THE VALUE RELEVANCE OF ACCOUNTING INFORMATION AND ITS IMPACT ON STOCK PRICES: A STUDY ON LISTED PHARMACEUTICAL COMPANIES AT DHAKA STOCK EXCHANGE OF BANGLADESH

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ABSTRACT

This study intends to determine the Value relevance of accounting information (VRAI) that emphasizes the impact of different information produced by accounting on the market price of the share. This paper tries to determine the VARI on pharmaceutical companies' share price at the Dhaka Stock Exchange (DSE) of Bangladesh. For this purpose, I have collected data from different Pharmaceutical companies listed under the DSE for the period starting from 2017 to 2019. In this study correlation, ANOVA and regression analysis are applied to ascertain the association between Financial Accounting Information like Earnings per Share (EPS); Net Operating Cash Flow Per Share (NOCFPS); Net Asset Value Per Share (NAVPS); Cash Dividend Per Share (CDPS), and Stock Dividend Per Share (SDPS) and Market Value Per Share (MVPS). The results confirmed a statistically significant positive relationship of NOCFPS, NAVPS with MVPS. Differently, the results also confirmed a statistically significant negative relationship between EPS and MVPS. The results also ascertained that CDPS, and SDPS have no significant but positive relationship with MVPS. Finally I concluded that the information produced by accounting systems are value relevance and important in decision making. The existing literature of VRAI will enrich by results of this study. This study recommends the existing and potential investors to use accounting information for taking efficient and effective investment decisions.

Contribution/ Originality: This study is one of the very few studies examining the VRAI on pharmaceutical companies listed in the DSE in Bangladesh. This research is one of the primary studies in Bangladesh in pharmaceutical sector.

1. INTRODUCTION

The VRAI is the importance of accounting information on investment decisions on stocks. Investors invest their capital and want to ensure that there principle amount and return on investment will come back quickly. Expectation of positive rate of return is an essential part of investment (Hossain, 2013). For this, before investing in stock, they want to know the ability and strength of the company. They need accurate information about the companies for making a proper decision. (Hossain, 2020b) argued that the key expectation of the investors is to make certain the getting back of investment along with return timely. The different financial reports and disclosures of the company are the main sources of information for the investors. Companies provide different accounting information timely for the investors concerned about the company's performance and present condition.
After getting that information, investors make decisions about purchasing, hold, or sale. So this information is very important for as a whole investor as well as the company. On the basis of investment decisions, accounting information is pertinent when it is used to make the decisions for investing in equity (Omokhudu & Ibadin, 2015). If the information provided by the accounting is valued, investors will use for share valuation. Sami and Zhou (2004) defined VARI as the capacity of information produced by accounting systems to change the stock price. Accounting information is value relevant when potential investors use this in assessing the firms and also consider this information to change the share price (Barth, Beaver, & Landsman, 2001; Nayeri, Ghayoumi, & Bidari, 2012).

The key focus of this research is to determine the VRAI of pharmaceutical companies listed under the DSE in Bangladesh's secondary capital market. Such accounting information's value relevance might be examined by the response in share price to accounting information of selected companies in specific period. After publishing the accounting information, the changes in share prices are the investors' reaction to the company's accounting information. The regression model's coefficient using accounting information, like EPS, NOCFPS, NAVPS, CDPS, SDPS and MVPS are used to examine the market reflection.

The manufacturing sector is very important in sustainable economic growth and development of Bangladesh (Hossain, 2020a). Pharmaceutical companies are one of the significant parts of manufacturing companies. No sufficient research work has been done on VARI of pharmaceutical companies in Bangladesh. Hence, this research will enrich the existing literature of pharmaceutical companies and will help to determine sustainable share price. This research is a primary work to find out the exact idea about the values of accounting information to determine the market value of share.

1.1. Objectives

The foremost objective is to find out the VARI on pharmaceutical companies' share price at the DSE. To achieve this, the following specific objectives are used:

- To find out the VARI on the share price.
- To find out the relationship between EPS and MVPS.
- To ascertain the relationship between NAVPS and MVPS.
- To establish the relationship between NOCFPS and MVPS.
- To find out the relationship between dividend and MVPS.

2. LITERATURE REVIEW

Many researchers conducted researches to find out the VARI on the share price. Beisland (2010) related the value relevance to the firm value and concluded that VARI is the capability to determine the MVPS. This information is produced by accounting systems that interferes the investor's decisions and finally affects the share price. Oyerinde (2009) established that accounting information is capable to change the market price of share in the Nigerian Stock Market. Oladele, Oladele, and Ajayi (2018) conducted research in Nigerian stock exchange said that the accounting information is statistically value relevant.

Different researchers argued different opinions about the VARI. A significant number of them argued that the value relevance of EPS declined while BVPS's value relevance increased. Halonen, Pavlovia, and Pearson (2013) conducted a research in Swedish stock market and found that accounting information such as EPS and NAVPS are able to clarify a significant part of stock price. Riaz, Liu, and Khan (2015) also reported a statistically significant influence of EPS and BVPS on the MVPS.

Omokhudu and Ibadin (2015) studied the VARI in Nigeria from 1994 to 2013 and concluded that in Nigeria accounting information like earnings, dividends, and cash flows are statistically significant and has the value relevance. They also argue that investors should emphasize following accounting information: earnings, dividends, and cash flows in making investment decision. Olugbenga and Atanda (2014) used the OLS regression method to
reveal the VARI and found that on examined companies accounting information is value relevant. Khanna (2014); Lam, Sami, and Zhou (2013); Alfaiaih and Alanezi (2011); Safajou, Pourhydari, and Solaimani (2005); Khanagha, Mohammad, Hassan, and Sori (2011) and Der, Polak, and Masri (2016) also reported the same result and found a relationship among EPS, BVPS, and MVPS.

Tharmila and Nimalathasan (2013) found a significantly influence of EPS and NAVPS on the market value of share. Zahan and Rana (2020) conducted a research in Bangladesh and concluded that dividend announcement significantly influences the stock price. Hassan and Haque (2017) also conducted a research in Bangladesh and argued that EPS and BVPS play a significant role in determining share prices. Mostafa (2016) found that both EPS and BVPS have significant influencing ability in determining MVPS while EPS has more influencing ability than BVPS. Olowolaju and Ogunsan (2017) found in Nigeria that Dividend per Share can significantly positively predict MVPS. Camodeca, Almici, and Brivio (2014) found that in UK cash flows is the most VRAI while in the Italy the most VRAI is earning. Miah (2012) found in DSE that stock price is inversely related with NAVPS.

Nyabundi (2013) also found a considerable relationship among EPS, BVPS, and MVPS in Nairobi Stock Exchange. Haw, Qi, and Wu (2008) also found that EPS is more value relevant compared to cash flow. Ayzer and Cemal (2013) found that EPS and combined book values have significant impact of determining stock prices while earnings has less explanatory power than book values. Vijitha and Imalathasan (2014) conducted a research on Colombo Stock Exchange and found a significant association of EPS, NAVPS, and ROE. Ghosh and Ghosh (2015) found that EPS, ROE and NAVPS have a significant positive control on MVPS. Kwon (2009) concluded in later (Andriantomo & Yudianti, 2013; Pathirawasam, 2013) supported that compared to cash flows and EPS, BVPS has more power to influence the MVPS.

Many researchers argued that value relevance of EPS are still significant but value relevance of the BVPS is decreasing (Barth, Li, & McClure, 2018; Gan, Chong, & Ahmad, 2016; Zubdeh, 2016). Perveen (2019) reviled that operational profit, EPS, and firm size are the most significant value relevant information of the firm. Mirza, Malek, and Abdul-Hamid (2018) examined the VARI in Malaysia's capital market using the basic Ohlson model. They concluded that the BVPS is significant value relevant, and EPS are also relevant, but the investors provide less on EPS in investment decision making.

Wang, Chen, and Ton (2004) revealed that comparatively EPS has a significant influence in determining MVPS than economic value addition of the company. Ahmadi, Garraoui, and Bouri (2018) found that EPS, BVPS, and cash flow all three variables are significantly associated with firm value. They also found that BVPS has statistically more value relevance power than EPS. Qu and Zhang (2015) argued that the value relevance of net BVPS is significantly increased while in earnings the value relevance is slightly decreased. Nayeri et al. (2012) studied in Iran from 2001 to 2007 and found that in making investment decisions investors use accounting information while growth of the company has significant negative impact on stock price.

Kwon (2018) conducted research focusing on USA and China and concluded that the BVPS is positively related with MVPS while accounting earnings is negatively related with corporate value. Some other variables may be also value relevant. Hossain (2020b) found that liquidity and leverage significantly influenced the profitability and value relevant.

### 2.1. Conceptual Framework

Through literature review, Figure 1, the schematic conceptual model of the association between information produced by accounting systems and the MVPS has been developed, which is as follows:
2.2. Research Hypotheses

i. Ho1: Accounting information of pharmaceutical companies listed in DSE is not value relevant.

ii. Ho2: EPS of pharmaceutical firms listed in DSE are not statistically associated with the share price.

iii. Ho3: NAVPS of pharmaceutical firms listed in DSE is not statistically associated with the share price.

iv. Ho4: NOCFPS of pharmaceutical firms listed in DSE is not statistically associated with the share price.

v. Ho5: CDPS of pharmaceutical firms listed in DSE is not statistically associated to the share price.

vi. Ho6: Dividend per share of pharmaceutical firms listed in DSE is not statistically significantly related to the share price.

3. RESEARCH METHODOLOGY

3.1. Data and Variables

For collecting data, sixteen listed Pharmaceutical Companies are selected from DSE. The numerical data are collected from companies' published annual reports and web sites. Thus, the data set is 112 entries of sixteen Pharmaceutical Companies. For measuring the impacts of share price, MVPS is used as a dependent variable. The EPS, NOCFPS, NAVPS, CDPS and SDPS are used as the independent variables to measure the VARI. Table 1 shows the variables, abbreviations, and measurements which are applied in the analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Abbreviation</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings Per Share</td>
<td>EPS</td>
<td>Net Income - Preferred Dividends/Weighted Average Common Stocks Outstanding</td>
</tr>
<tr>
<td>Net Operating Cash Flow Per Share</td>
<td>NOCFPS</td>
<td>Operating Cash Flow - Dividend from preferred stock /Weighted Average Common Stocks Outstanding.</td>
</tr>
<tr>
<td>Net Asset Value Per Share</td>
<td>NAVPS</td>
<td>Total Assets - Total Liabilities/Number of Stocks Outstanding</td>
</tr>
<tr>
<td>Cash Dividend Per Share</td>
<td>CDPS</td>
<td>The percentage of cash dividend declared.</td>
</tr>
<tr>
<td>Stock Dividend Per Share</td>
<td>SDPS</td>
<td>The percentage of stock dividend declared.</td>
</tr>
<tr>
<td>Market Value Per Share</td>
<td>MVPS</td>
<td>Closing price of per share at the accounting information declaration date.</td>
</tr>
</tbody>
</table>

3.2. Model Specification

The MVPS is the dependent variable while financial accounting information like EPS, NAVPS, NOCFPS, CDPS, and SDPS in addition to firm characteristics and economic situation of the country are independent variables. The VARI on the company's share price is determined by using the following OLS regression equations: MVPS = f(EPS, NAVPS, NOCFPS, CDPS, SDPS)
Model: \( \text{MVPS}_t = \beta_0 + \beta_1 \text{EPS}_t + \beta_2 \text{NAVPS}_t + \beta_3 \text{NOCFPS}_t + \beta_4 \text{CDPS}_t + \beta_5 \text{SDPS}_t + \varepsilon_t \)

### 4. ANALYSIS

#### 4.1. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>111</td>
<td>-52.75</td>
<td>55.56</td>
<td>3.6912</td>
<td>11.25120</td>
</tr>
<tr>
<td>NOCFPS</td>
<td>111</td>
<td>-67.72</td>
<td>117.74</td>
<td>7.127</td>
<td>22.21840</td>
</tr>
<tr>
<td>NAVPS</td>
<td>111</td>
<td>12.45</td>
<td>246.71</td>
<td>77.1945</td>
<td>70.77487</td>
</tr>
<tr>
<td>CDPS</td>
<td>23</td>
<td>2.00</td>
<td>550.00</td>
<td>79.5217</td>
<td>148.13281</td>
</tr>
<tr>
<td>SDPS</td>
<td>13</td>
<td>3.50</td>
<td>20.00</td>
<td>10.2308</td>
<td>4.39515</td>
</tr>
<tr>
<td>MVPS</td>
<td>112</td>
<td>12.90</td>
<td>1570.80</td>
<td>3.4994*</td>
<td>435.16171</td>
</tr>
</tbody>
</table>

Table 2 illustrates the mean and standard deviation of EPS are 3.69 and 11.25; NOCFPS are 7.12 and 22.22; NAVPS are 77.19 and 70.77; CDPS are 79.52% and 148.13%; SDPS are 10.23%, and 4.39%; MVPS are 3.50, and 435.16 Taka respectively.

#### 4.2. Correlations Analysis

<table>
<thead>
<tr>
<th></th>
<th>EPS</th>
<th>NOCFPS</th>
<th>NAVPS</th>
<th>CDPS</th>
<th>SDPS</th>
<th>MVPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>1</td>
<td>.318**</td>
<td>.330**</td>
<td>-.036</td>
<td>.351</td>
<td>.278**</td>
</tr>
<tr>
<td>NOCFPS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed) Correlation</td>
<td>.318**</td>
<td>1</td>
<td>.181</td>
<td>.687**</td>
<td>.581*</td>
<td>.603**</td>
</tr>
<tr>
<td>NAVPS</td>
<td>.330**</td>
<td>.181</td>
<td>1</td>
<td>.513*</td>
<td>.040</td>
<td>.709**</td>
</tr>
<tr>
<td>Sig. (2-tailed) Correlation</td>
<td>.000</td>
<td>.057</td>
<td>.015</td>
<td>1.903</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>CDPS</td>
<td>-.036</td>
<td>.687**</td>
<td>.513*</td>
<td>1.077</td>
<td>.797**</td>
<td></td>
</tr>
<tr>
<td>SDPS</td>
<td>.874</td>
<td>.000</td>
<td>.015</td>
<td>.844</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed) Correlation</td>
<td>.351</td>
<td>.581*</td>
<td>.040</td>
<td>.077</td>
<td>1</td>
<td>.346</td>
</tr>
<tr>
<td>MVPS</td>
<td>.278**</td>
<td>.603**</td>
<td>.709**</td>
<td>.797**</td>
<td>.346</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed) Correlation</td>
<td>.003</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.246</td>
<td></td>
</tr>
</tbody>
</table>

Note: **. Significant at the 0.01 level (2-tailed).
* Significant at the 0.05 level (2-tailed).

Table 3 illustrates that MVPS is positively associated with EPS, NOCFPS, NAV, CDPS, and SDPS. The correlation coefficient 0.797 between CDPS and MVPS with a 1% level of significance indicates a strong positive relation, which implies that if the company declares more cash dividend, the demand of the share increases, so the MVPS also increases. The correlation coefficient 0.709 at 1% level of significance between NAV and MVPS points out that if there is a more NAV, more MVPS. The correlation coefficient between NOCFPS and MVPS is 0.603 with a 1% level significance, indicating that NOCFPS strongly positively influences the MVPS.

The correlation coefficient between EPS and MVPS is 0.278, with a 3% level of significance. There is a week positive relation between EPS and MVPS. The correlation coefficient between SDPS and MVPS is 0.346, which is also not significant at 1% and 5%.
4.3. Regression analysis

The regression results have been presented below:

**Table 4. Model Summary.**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.861a</td>
<td>.742</td>
<td>.730</td>
<td>227.30185</td>
<td>.876</td>
</tr>
</tbody>
</table>

Note:
- a. Predictors: (Constant), SDPS, NAVPS, CDPS, EPS, NOCFPS.
- b. Dependent Variable: MVPS.

**Table 5. ANOVA.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>5</td>
<td>3118930.164</td>
<td>60.367</td>
<td>.000a</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>105</td>
<td>51666.130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>110</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
- a. Predictors: (Constant), SDPS, NAVPS, CDPS, EPS, NOCFPS.
- b. Dependent Variable: MVPS.

**Table 6. Coefficients.**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-29.019</td>
<td>163.055</td>
<td>Beta</td>
<td>-.178</td>
</tr>
<tr>
<td>EPS</td>
<td>-3.650</td>
<td>2.200</td>
<td>-.094</td>
<td>-1.659</td>
</tr>
<tr>
<td>NOCFPS</td>
<td>9.924</td>
<td>1.177</td>
<td>.504</td>
<td>8.434</td>
</tr>
<tr>
<td>NAVPS</td>
<td>3.963</td>
<td>.335</td>
<td>.504</td>
<td>11.827</td>
</tr>
<tr>
<td>CDPS</td>
<td>.174</td>
<td>.378</td>
<td>.026</td>
<td>.460</td>
</tr>
<tr>
<td>SDPS</td>
<td>.192</td>
<td>15.427</td>
<td>.001</td>
<td>.012</td>
</tr>
</tbody>
</table>

Note: Dependent Variable: MVPS.

Table 4 points up the association of EPS, NOCFPS, NAVPS, CDPS and SDPS on MVPS. Here Adjusted R Square 0.73 indicates that the dependent variable MVPS 73% explained by EPS, NOCFPS, NAVPS, CDPS and SDPS on MVPS. The Durbin-Watson statics of .876 indicates the unlikelihood of autocorrelation.

Table 5 Shows the f-statistic value of ANOVA 60.367 is statistically significant at a 1% level of significance with df five and a p-value of 0.00, which implies that the null hypothesis there is no significant relationship between the dependent and independent variables is rejected. So we can argue that a significant positive association exists among accounting information like SDPS, NAVPS, CDPS, EPS, NOCFPS and MVPS supporting (Oladele et al., 2018). Table 6 shows what extent of each independent variable influence the MVPS. The Beta coefficient of NOCFPS is 9.924 with a p-value of 0.000 statistical significant at 1% level indicates that NOCFPS significantly impact on MVPS. The similar result also found by Omokhudo and Ibadin (2015); Camodeca et al. (2014) and Ahmadi et al. (2018) but varying from Kwon. (2018). The Beta coefficient of NAVPS is 3.963, with a p-value of 0.000 statistically significant at 1% level. It also means the NAVPS statistically significant impact on the share price supporting Halonen et al. (2013); Tharmila and Nimalathasan (2013) and Ghosh and Ghosh (2015) but varying from Miah (2012). The beta coefficient of EPS is -3.650 with a p-value of 0.100 statistically significant at 10% level. It means EPS has a significant impact on the MVPS similar to the result found by Omokhudo and Ibadin (2015); Tharmila and Nimalathasan (2013); Hassan and Haque (2017); Mostafa (2016); Camodeca et al. (2014); Nyabundi (2013); Ayzer and Cemal (2013); Wang et al. (2004); Ahmadi et al. (2018) but negatively related with the share price supporting Kwon. (2018) but varying Ghosh and Ghosh (2015). The beta coefficient of CDPS and SDPS are 0.174
and 0.192, with a p-value of 0.946 and 0.990, respectively, which are statistically not significant varying Omokhudu and Ibadin (2015); Zahan and Rana (2020) and Olowolaju and Ogunsan (2017). Finally, it can be said that NOCFPS, NAVPS, and EPS have a significant impact, while CDPS and SDPS have no significant impact on the MVPS.

The regression model is retrieved as follows:

$$MVPS_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 NAVPS_{it} + \beta_3 NOCFPS_{it} + \beta_4 CDPS_{it} + \beta_5 SDPS_{it} + \epsilon_{it}$$

$$MVPS_{it} = -29.019 - 3.650 EPS_{it} + 3.963 NAVPS_{it} + 9.924 NOCFPS_{it} + 0.174 CDPS_{it} + 0.192 SDPS_{it} + \epsilon_{it}$$

5. CONCLUSIONS

Investors find publicly available information about the company's performances from financial accounting reports used to make investment decisions. This study examined the VARI like EPS, NOCFPS, NAVPS, CDPS, and SDPS to the MVPS. The results discovered that NOCFPS was positively correlated with the MVPS at a 1% significance level supporting the findings of Omokhudu and Ibadin (2015); Camodeca et al. (2014) and Ahmadi et al. (2018) but varying from Kwon. (2018). This indicates that Net Operating Cash Flow influences the share price significantly positively. The results also revealed that NAVPS was positively correlated with the share's market value at a 1% significance level supporting Halonen et al. (2013); Tharmila and Nimalathasan (2013) and Ghosh and Ghosh (2015) but varying from Miah (2012). Investors want to ensure sufficient NAVPS to maximize wealth of the company. If the NAVPS increase the investors will invest more funds to the company. The results also revealed that EPS was negatively correlated with the share's market value at a 10% significance level supporting Kwon. (2018) but varying Ghosh and Ghosh (2015). The study also found that CDPS and SDPS were positively insignificantly correlated varying Omokhudu and Ibadin (2015); Zahan and Rana (2020) and Olowolaju and Ogunsan (2017). The NOCFPS, NAVPS, and EPS have a statistically significant impact on the MVPS.

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