

## THE SUPERIORITY OF MODERN ECONOMIC BASED MEASURES OVER OLD-FASHIONED ACCOUNTING MEASURES

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### **Abstract:**

The current investigation objects to equate the economic value added measure relative traditional measures of performance in accounting. Performance of companies was measured using traditional measures such as net income, cash flow from operations, free cash flow, and residual income and compared to the new recent generated method economic value added. A sample of listed shareholding companies were selected from Jordanian stock market for the years (2013-2019); proper analytical statistical methods like correlations, simple and multiple regression were used in order to do this comparison. The outcomes of the study assured a statistical significant association amongst market value added and economic value added; moreover, the economic value added placed in the second rank after the net income among a nine performance measures. Also, the findings revealed that the cost of capital as an element of economic value added have greater capacity to justify the volatility in market value than old-fashioned performance measures.

**Key Words:** Market Value Added; Net Income; Cash Flow; Residual Income; Cost of Capital

### **1. INTRODUCTION**

Financial statements such as the statement of financial position, the income statement, and the statement of cash flows contain financial information that is of great importance to several different parties, as each party needs its own information for the purpose of making the necessary decisions regarding its various activities, whether these parties are the company's management or lenders or clients, government and tax agencies, existing or potential investors. One of the questions that always comes to mind is how shareholders make sure that the people entrusted with managing their investments are managing them effectively, maximizing their wealth, or achieving the so-called Market Value Added (MVA).

Historically, several traditional accounting measures of performance are still widely used by managers and performance analysts as indicators to measure corporate performance. Examples of these measures used are: Net Income, Cash Flows from Operations (CFO), and Residual Income (RI), and Return on Equity (ROE), these metrics have proven effective in both developed and emerging markets. However, these measures have never been free from criticism as they are affected by different accounting methods and their heavy reliance on accountants' estimates, especially measures based on accounting profits (Al-Masawreh, 2011).

The shortcomings and criticisms that constantly directed at the traditional measures because of their dependability on accrual basis for calculating profits led to the emergence of several measures based on value, and from the most famous of which is the measure of economic added value, this financial measure that clearly and accurately reflects real profits (Sharma and Kumar, 2012). These endless critics to traditional metrics resulted in to find a new measure that overcomes the deficiencies and weaknesses in traditional measures; one of the most recent established measures is the “Economic Value Added (EVA)”, this measure is calculated based the economic income concept rather than accounting income that traditional method usually use. Economic value added measure was developed at the late of 1995 by Stern et al as a novel performance measure designed to capture all explicit and implicit costs for entity that effects performance. This innovative measurement is figured by taking in to account the net operating income after tax and then deducting any opportunity costs from the invested amounts of capital. The presence of this measure was appreciated by so many managers and analysts after revealing that there is a strong association between EVA and market value of company.

However, the exposure of several local and global economies financial crises revealed the incompetence of traditional financial measures to show the true picture of the financial position of companies. Therefore, the study is framed to find whether the use of economic value added as performance measure is more beneficial than traditional performance measures or not, and wither such innovative measure provide more reliable information content in comparison to traditional performance metrics. Another benefit of the study is to highlight and clarify the importance for employing recent and up-to-date measures of performance to evaluate companies in achieving its strategic objectives. The next parts of the paper are organized as follows: part 2 review the and discuss the related literature, previous studies and hypothesis development; part 3 for the selected models; part 4 for results discussion and the last part 5 for conclusions and recommendations.

## 2. THEORETICAL BACKGROUND

The scholarly literature on economic added value and performance is largely discussed by many academics such as (Biddle et al., 1997; Elali, 2006; Farzad and Julla, 2000); they tried to link the reported financial information about profitability with stock earnings using several measures like economic value added, residual income, and operating cash flows. Majority of those researchers asserted that economic value added if applied correctly is an effective metric and can be used as a successful base for internal decision making in addition to its usefulness for measurement of true return and for granting incentives. The results about entity earning per share were very convincing when EVA is applied; they justified these results by the strong association between such measure and real market earnings; they recognized economic added value as adjusted measurement technique for residual income in spite of the various methods used that compute economic income; according to them EVA is the most appropriate measure to uncover the real value of entity.

Historically, the concept of economic value added was developed by Stewart at the end of eighteenth in last century, he defined EVA as a measure that computes the financial outcomes

of entity through estimating its actual income, according to the suggested method of EVA, the financial performance is computed by figuring the difference between operating income after tax and the cost of investment (Stewart, 1991). By referring to the suggested framework of EVA all assets possessed by the entity are regarded as worth full variables, whether these resources are financial or not financial, physical or non-physical; and in order to succeed in investing such variables its essential to know how to acquire, operate or sell them in addition to understand how to measure them efficiently.

Recent developments in the field of performance measurement have led to new advances in measurement techniques specifically market value measures such as EVA; a rise of such measurement methods enhanced the competence of companies in figuring its real operating outcomes (Stern et al., 1995). It was agreed that the informational content of the results for various accounting measures, including the economic added value, varies greatly according to these measures. This informational content is created as soon as new information reaches a recipient (Christensen and Demski, 2003). This information is valuable to users, investors, lenders and managers in making economic decisions. The content of issued financial reports is usually evaluated from both internal and external perspective, hence such content must serve not only the internal stewardship of company but also the external stakeholders when making investment decisions (Matar and Al-Suwaiti, 2008).

Given the need for investors to know the results of performance through the informational content, it has become necessary to evaluate and measure this performance, as many researchers looked at performance as the pattern that the company follows in investing its availability resources based on a number of criteria related to its objectives and within a set of variables. For the internal and external environments, with which the company seeks to maintain its survival and increase its ability to grow (Al-Mohsen et al., 2010). The performance appraisal process depends on the use of data related to the nature of the company's activities through which the actual units of implementation are clear, the distance from the plans set for the company, the clarification of obstacles and the evaluation of the company's activities. The performance appraisal process was also defined as: "The process of measuring the activity performed by approved control standards, determining its results, and indicating the extent of compatibility between the results of the activity and the objectives that are sought to be achieved" (Stern et al., 1995).

Since the inception of financial elements as avital requirement for entities survival, companies have worked to achieve the goals of their investors to ensure their growth in return and long term continuity; therefore, companies main focus at all times is to strengthen its financial position by adopting the best methods for evaluation of their performance. For decision-making regarding current and future activities, companies constantly follow the new established frameworks in measurement; the entrance of the new concept for economic income led to distinction between two of company values, the accounting value, and the economic value. The two terms of value in most research follows the term organization or company, but they are two related interacted terms. Some researchers argue that the value of entity primarily rely on

many elements that influences the financial performance such as the capital structure, type of industry, region (Fisher, 2010).

Many of undertaken research on performance metrics diversified between traditional accounting measuring methods and new performance measures. Some researchers supported the old-fashion methods on the ground that they are regarded as the basis for financial analysts to measure performance; moreover, they claimed that the new measuring methods are emerge from the old ones with some modifications. On the other hand, the opponents of traditional methods accused them by their deficiency in reflecting the actual economic substance of company market value due to their reliance on accounting income rather than economic income. For instance, the traditional measuring techniques failed to measure the use of flexible budgets in estimating discretionary costs and also were unsuccessful to control the fixed costs. In the area of appropriateness, these measures likewise failed to develop the essential control over the quality and productivity elements, or shed light on the opportunity cost. Another criticism directed to old measures is the absence of non-financial components in their measurement model (Johnson and Kaplan, 1991).

Whilst traditional measures still the most popular methods some researchers viewed EVA with greater importance as substitute measure to traditional ones because of its calculation that based on economic income; they suggested that with EVA the return of company is expressed in the residual value after investors receive their compensation (Stern et al., 1995). The importance of economic metrics appears in its connection with the process of making operational and investment decisions that achieve an added value for shareholders in the long term. And this value does not depend only on the accounting profits used in the traditional measures, which requires the existence of special measures to ascertain them.

Most of the studies in the field of evaluating performance applied several traditional metrics; for example, net income was used as indicator for efficiency of operations (Khalil, 2004). Operating cash flow was also used to evaluate survival and continuity of business (Qaddumi and Al-Kilani, 2006); the Free Cash Flow (FCF) metric was derived from the cash flow metric, which measures the company's financial position better. Its ability to grow and expand depending on internal sources. Other measures like residual income was useful to overcome deficiencies of accounting income and the capital invested rate; this measure as scholars claim covers at minimum the costs of investment but not essentially all investment returns; moreover, this particular measure activated the role of responsibility centers in firms and enables appraisal based on departments rather than whole investment (Suisse, 2010).

The early economists and other scholars were interested in measuring performance based on value, not profit, and the need to provide modern performance measures that measure this concept. My studies are considered; (Williams, 1983) is one of the long-standing studies in this regard, where he presented a financial concept of value that combines the price of the asset (or its price) and the income likely to be obtained from the acquisition of this asset. In modern thought also increased interest in the concept of value creation and its relationship to performance, which He was prominent in the works of (Hax and Majluf, 1984; Rappaport, 1986; Easton et al., 1992; Stewart, 1991). In the nineties of the last century, the issue of value

creation became a strategic path for a large number of economic establishments, it is the way for business organizations to develop their strategic ability, lead creativity and achieve competitive advantage (Hart and Milstein, 2003).

Modern measures have shown success in overcoming the gaps of old measures, especially in showing the added value of the company and how companies can create value (Al-Naimi, 2013). After the introduction of market added value as a new measure for performance companies became more capable to follow the means of creating value to owners; and consequently majority of future plans and strategies were built based on previous revealed market performance. And after implementing future strategies companies again the market value is used to compare the achieved performance with past results in order to assure whether the market value is greater than invested capital or not (Tan et al., 2011). Similar to market value with some enhancement the economic value added usually used to insure the positive progress of company value and how company activities are designed to contribute more for shareholder's wealth.

The use of the added economic value has removed a lot of confusion resulting from the contradictions and conflicts that arose due to the companies' use of multiple performance indicators such as: earnings per share and return on equity (Farzad and julla, 2000). Therefore, the use of economic value added contributed to creating value, as it linked the strategic dimension of the company to the financial dimension; this made it easier for managers to take appropriate and rational decisions and contributed to controlling the results of investments, in addition to increasing their responsibility to a greater degree (Suisse, 2010).

### **3. FORMER STUDIES AND ASSUMPTIONS FORMULATION**

The debate on the proper performance metrics is found in many of former studies; in a study conducted by Lehn and Makhija (1996) in USA to examine both of EVA and MVA measures efficiency in estimating stock returns; the study found a strong association between the proposed measures and value of stocks in market, after comparing between traditional measures and recent established measure, EVA scored the highest correlation coefficient. Another similar investigation done by Pushner and Kramer (1997) in India also reached the same conclusion and affirmed that EVA is the best performance measure that reflects the value of Indian companies.

In the same environment Ramana (2005) compared also between conventional measures such as net income and operating cash flow with recent measures like EVA and MVA, the results of his study came with reverse conclusion, rational measures were found more successful in evaluating performance than up-to- date measures. The correlation coefficient and regression analysis were used to test the significance of the MVA relationship with these variables, as the study concluded that there is a strong direct statistically significant correlation between NI and NOPAT, and that these two indicators have the ability to explain the variance in MVA more than the EVA indicator; although market added value and economic value added are found capable to explain the change in stock values the traditional measures have higher correlations with stock price movement.



In North America a study of Ferguson et al. (2006), which aimed to verify the ability of the indicators EVA and MVA in predicting future stock returns for 1000 American companies, in the period (1993 - 2002). The study showed the following results: The increase in MVA values versus EVA values the cumulative returns of stocks in investment portfolios, and the higher the return on stocks increased the risk ratio. The EVA and the MVA indexes were able to predict more than 50% of the future returns of the stocks. Likewise, George (2007) study, that aimed to compare the stock prices of 300 Canadian companies he focused on economic value added as performance indicator, he found that firms that employed EVA as a measure reported more growth rates in dividends than firms used old performance measures

Another considerable amount of literature was also concerned with the issue of performance metrics. In a study for Sharma and Kumar (2012) compared the performance of companies in middle Asia using some performance measures including EVA; the researchers used cross-sectional time-series regression (Panel Data Regression). The results of the study recommended EVA on any other metric for measuring performance after the highest correlation was related to EVA.

In Europe Pavelkova and Dostal (2013) after testing a study on Czech Republic companies asserted the importance of modern measures of performance particularly EVA, although traditional measures are found capable to evaluate business EVA was shown more effectual in estimating business value. Turvey et al (2000) suggested economic added value is better than net income measure in estimating business value because the accounting income is not deducted from cost of capital as EVA methodology works as Lehn and Makhijan (1996) revealed the strong association between the investment return and stock value. This result was also approved by (Yoshua and Muhammad, 2021) after they supported the association between EVA and value of stock in market. These results were contradicted by Burca and Batrinca (2014) after revealing that stock returns are negatively correlated to economic value added. Another search was with the above argument that both of (EVA) and (MVA) have more positive correlation with business value than traditional metrics (Nugroho, 2018; Parmar, 2015; Panigrahi, 2017; Kumar et al., 2017)

Traditional measures for performance are accused by their shortage in directing companies for future acts and operations; these measures basically depend on accounting reports prepared on regulations and accounting setters, therefore, such measures have little impact on the process of decision making. For instance, measures like earning per share (EPS) and return on investment (ROI) lack the cannot estimate the projected cash flows of company due to their emphasis on past rather than future.

Hence, the subjectivity of management for manipulating income is hard to be observed if such measures are used (Binnarsly, 1996). The fact of hidden manipulation of income by managers was also supported by many researches (Dyl, 1989; Gomez Mejia and Balkin, 1992; Hunt, 1985); subjectivity of accounting staff for figuring profitability was also pointed out by (Jensen and Murphy, 1990; Verrecchia, 1986). On the other hand, EVA provided a suitable solution for profitability distortion if found, any additional increase in capital by shareholders or by debt

will be mirrored in result of EVA; therefore, any management act to manipulate income will be noted by EVA result (Biddle et al., 1997; Brickley et al., 1997)

From investor perspective, management at all times must work for their benefit by creating value to the whole investment; thus, management routinely must adopt the appropriate means that maximize wealth of shareholders, if this is the primary responsibility of management then all methods, tools that fulfill this goal must be adopted. So, in order to maximize wealth by enhancing performance through increasing income and cash flows management must follow EVA as the best appropriate measure that translate management ability to create value (Prober, 2000; Stewart, 1991). Another argument placed by Stewart (1994) related to EVA that is, EVA is almost 50 percent better than old measures such as “EPS, ROE and ROI” in revealing performance degree, its ability in creation of wealth is higher than its former methods. This superiority also confirmed by McClenahan (1998) that classified the traditional measures in the second place after EVA measure in measuring company performance.

The generalizability of much published research defended EVA measure on the fact that EVA is distinguished from former measures by its concern on how company create value rather than how much business distribute dividends; Herzberg (1998) stated that “instead of using a dividend discount approach, these models measure value from the point of view of the firms’ capacity for ongoing wealth creation rather than simply wealth distribution”. Equally, Machuga et al. (2002) introduced empirical evidence that EVA is more effective in maximize firm value and provide greater accuracy in predicting future returns. Another evidence also reported by Lehn and Makhija (1996) once they argued that EVA is an efficient measuring method of performance and the finest measure that create value because its recognize the cost of capital for investment.

Some of previous research was not supported to EVA is the best measure; for example, Fernandez (2001) after examining EVA effectiveness in American and European companies found negative association between EVA and MVA also he noted that operating profit after tax, weighted average cost of capital is more correlated to MVA. These findings of Fernandez were also in agreement with the results of (Biddle et al., 1997; and Riceman et al., 2000).

Similar to other regions worldwide some historian in the Middle East region conducted studies on EVA as a measure of performance. Tarwanah (2006) examined the appropriateness of EVA and traditional measures in predicting firm value in Jordanian context; his results showed better estimation of firm value when using economic value added. In the same environment the market stock prices were proved to be related more to EVA than any other traditional measures (Matar, 2006; Fallatah, 2010; Haddad, 2012). A related research by Al-Rawashdah study, 2006 on performance measurement revealed that both of EVA and traditional measures justifies the change in stock return, but traditional measures (ROA, ROE, EPS and CFO) have more explanatory power in explaining the volatility of stock prices.

Based on previously reviewed literature of theories and discussed results the predetermined hypotheses are:

H1: There is a significant relationship between the economic value added (EVA) and the market value added (MVA).

H2: EVA is capable to explain MVA than any of the traditional performance measures.

From the second hypothesis, the following sub-hypotheses are emerged:

H2-1: EVA is more capable to explain the market value added (MVA) than net income (NI) measure.

H2-2: EVA is more capable to explain MVA than cash flows from operations (CFO) measure.

H2-3: EVA is more capable to explain MVA than free cash flow (FCF) measure.

H2-4: EVA is more capable to explain (MVA) than residual income (RI).

H3: The components of the economic value added (EVA) are more capable to explain (MVA) than (EVA).

### 3. METHODOLOGY

#### 3.1 Proposed Models

In order to examine the formulated hypotheses, we selected the most popular models that have been employed to compare between economic added value and traditional measures. The chosen variables of the study were as follows:

The independent variable; market value added (MVA).

The independent variables are: economic added value (EVA); net income (NI); operating cash flow (CFO); free cash flow (FCF) and residual income (RI).

Three models have been used by scholars to explore the relationship between EVA and MVA.

Model 1: this model is widely available and has been applied by many investigational studies to test the relationship between the EVA indicator and the MVA market value added; this model has been adopted by many researchers in the economic added value index, including (Chen and Dodd 1997; Elali, 2006; Erasmus, 2008), which is:

$$MVA_{it} = EVA_{it} + E_{it} \dots\dots\dots (1)$$

MVA is denoted to market added value, EVA is denoted to economic value added and E is for random error

Model 2: to date several models have been developed and introduced by researchers that measures the relationship between financial performance measures (either economic or accounting) and MVA, the most popular model that adopted by (Chen and Dodd, 1997; Elali, 2006; Erasmus, 2008; Sharma and Kumar, 2012) this models serve the second main hypothesis and the examining of the sub-hypotheses in order to determine which measure have the best explanatory power that justify the variances in market value added. The following equations represent this model for traditional measures of performance:



$$MVA_{it} = \beta_0 + \beta_1 NI + E_{it} \dots \dots \dots (2)$$

$$MVA_{it} = \beta_0 + \beta_1 CFO + E_{it} \dots \dots \dots (3)$$

$$MVA_{it} = \beta_0 + \beta_1 FCF + E_{it} \dots \dots \dots (4)$$

$$MVA_{it} = \beta_0 + \beta_1 RI + E_{it} \dots \dots \dots (5)$$

MVA is donated to market value added (dependent variable); whilst (the independent variables) are: NI is net income; CFO is cash flow from operations; FCF is free cash flow and RI is for residual income.

Model 3: this model selected to test the association between elements of economic added value and market value added; the model approved is effectiveness after it has been adopted by several researchers (Biddle et al., 1997; Worthington and West, 2004; Elali, 2006):

$$MVA_{it} = \beta_0 + \beta_1 CFO_{it} + \beta_2 ACC_{it} + \beta_3 ATI_{it} + \beta_4 CC_{it} + \beta_5 ADJ_{it} + E_{it} \dots \dots \dots (6)$$

MVA is the dependent variable; CFO is cash flows from the operations; ACC is Company accounting accruals; ATI is after-tax interest; CC is the cost of capital; ADJ<sub>it</sub>: Accounting adjustments for company.

### 3.2 Data and Sample

Quantitative information offers an effective source of data to empirical investigation; therefore, the study utilized data from the company guide and annual reports issued electronically by Amman Stock Exchange, the population consisted of sample for 87 industrial companies listed in stock market from the years 2013- 2019. The data for 69 company were valid to the study with 483 observations.

## 4. RESULTS DISCUSSION

### 4.1 Statistical Description of the Study Variables

The first analysis presents the descriptive statistics that describes the study variables. Namely:

**Table 1: Descriptive statistics for dependent and independent variables**

measure	MVA	EVA	NI	CFO	FCF	RI
mean	90,927,535	1,063,241	8,653,110	11,630,774	5,794,170	201,881-
Max	3,084,895,000	175,660,100	329,660,100	341,965,800	319,781,000	153,283,247
Min	23,706,668-	42,505,551-	21,605,551-	7,367,012-	106,742,900-	45,694,443-
Std. dev	449,900,000	17,930,519	40,089,896	46,739,746	36,085,711	15,953,384
Jarque-Bera	5	2	3	4	5	4
sig	0.000	0.000	0.000	0.000	0.000	0.000
N	483	483	483	483	483	483

As shown in table 1 the mean for MVA was amounted to (90,927,535) JD, this value mediated between a maximum value of (449,900,000) JD and a minimum value (3,084,895,000) JD; mean for EVA was amounted to (1,063,241) JD, this value mediated between a maximum value of (175,660,100) JD and a minimum value (42,505,551-). As for the traditional measures the table show also mean for NI was amounted to (8,653,110) JD, this value mediated between a maximum value of (329,660,100) JD and a minimum value (21,605,551-) JD; the mean for CFO was amounted to (11,630,774) JD, this value mediated between a maximum value of (341,965,800) JD and a minimum value (-7,367,012) JD. The descriptive statistics for FCF show average mean amounted to (5,794,170) JD with a max value of (319,781,000) JD and a min value of (-106,742,900); the last variable RI scored a mean amounted to (-201,881) this mean lies between (153,283,247) and (-45,694,443). When reviewing these results, we conclude that all companies have gone through stages of decline in revenues in multiple periods, and this is indicated by some of the negative results of this sample, but generally all variables means that covers seven years showed a positive mean which indicates that the sampled companies achieve profit over the seven years that covers the study.

#### 4.2 Testing of Hypotheses

In order to validate our pre-assumed hypotheses models were tested with proper statistical test.

The first table show the results after examining the effect of market added value on economic added value; the results reveals significant effect for market value on economic value, this appears in the value of Adj R2 = 0.7311. The pre-assumed relationship was proved by the F value that scores significantly 138.10; thus the first main hypothesis was confirmed and approved, that the change in economic value added can be attributed by 73% to market value added.

**Table 2: Simple regression results for the relationship between EVA and MVA**

Ind. variable	B	Std. dev	T	P-value
EVA	12.815	0.522	27.548	0.000
Adj. R <sup>2</sup> = 73.11%    F = 138.10    Prob. = 0.000    D-W = 2.766				

Based on the investigation methodology that aims to find the impact of traditional measures on company performance; the following tables show the obtained result for the association among traditional measures and market value added. Table 3 show the simple regression results for the influence of net income on market added value, the correlational analysis results indicate that net income explains 78% of change in market value, the adj. R2 scores 0.7805, also the table show that the F value was significant at 187.8. These findings approve the accuracy for the first sub-hypothesis that market value positively response to net income information. But when comparing the value of Adj R2 for both of economic value added (Adj R2 = 0.7311) and net income (Adj R2 = 73.11%) we find that explanatory power of net income is greater than EVA by 6.5% which sorts net income as a better measure than EVA

**Table 3: Simple regression results NI on MVA**

Ind. variable	B	Std. dev	T	P-value
NI	11.513	0.227	32.991	0.000
Adj. R <sup>2</sup> = 78.05%    F = 187.8    Prob. = 0.000    D-W = 2.7				

The results that appear in table 4 screen the relationship between the second traditional measure; cash flow from operation with market value added. It can be seen from the table that the explanatory power of CFO for MVA is 61%, the model was significantly fit as F value show (56.44). Based on such results we accept the second sub-hypothesis for the positive association between market value and operating cash flow. Comparing the explanatory power of The CFO with EVA and NI we find that operating cash flow have lower influence on market value.

**Table 4: Simple regression results for the impact CFO on MVA**

Ind. variable	B	Std. dev	T	P-value
CFO	21.334	1.921	14.571	0
Adj. R <sup>2</sup> = 61.19%    F = 56.44    Prob. = 0.000    D-W = 2.69				

In table 5 that present the assessment for the response of market value added to free cash flow the regression result for the explanatory power was significant at 55 % (Adj R2 = 0.5513); moreover, the F value recorded 86.22. The mentioned results confirm that market value positively react to FCF, therefore, the third pre-assumed sub-hypothesis approves its accuracy based on 55% explanatory power and F value of 86.22. The comparison of free cash flow value to economic value added is lower by 24.6%; thus and over again the EVA approved its superiority over FCF in justifying change in market value.

**Table 5: Simple regression results for the effect of FCF on MVA**

Ind. variable	B	Std. dev	T	P-value
FCF	8.545	1.666	15.675	0.000
Adj. R <sup>2</sup> = 55.13%    F = 86.22    Prob. = 0.000    D-W = 2.74				

Table 6 screen the investigation values for the residual income measure, as appear in the table the value of coefficient B has amounted to (16.399) and its t-test is equal to (9.729) with a level of significance (Sig = 0.000), and this confirms the significance of this coefficient as well. Also, the value of the adjusted coefficient of determination was approximately (Adj R2 = 0.5485), which indicates that market value reacted to residual income by 54.85%. Similar to free cash flow the explanatory power of residual income was less than economic value added by 26% in explaining market value added. Therefore, we accept the fourth sub-hypothesis that EVA is more capable to explain variation in market value added.

**Table 6: Simple regression results for the effect of RI on MVA**

Ind. variable	B	Std. dev	T	P-value
RI	16.399	0.825	9.729	0.000
Adj R <sup>2</sup> = 54.85%    F = 37.98    Prob = 0.000    D-W = 2.15				

In order to compare all results for the second main hypothesis we summarized the explanatory power of all measure as appear in table 7. As the table show the economic value added was ranked second after net income measure; while all other measures ranked after economic value added. This results confirms and assures the second main hypothesis that Eva have more ability to change market value added than traditional measures except for net income.

**Table 7: Ranking of explanatory power for traditional measures compared to EVA**

measure	NI	Greater than	EVA	Greater than	CFO	Greater than	FCF	Greater than	RI
Adj R <sup>2</sup>	78.05		73.11		61.19		55.13		54.85

In order to validate the third hypothesis that set to assure whether the components of the economic value added (EVA) are more capable to explain (MVA) than (EVA) or not. The regression results shown in table 8 indicates that all economic value added element except ADJ jointly have significant impact on market value added and explained approximately about 82% (Adj R<sup>2</sup> = 0.8215) of variation in market value added. Comparison for the joint influence of this result to economic value added when used as a single measure reveals an increase in explanatory power by 11% in effecting the variation in market value added. Consequently, the third hypothesis is found significantly positive that components of EVA jointly has more explaining power than EVA as a single measure.

**Table 8: Multiple regression results for the joint impact of EVA components on MVA**

Eva components measures	B	الانحراف المعياري	اختبار T	P-Value
<b>CFO</b>	4.6739	1.4487	3.5497	0.000
<b>ACC</b>	8.4436-	1.4927	6.2205-	0.000
<b>ATI</b>	60.4054-	21.505	3.0899-	0.000
<b>CC</b>	12.342	1.0901	12.4498	0.000
<b>ADJ</b>	15.125	10.032	1.6588	0.1474
Adj R <sup>2</sup> = 82.15%    F = 96.58    Prob = 0.000    D-W = 1.66				

To explore which of economic value element has the best variation on market added value than other element, the results is showed in table 9. As seen from the table, all the elements appeared with significant positive impact on market value added except for CC have negative impact; the highest explanatory value of the MVA variance was CC, while the lowest explanatory power was ATI.

**Table 9: Results of relationship between the EVA components individually and MVA**

Variable	B	R <sup>2</sup>	Adj R <sup>2</sup>	T	F	P-Value
CFO	21.334	0.618	0.611	14.571	56.44	0.000
ACC	-18.699	0.419	0.406	-7.654	23.419	0.000
ATI	67.215	0.293	0.288	5.841	19.117	0.000
CC	13.200	0.759	0.751	11.755	76.130	0.000
ADJ	34.633	0.647	0.638	9.375	27.939	0.000

After rearranging the explanatory power of the independent study variables with the components of the economic added value according to their explanatory power (table 10) we find; net income preserved its first rank as the best measure for variation of market value added, on the other hand we find that cost of capital as a component of EVA became in the second rank and EVA as a single measure in third rank, accounting adjustments also as a component of EVA was in fourth place and better than cash flow measures, the other last three measures were residual income, accounting accruals and interest after tax. From such results we conclude that although EVA components have good explanatory power in justifying variation in market value power but this power is not equal (Sharma and Kumar, 2012).

**Table 10: Results of rearranging of study variables using Adjusted R<sup>2</sup>**

measure	NI	CC	EVA	ADJ	CFO	FCF	RI	ACC	ATI
Adj R <sup>2</sup> %	78.05	75.01	73.11	63.80	61.19	55.13	54.85	40.60	28.67
Rank	1	2	3	4	5	6	7	8	9

By reviewing all previously discussed results the study delivered conclusive evidence for the superiority of economic value added and its component measures measure over several traditional performance measures; the results also confirmed the high association among EVA and MVA. Moreover, the findings approved that market value added respond to traditional measures but with lower level than economic value added. Despite of the worthiness of economic value added as a recent measure but it did not succeed to replace and overrides net income as the best traditional measure that explain the variation in market value. The overall detailed results for the effect of economic value added on market value added assured its value in predicting market value added; also the all components of EVA also accepted as useful measures that justifies the market variation.

## 5. CONCLUSIONS

The study was aimed to investigate a debated issue concerning the best performance measurement methods for market value added (MVA); through the study a comparison was conducted between recent measures such as economic value added (EVA) measure and its components with traditional measures of performance such as Net Income (NI), Cash from Operations (CFO), Free cash flow (FCF) and Residual Income (RI). The community of the study comprises listed shareholding companies in Amman stock exchange from the year of



2013 to 2019. The methodology was based on analytical searching method employing market real data.

The appropriate statistical techniques such as the T test for one sample, Pearson correlation coefficient, and simple and multiple regression analyses were used. The results of the study provided empirical evidence for the dominant of net income over all other measuring methods; it represents the greatest explanatory power, on the other hand the added market value was reported from the best of performance measures and it revealed greater explanatory power than traditional measures except for net income. Results also confirmed the ability of the economic value-added components to explain the variation in market value added that varied according to measurement methods, the cost of capital cost as economic value component emerged as one of the strongest components measures of market value when matched to many of traditional performance measures.

### Recommendations

1. The essentiality to adopt beside the traditional measures the economic value added measure and its component's as performance measures.
2. Applying the measure of economic value added to other economic sectors such as banks and service companies.
3. Linking the performance evaluation of the management of the joint-stock company to the economic value-added measure in addition to other measures, as this measure provides information on the management's efficiency in making decisions directed towards achieving the company's goals and the interests of shareholders.
4. Expanding disclosure of accounting information and not being satisfied with mandatory disclosure, with the aim of increasing transparency in Jordanian industrial companies.

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