relationship between earnings per share and value-added measures and the market value of shares.

Using a sample of 20 vehicle manufacturers in India, (Vijayakumar, 2011) determined if economic value added (EVA) has a significant explanatory capacity. The study used the Factor Analysis approach to discover the most relevant components in economic value-added, out of eight variables: profits per share (EPS), sales, profit after taxes, market value, market value-added, return on sales, return on average assets, and return on capital employed. Three important components may be identified from the eight variables, accounting for 69.9 percent of the variance in economic value-added, according to the study's findings. In addition, the data revealed that the link between after-tax sales and earnings and economic value added is the strongest.

Yahyazadefar et al. (2010) investigated the relationship between two types of traditional performance evaluation criteria (return on owners' equity, return on average assets, and earnings per share) and economic value added-based performance evaluation criteria. Economic value added, return on owners' equity, and market value-added were found to have a strong link, according to the results. However, there is no statistically significant correlation between average return on assets, earnings per share, and market value-added.

Vakilian et al. (2009) did another study in which they evaluated economic models with EPS and analyzed the relationship between

economic value-added and residual earnings. The results demonstrate a substantial correlation between residual earnings and future earnings per share, suggesting that this criterion has predictive significance. There is no statistically significant correlation between economic added value and earnings per share. Iran, therefore, rejected Stewart's view that economic value added is the optimal success metric. Utilizing residual profits as an efficient performance model for investment decisions is desirable.

While Popa et al. (2009) asserted that EVA might be a useful tool for bankers in assessing and enhancing the financial performance of their institutions. They illustrate the advantages of EVA by comparing it to other performance metrics. EVA takes into account the interests of the bank's shareholders; hence, its use by bank management may result in different decisions than if management relied solely on other indicators. They investigate the Romanian banking system to compare the advantages of EVA to alternative performance measures such as return on average assets (ROA), return on owners' equity (ROE), net banking income, and the efficiency ratio, which do not account for the cost of equity capital used.

Furthermore, Mahmoodabadi and Bayazidi (2008) investigated the company valuation explanatory power of residual earnings evaluation models and earnings abnormal growth models. It was established that there is no discernible difference between the explanatory power of these two models in determining the value

of enterprises across industries and in general. Almost always, the residual earnings evaluation model accurately predicted company values.

In contrast, Athganassakos (2007) found that changes in economic added-value relative to changes in earnings explained a major amount of the ten-year and five-year fluctuations in stock returns. He discovered that economic added value is a measure of the institution's past achievement, but does not provide insight into its future performance. In a separate study, Ghanbari (2007) examined the strong relationship between economic value-added and market value added in Indian care manufacturing firms. He discovered numerous evidence that economic value added is superior to other traditional performance measures, and that the best measure of a company's success is its ability to increase the value of its stockholders' investment.

In the same year, Irala (2007) investigated whether economic value added is more predictive than typical performance indicators such as Return on Capital Employed (ROCE), Return on owners' equity (ROE), Earnings per Share (EPS), Capital Productivity (CP), and Labor Productivity (LP) (LP). Thus, he evaluated data from one thousand Indian businesses over a six-year period. Economic value added had a greater predictive value of market value than other scales, and because it is utilized for a brief period of time, it is considered a fundamental performance metric.

Additionally, Kyriazis and Anastassis (2007) examined the economic value added by several institutions in the Athens stock market and found that, while economic value added is a useful proxy for change in earnings, it explained a significant portion of the fluctuations in stock returns over ten and five years. He discovered that economic added value is a measure of the institution's past achievement but does not provide insight into its future performance. On a mathematical level, Pfeiffer (2000) examined EVA and discounted cash flow techniques for resolving internal agency problems in decentralized decision-making. Aside from the theoretical discussion, knowledge of the EVA's numerical behavior under different conditions and its numerical relationship to accounting measures such as Return on Investments (ROI), Return on Owners' Equity (ROE), and economic profitability measures such as the Internal Rate of Return (IRR) is required (IRR). Girotra et al. (2001) emphasized the significance of the EVA. Return on equity (ROE), Return on net worth (RONW), Return on capital employed (ROCE), and earnings per share (EPS) are compared to EVA (EPS). They assert that although EVA is not a technique for producing value, it does encourage managers to think like owners, which may motivate them to enhance performance. According to the study, EVA has benefited firms by compelling them to pay strict attention to utilized capital, especially excess working capital.

This study is one of the few that has focused on measuring financial performance using modern measures in the Egyptian Securities market, specifically the measure of economic added value due to the difficulty of obtaining data to calculate it, as well as the large number of companies on which the statistical study was based, as the study used the data of 161 companies register. Based on the prior discussion of studies that measured the financial performance of companies, this study is one of the few that has focused on measuring financial performance using modern measures in the Egyptian Securities market and its effect on shareholders' value as measured by Al-Awawdeh and Al-Sakini (2018). In addition to making use of a statistical model that was distinct from those that had been utilized in the vast majority of earlier investigations, this study also made use of a novel methodological strategy.

Research Hypotheses

H_1: On the Egyptian stock market, conventional performance measures (Return on average assets (ROA), rate of return on owners' equity (ROE), and Earnings Per Share (EPS)) have a positive significant influence on shareholder value maximization.

H_2: Modern performance metrics (Economic value added (EVA), Market value added (MVA), and Price to Book ratio (P/B)) have a positive significant influence on maximizing shareholder value in the Egyptian stock market.

H_3: Traditional performance indicators on the Egyptian stock market have a weaker correlation coefficient with shareholder value compared to modern performance metrics.

Research variables

The indicators for all the variables used in this study are taken from the firm annual report/financial statements. The details are summarized below.

Table (1) Study Variables

Variables	Explanation
Economic Value Added (EVA)	Invested Capital × (Return on owners' equity – Weighted average cost of capital)
Market Value Added (MVA)	MVA = Equity market value - Equity book value Equity Market Value = No. of outstanding shares × Market common stock price
P/B ratio	Market price per common share / Book value per common share
Return on owners' equity (ROE)	Net Income after tax /Average Total owners' Equity
Return on average assets (ROA)	Net Income after tax / Average Total Assets
Earnings Per Share (EPS)	Net Income available to common stock / Weighted Average No. of common stock outstanding
Shareholders' Value (SHV)	Equity market value × (ROE – Cost of Equity)

Source: Prepared by the researcher

Research Methodology

This research follows a descriptive quantitative research method (Zikmund, 2003). The data in this research is solely based on secondary data, particularly from annual reports/financial Statements of those publicly traded firms, including references, such as books, journals, and other articles on previous studies on

Egyptian public register firm's performance analysis. Though this study is primarily based on the quantitative method. The sampling method is used to emphasize the publicly listed firm.
The research population consists of all firms registered in the Egyptian security market (218 firms) according to the Egyptian exchange official website. The sample consists of 161 firms (excluding financial sector firms due to their unique nature and standards) satisfying data needs for the study period (2014–2018).

Statistical methods used.

To determine the type of relationship between the study variables and the validity of the Hypotheses of the study, several statistical tests were used, like (the Residuals Heteroskedasticity Test, the Normality of Residuals test, Multi-Linear Regression Coefficient, Multi-Linear Correlation, Multicollinearity, and Autocorrelation test).

Results of statistical analysis:

To verify the validity of data for statistical analysis, we use Shapiro-Wilk Test. Due to the importance of using the Normal distribution test of data to make sure that the study variables follow the Normal distribution so, we can conduct the parameter tests of the study, which amounted to 805 samples for the study variables, where this study was applied to 161 companies within five years, the period (2014 to 2018).

The Next Table (2) shows Shapiro-Wilk Testing on study variables, where we accept H_0 when significant P Z > 0.05, given the following:

- H_0: variables follow the normal distribution.
- H_1: Variables do not follow the normal distribution.

Table (2) Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
SHV	805	0.777	115.438	11.655	0.522
EVA	805	0.437	291.462	13.928	0.182
MEV	805	0.294	365.661	14.484	0.079
PB	805	0.197	415.886	14.8	0.058
EPS	805	0.303	361.072	14.453	0.088
ROE	805	0.109	461.516	15.056	0.146
ROA	805	0.558	228.95	13.335	0.303
LogTA	805	0.982	9.188	5.443	0.727
Leverage	805	0.699	155.905	12.392	0.444

Source: Stata V_{15} Outputs

From the previous table all variables follow the normal distribution, depending on Shapiro's test, and the level of significance P z > 0.05, which means All Variables are distributed according to the normal distribution, Accordingly, Accepted the null hypothesis H0: variables follow the normal distribution, and reject the alternative hypothesis H1: Variables do not follow the normal distribution.

Multicollinearity and Autocorrelation test

Multicollinearity and Autocorrelation testing were used to test the powers of study data for statistical analysis as in the following table:

Table (3) Multicollinearity and Autocorrelation test

Variable	Obs	Tolerance	VIF
SHV	**805**	**0.4198**	**6.526**
EVA	**805**	**0.5748**	**6.466**
MEV	**805**	**0.4259**	**6.596**
PB	**805**	**0.5093**	**6.386**
EPS	**805**	**0.4987**	**6.376**
ROE	**805**	**0.5905**	**6.666**
ROA	**805**	**0.4765**	**6.296**
LogTA	**805**	**0.3205**	**6.886**
Leverage	**805**	**0.3676**	**6.716**

Source: Stata v15 Outputs

The previous table shows the results of the Multi-collinearity Test linear interference test through the Collinearity Diagnostics scale based on two indicators:

- Variance Inflationary Factor and there is inflation by this indicator when the VIF>= 5.
- Tolerance endurance factor is a self-association problem, There's a data problem when its Tolerance valuable > 0.25

According to the results shown in the previous table and an indication of the assumptions of the previous two indicators, it is clear that all the variables of the study passed these indicators.

Tests hypotheses:

According to the study model, the data will be analyzed using the panel data method by using three models: Pooled Regression Model (PRM), Fixed Effects Model (FEM), and Random Effects Model (REM). In order to choose between which of these models should be chosen, and used in the analysis, two tests will be applied: the first is called the proposed Lagrangian Multiplier Test (LM) by Breusch and Pagan (1980) in order to choose between PRM, FEM or REM. The second is called the proposed Hausman H Test (1978) and is used to choose between FEM and REM.

First: Tests hypotheses (1)

H_1: On the Egyptian stock market, conventional performance measures (Return on average assets (ROA), rate of return on owners' equity (ROE), and Earnings Per Share (EPS)) have a positive significant influence on shareholder value maximization.

1- Doornik-Hansen test for Model Variables

The Doornik-Hansen test for multivariate normality is based on the skewness and kurtosis of multivariate data that is transformed to ensure independence. It is more powerful than the Shapiro-Wilk test for most tested multivariate distributions.

Table (4) Result of Normality for Model Variables

Test for multivariate normality	
Doornik-Hansen	$chi^2(2) = 120.619$
Prob>chi2 = 0.0837	

Source: Stata v15 Outputs

The previous table shows a test to ensure that Residuals for model variables have a normal distribution, and the prob's value for the linear regression model is = 0.0837, which is greater than 5%, Accordingly, accepted the null hypothesis H0: Residuals follow the normal distribution, and reject H1: Residuals do not follow the normal distribution, which is a good indicator of the quality of the model.

2- Residuals Heteroskedasticity Test

Figure (1) Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of SHV
chi2(1) = 128.16
Prob > chi2 = 0.1035

Source: Stata V_{15} Outputs

The result of the Residuals Heteroskedasticity Test in the previous table indicated that prob = 0.1035, which is greater than 5%, Accordingly there is no problem residuals Heteroskedasticity, which means accepted the null hypothesis There's no Heteroskedasticity in the residuals, and reject Alternative hypothesis

3- The model results

To determine the best model between a pooled regression model or (fixed effects model and a random effect model) we will use the Lagrangian test.

- **Lagrangian Multiplier Test**

Figure (2) Results of a Lagrangian Multiplier Test

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Breusch and Pagan Lagrangian multiplier test for random effects

        SHV[CID,t] = Xb + u[CID] + e[CID,t]

        Estimated results:
                         |       Var      sd = sqrt(Var)
                ---------+------------------------------
                     SHV |   4.39e+08        20962.82
                       e |   1.15e+08        10733.92
                       u |   2.07e+08         14377.1

        Test:   Var(u) = 0
                                 chibar2(01) =    534.08
                              Prob > chibar2 =    0.0000
```

Source: Stata V_{15} Outputs

The test results show that prob Lagrangian Multiplier is = 0.000, which is less than 0.05.

- Null hypothesis: PRM regression will be better than both FEM and REM. (P=0)
- Alternative hypothesis: FEM or REM regression models will be better than PRM. (P=1)

from the results, we accepted the null hypothesis and reject the alternative hypothesis therefore the best model is PRM.

- **pooled regression model (PRM)**

Table (5) Model Results

SHV	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
EPS	15.838	91.908	3.95	.000	182.429	543.248	***
ROE	1.848	40.596	6.85	.008	447.497	125.193	***
ROA	45.598	22.35	8.75	.000	151.727	239.469	***
LogTA	.858	966.13	12.20	.000	13687.31	9894.406	***
Leverage	.307	2080.309	4.26	.000	4778.79	12945.823	***
Constant	.295	2720.358	8.44	.000	17614.403	28294.187	***

Mean dependent var	-4696.181	SD dependent var	20962.823
R-squared	0.401	Number of obs.	805
F-test	40.117	Prob > F	0.000
Akaike crit. (AIC)	18135.503	Bayesian crit. (BIC)	18163.648

*** *p<.01*, ** *p<.05*, * *p<.1*

Source: Stata V_{15} Outputs

The previous table shows the results of the multiple regression test of independent study variables (EPS-ROE-ROA) and dependent variables SHV. There is a Moderated positive impact

of the independent variables (Return on average assets (ROA), rate of return on owners' equity (ROE), and Earnings Per Share (EPS)), on maximizing shareholder value in the Egyptian stock market., which can be represented by a simple linear regression model of the following:

SHV = 0.295 + 15.838 EPS + 1.848 ROE + 45.598 ROA + 0.858 LogTA+ 0.307 Leverage

Which mean if the Earnings Per Share (EPS) increased by 1 unit the Shareholders' Value will increase by 15.8 Unit and if the rate of return on owners' equity (ROE), increased by 1 unit the Shareholders' Value will increase by 1.848 Unit, and Return on average assets (ROA), increased by 1 unit the Shareholders' Value will increase by 45.598 Unit.

- The significance of independent variables is (0.000) lower than (0.05), which means the variable is statistically significant.
- The degree of significance regression model proposed (0.00) is less than (0.05), which means that the model is statistically significant.
- Reached the coefficient of determination is R^2=40%, which means, 40% of changes in SHV can be explained by the change in (EPS-ROE-ROA -LogTA-Leverage)

Finally, the results and previous analysis confirm that there is a statistically significant impact of (Return on average assets

(ROA), rate of return on owners' equity (ROE), and Earnings Per Share (EPS)), on maximizing shareholder value in the Egyptian stock market.

Second: Tests hypotheses 2

H_2: Modern performance metrics (Economic value added (EVA), Market value added (MVA), and Price to Book ratio (P/B)) have a positive significant influence on maximizing shareholder value in the Egyptian stock market.

1- Doornik-Hansen test for Model Variables

Table (6) Result of Normality for Model Variables

Test for multivariate normality
Doornik-Hansen chi2(2) = 327.826
Prob>chi2 = 0.2953

Source: Stata V_{15} Outputs

The previous table (6) shows a test to ensure that residuals for model variables have a normal distribution, and prob's value for the linear regression model is = 0.2953, which is greater than 5%, Accordingly, accepted the null hypothesis H_0: Residuals follow the normal distribution, and reject H_1: Residuals do not follow a normal distribution, which is a good indicator of the quality of the model.

2- Residuals Heteroskedasticity Test

Figure (3) Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of SHV
chi2(1) = 678.87
Prob > chi2 = 0.2934

Source: Stata V_{15} Outputs

The result of the Residuals Heteroskedasticity Test in the previous table indicated that prob = 0.2934, which is greater than 5%, Accordingly there is no problem with residuals Heteroskedasticity, which means accepted the null hypothesis There's no Heteroskedasticity in the residuals, and reject Alternative hypothesis

3- The model results

To determine the best model between a pooled regression model or (fixed effects model and a random effect model) we will use the Lagrangian test.

- **Lagrangian Multiplier Test**

Figure (4) Results of a Lagrangian Multiplier Test

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Breusch and Pagan Lagrangian multiplier test for random effects

        SHV[CID,t] = Xb + u[CID] + e[CID,t]

        Estimated results:
                         |       Var      sd = sqrt(Var)
                ---------+------------------------------
                     SHV |   4.39e+08        20962.82
                       e |   8.36e+07        9144.929
                       u |   1.23e+08        11111.94

        Test:   Var(u) = 0
                                 chibar2(01) =   505.66
                              Prob > chibar2 =   0.0000
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Source: Stata V_{15} Outputs

The test results show that prob Lagrangian Multiplier is = 0.000, which is less than 0.05.

- Null hypothesis: PRM regression will be better than both FEM and REM. (P=0)
- Alternative hypothesis: FEM or REM regression models will be better than PRM. (P=1)

from the results, we accepted the null hypothesis and reject the alternative hypothesis therefore the best model is PRM.

- **pooled regression model (PRM)**

Table (7) Model Results

SHV	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
EVA	23.853	.899	26.53	.000	22.088	25.618	***
MEV	12.189	14.064	7.87	.008	15.416	39.795	***
PB	74.301	67.323	12.10	.000	57.85	206.452	***
LogTA	.661	741.762	5.11	.000	5247.694	335.628	***
Leverage	.599	1436.686	2.42	.016	6296.125	655.874	**
Constant	.417	2155.664	4.35	.000	5140.983	13603.85	***

Mean dependent var	-4696.181	SD dependent var	20962.823
R-squared	0.721	Number of obs	805
F-test	174.015	Prob > F	0.000
Akaike crit. (AIC)	17722.791	Bayesian crit. (BIC)	17750.936

**** p<.01, ** p<.05, * p<.1*

Source: Stata V_{15} Outputs

The previous table (7) shows the results of the multiple regression test of independent study variables (EVA-MVA-P/B-LogTA-Leverage) and dependent variables SHV. There is a strong positive relationship between the independent variables Economic value added (EVA), market value added (MEV), and Price to Book ratio (P/B), on maximizing shareholder value in the Egyptian stock market., which can be represented by a simple linear regression model of the following:

SHV = 0.417 + 23.853 EVA + 12.189 MEV + 74.301 P/B + 0.661 LogTA+ 0.599 Leverage

Which mean if the Economic value added (EVA) increased by 1 unit the Shareholders' Value will increase by 23.8 Unit and if the market value added (MEV) increased by 1 unit the Shareholders' Value will increase by 12.189 Unit, and the Price to Book ratio (P/B) increased by 1 unit the Shareholders' Value will increase by 74.301 Unit.

- The significance of independent variables is (0.000) lower than (0.05), which means the variable is statistically significant.
- The degree of significance regression model proposed (0.00) is less than (0.05), which means that the model is statistically significant.
- Reached the coefficient of determination is R^2=72%, which means, 72% of changes in SHV can be explained by the change in (EVA-MEV-P/B-LogTA-Leverage)

Finally, the results and previous analysis confirm that there is a statistically significant impact of (Economic value added (EVA), market value added (MEV), and Price to Book ratio (P/B)), on maximizing shareholder value in the Egyptian stock market.

Third: Tests hypotheses 3

H_3: Traditional performance indicators on the Egyptian stock market have a weaker correlation coefficient with shareholder value compared to modern performance metrics

The study compares modern and traditional financial performance measures, and after analyzing the multiple regression of the study variables, we reached the following regression equations:

Model1: SHV = 0.295 + 15.838 EPS + 1.848 ROE + 45.598 ROA + 0.858 LogTA+ 0.307 Leverage

Model2: SHV = 0.417 + 23.853 EVA + 12.189 MEV + 74.301 P/B + 0.661 LogTA+ 0.599 Leverage

Previous equations show that the second model variables Economic value added (EVA), market value added (MEV), and Price to Book ratio (P/B), have a greater impact than the first model variables on maximizing shareholder value in the Egyptian stock market.

We also finds the coefficient of determination R^2 for the second model, which is 72%, which is larger than the coefficient of determination R^2 = 40% for the first model, this reflects the great prediction ability of the second model. It also indicates that modern financial measures can better explain the change in the value of shareholders' equity than the traditional measures. The next figure show comparison between the correlation for the first and second model.

Figure (5) Results of comparison between Correlation for the first and second model

The previous figure (5) shows that there is a strong correlation between Economic value added (EVA), and shareholder value because R=0.7, and there is a moderate relationship between market value added (MEV), Price to Book ratio (P/B), and shareholder value because R=0.5, 0.6, Which indicates that the Modern performance measures have a greater correlation than the conventional one on shareholder value.

Conclusion:

This study attempts to investigate which financial performance metrics have a substantial impact on shareholder value and to measure the effect of different financial performance indicators on maximizing shareholder value. According to the findings,

1- Conventional financial performance metrics (ROA, ROE, and EPS) have a positive impact on shareholder value, and the correlation coefficient between ROA and shareholder value is greater than that of ROE and EPS.

2- Modern financial performance metrics (EVA, MVA, and Tobin-Q) have a positive impact on shareholder value, and the correlation coefficient between EVA and shareholder value is greater than that of MVA and Tobin-Q ratios.

3- Overall model of Modern Financial performance explains the change in shareholders' value more than the Traditional financial measures model did.
4- EVA has a stronger relationship with shareholder value than all other metrics (MVA, Tobin-Q., ROA, ROE, and EPS), as indicated by a correlation coefficient of 70%.

In conclusion, after evaluating the results of the statistical analysis, we can accept the research hypothesis.

Recommendation:

1- Egyptian stock exchange should by its authority encourage registered firms to disclose all data needs to compute EVA measures
2- Investors should adopt new models for calculating business performance, such as EVA, MEVA, and Tobin-Q, which capture more data on firm financial performance.
3- Conduct a future study with a longer period about EVA on the Egyptian stock market.

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