

## Stock Market Reaction to Accounting Information of Listed Pharmaceutical Companies in Nigeria

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### ARTICLE INFO

*Keywords:* Accounting, Information, Stock Market Reaction

*Received :* 09, May

*Revised :* 11, June

*Accepted:* 22, July

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### ABSTRACT

The aim of this study was to investigate the effect of accounting information on stock market reaction of quoted pharmaceutical companies in Nigeria by determining whether there is a significant relationship between accounting information and stock market reaction using 2009 to 2014 secondary data collected from the Nigeria Stock Exchange office in Port Harcourt, Rivers State, Nigeria. An ex post facto research design was appropriately adopted to address the objective of the study. Because of the research design adopted, a multiple regression analysis was employed to test the hypothesis raised in the study. The independent variable, which is accounting information, is measured as earnings per share (EPS) and book value per share (BVS), while the dependent variable, which is stock market reaction, is measured as stock price. The results obtained suggest that there is no statistically significant relationship between accounting information and stock market reaction; drawing on this finding, we concluded that accounting information has no significant effect on stock market reaction. Based on this finding, we recommend that sound and specific guidelines on accounting information should be issued by the Financial Reporting Council of Nigeria (FRCN) and the Security and Exchange Commission (SEC) so as to increase the relevance of accounting information of quoted companies.

## **INTRODUCTION**

Capital market research, which aims to ascertain whether the information in the firms' financial statements provides investors with information to influence investors' beliefs about the firms' future worth and risk, is one key topic of research in financial accounting. In the past, market data has consistently outweighed accounting data when determining the factors that influence stock prices (Glezakos, Mylonakis, & Kafouros, 2012). On the contrary, a number of empirical studies indicate that accounting data prevails over market data in changing stock prices (Dontoh, 2004; Bamber, 1986; Francis, 1999; Beaver, 1968; Ball and Brown, 1968).

Higher levels of economic and business-related uncertainty have characterized African economies in the last decade. In this context, we expect that the information provided by firms' financial statements helps investors to determine firms' value and to evaluate the risk associated with their investments. Although accounting information provides a basis by which users of financial information can make economic, financial, and investment decisions, in a situation where there is no regulatory system and no information transparency to guide and facilitate the value of such information on which investors and other users of financial information base their confidence, this could pose a very big threat, thereby leading to a reduction in the stock price of firms (Saheb & Muhammad, 2013).

Ayuba (2011) and Njiforti (2015) found that an aggregate of investments totaling trillions of dollars in value were lost globally. The stock markets around the world crashed and became extremely volatile, and this decreased investor confidence as the fear of what might happen next in the capital market increased. In Nigeria alone, the total market capitalization, which stood at N12.40 trillion in March 2008, fell to N4.69 trillion in March 2009, which represented a whopping decline of 62.18% (Sanusi, 2010). This can be explained by the existing absence of acceptable investments by investors in Nigeria. Again, the need for this study was driven by the observations made by investors and financial managers regarding the impact of accounting variables on stock prices. Investors can calculate expected returns on their investments and changes, if any, from one accounting period to the next using accounting information variables like earnings per share and book value per share (Wan, 2010 in Osundina, Jayeoba, & Olayinka, 2016).

As a result, the purpose of this research is to investigate the impact of accounting information on the stock market reaction of listed pharmaceutical companies in Nigeria. Specifically, the objective this study is to examine is the effect of reported earnings and book value of shares on the stock prices of Pharmaceutical companies quoted on the Nigerian Stock Exchange (NSE).

The primary research question which this paper seeks to address is: to what extent does accounting information influence stock price? As a result of the research question above, we hypothesize that firms' stock prices is driven by announced earnings and the book value of shares.

## **THEORETICAL REVIEW**

### ***Theoretical Framework***

According to various researchers' perspectives, a variety of theories have been applied to the ideas of accounting information and stock price. However, for the purposes of this study, the theory of market efficiency and the theory of market value are the study's main pillars because both theories specifically examine the impact of accounting information on stock prices.

### ***The Theory of Market Efficiency***

This theory suggests that the market for securities is efficient if security prices reflect fully and promptly all available accounting information. According to this idea, the stock market's response and accounting information are directly related. According to Amiri, Ravanpaknodezh, and Jelodar (2015), a market that is efficient is one in which the stock price is adjusted to recently released accounting information and that information is used for pricing so that investors can be confident that their securities are valuable at the market price and that the price reflects pertinent financial information that influences stock prices.

### ***The Theory of Market Value Relevance***

The ability of accounting numbers to describe the information underlying stock prices is the definition of the idea of "value relevance" of accounting information. Accordingly, the value relevance is demonstrated by a statistical correlation between financial information and stock prices (Jianwei & Chunjiao, 2007).

According to Francis and Schipper (1999), the statistical correlation between financial data and prices is known as "market value relevance." According to the efficient market premise that pricing reflects available knowledge, accounting-based indicators adequately explain market prices (McLean & Zhao, 2014). According to Olugbenga and Atanda (2014), the strength of the relationship between accounting variables and the market value of a firm's stock is what is meant by the concept of value relevance.

A significant correlation between an accounting amount and the market value of a security is one of these definitions' key characteristics that makes it value-relevant. Accounting numbers and current company value (i.e., stock market price) must be related for financial information to be deemed valuable, since otherwise, financial reports cannot achieve their main goals. As a result, accounting information cannot be deemed value relevant (Barth, Beaver and Landsman, 2001).

## **CONCEPTUAL FRAMEWORK**

### ***Accounting Information***

According to Hendricks (1976), the primary goal of accounting information generation is to make decision-making easier. However, in order for financial reporting to be effective, it must also be pertinent, exhaustive, and

trustworthy. Due to these qualitative requirements, the information cannot be biased or inclined to favor one side over the other. As a result, accounting data ought to enable decision-makers to anticipate future behavior. Additionally, it ought to improve users' ability to distinguish between the similarities and differences between various sorts of information. Recent studies have suggested that over the past few decades, accounting information has become significantly less important to investors. This is because accounting information contained in financial statements must be accurate and transparent enough to give decision makers, including investors, an indication of a business's performance and financial condition. As a result, it has been found that investors tend to focus on information other than the pub (Perera and Thrikawala, 2010). Financial statements' primary goal is to give both internal and external consumers meaningful information. Information is used by owners, managers, staff, prospective and current investors, financial institutions, suppliers and other creditors, customers, governments and their agencies, and other stakeholders to make informed investment decisions. In order to increase the level of financial reporting transparency, listed companies typically use accounting information in financial statements as one of their primary means of communication with stakeholders. As a result, stock market regulators and accounting standards setters work to improve the quality of financial statements (Vishnani and Shah, 2008; Menike and Man, 2013).

### ***Stock market***

The stock market is a place that facilitates corporations to raise equity capital, thereby facilitating continuous economic growth and maintaining liquidity for the holders of the stocks who invest in these stocks for the purpose of capital gain. On the other hand, the main objective of accounting data is to provide information about the company's economy to different users inside and outside the company (Smith, 2006; Delkhosh & Poorkazem, 2016). A stock's price is the most obvious and important criteria for determining the firm's value. So, stock price maximization is the most important goal for most corporations to maintain their economic growth and credibility in the minds of investors. To answer the question, what determines stock prices? The answer would be that it depends upon the company's ability to generate cash flow now and have the potential to generate it in the future. When making investments, investors compare a company's value, which is based on stock prices (Brigham and Ehrdart, 2001).

### ***Stock Market's Reaction to Accounting Disclosures***

Firm value is defined in an efficient market as the present value of anticipated discounted future net cash flows (Kothari, 2001). An important input into the market's assessment of stock price is a firm's current performance, reflecting the Conceptual Framework's focus on financial statements providing information useful in assessing the amounts, timing, and certainty of future cash flows (Rankin, Stanton, McGowan, Ferlauto, & Tilling, 2012).

Disclosures of accounting earnings numbers lead to share price changes or increases in the volume of trading, providing evidence that capital market participants do use accounting information, reacting more quickly to bad news than good (Rankin, et al., 2012). However, the conservative principles that govern the calculation of accounting earnings 'garble' the signal sent to the capital market (ibid.).

Managers' behaviour suggests that they believe accounting information is used by stock market participants. The reaction of investors to voluntary disclosures by management and to some earnings management strategies confirms that accounting information is used by them (Rankin et al., 2012). The stock price reactions to earnings announcements confirm the seminal findings of Beaver (1968) in the US: earnings disclosures lead to significant stock price changes or trading volume increases.

### *Empirical Review*

Ball and Brown (1968) and Beaver (1968) were the first authors to test empirically the usefulness of accounting information. Beaver (1968) argues that price changes reflect the average change in investors' beliefs attributable to an announcement, and therefore the variability of price changes is likely to be more pronounced around the earnings announcement date. Additionally, the trading volume reflects unique readings of the announcement.

Therefore, the more information in an announcement, the more likely it is that investors will perceive it differently and, as a result, trade more as a result of their different interpretations. His sample consisted of annual earnings reports from 143 NYSE-listed companies with fiscal years ending other than December 31. Beaver discovered that during the weeks surrounding earnings announcements (eight weeks before and after the announcement), price swings were 67 percent higher and mean trading volume was 33 percent higher than during non-report periods. He concludes earnings announcements have information value that incentivizes investors to trade.

In other words, Ball and Brown (1968) researched the correlation between accounting information and stock prices. They discovered that a corporation with excess earnings could generate anomalous returns for investors after empirically examining the relationship between annual report earnings data and stock price.

This shows the relationship between stock price and accounting earnings. From a different angle, Beaver claimed that the stock price might be influenced by the company's financial and accounting information. Beaver discovered that when stock is traded, investors use the declared accounting information. Black conducted research and discovered that stock prices reflected both the facts and the noise of traders. Ball (1995) also thought that noise might cause the stock market to overreact. According to Ball, it isn't always successful in the stock market as people thought. Both Francis (1999) and Donto (2004) conducted empirical studies on the effects of operating cash flow and earnings information on stock prices. They discovered that the earnings data is more correlated but not absolute. Ohlson (1995) made

numerous groundbreaking contributions to the development of the appraisal model. He combined stock, book value, abnormal surplus, and other non-accounting data. His assessment approach can be used to evaluate the value of an organization using current financial statements and other data. Collins et al. (1997) created a model of accounting earnings, gross book value of equity, and stock price using the Residual Income Valuation Model as their theoretical basis. According to Penman (2001), only pertinent and accurate accounting data could forecast the enterprise's future value. Cheng and Yang (2003) used a large number of extreme samples to test the relationship between accounting information and stock prices.

Early empirical evidence on the factors influencing trading volume responses to earnings announcements also provides early empirical evidence. She shows that trading around earnings announcements increases with the absolute magnitude of the earnings surprise and finds that trading around firms' annual earnings announcements is more strongly associated with random-walk-based earnings surprise than with analyst's forecast-based earnings surprise. The bottom line is that she found a correlation between accounting information and stock market reaction.

There is also evidence about the value of accounting information in the international context. DeFond, Hung, and Trezevant (2007) find that annual earnings announcements contain more information for firms in countries with higher quality earnings, better enforced insider trading laws, and stronger investor protection institutions. Griffin, Hirschey, and Kelly (2010) discovered that nations with a higher application of accounting standards had accounting numbers that are more meaningful. Overall, these studies find the information content of earnings announcements is higher in settings in which investors find the accounting information more reliable.

Accounting data might be an important source of information in countries with a relatively high degree of uncertainty. Therefore, our prediction is that accounting information (such as earnings per share and book value per share) and stock prices are associated.

## **METHODOLOGY**

For the purposes of this study, 4 out of 7 pharmaceutical companies listed on the Nigeria Stock Exchange (NSE) have complete data and, therefore, were selected for the period 2011 to 2014. The data has been collected from the NSE office in Port Harcourt. For each company, the logarithms of the yearly stock prices, earnings per share, and book value per share have been used throughout the examined period.

In this paper, we want to test whether earnings per share and book value per share are joint predictors of stock price or whether any of them is a significant predictor of stock price, but in order to do that, we are going to use a linear model. Linear models assume that the dependent variables are approximately of a normal distribution, and so, to examine whether they are, we use the Shapiro-Wilk test to measure normality.

The present study adapts the Ohlson's (1995) model which was developed according to the suggestions of Preinrich (1938), Edwards and Bell (1961) and Peasnell (1982). It expresses the stock price as a function of the earnings per share and the book value per share, as follows:

$$P=f(\text{EPS}+\text{BVS}) \dots \dots \dots (1)$$

$$P_{it}=a+b\text{EPS}_{it}+c\text{BVS}_{it}+e_{it} \dots \dots \dots (2)$$

Where:  $P_{it}$  is the stock price,  $\text{EPS}_{it}$  the earnings per share,  $\text{BVS}_{it}$  the book value per share, and  $e_{it}$  is the part of the price which is not interpreted by the model (residuals).

It has been shown in previous studies that earnings and book values may act, to a certain extent, as substitutes for one another and interact with each other. Therefore, it is expected that multicollinearity will be present in equation (2). Hence, the variance inflationary factor (VIF) is employed to measure the collinearity of the independent variables. According to Doane and Seward (2011), multicollinearity does not bias the least squares estimates or the predictions for response variables, but it does induce variance inflation. The variances of their estimated coefficients tend to become inflated (Doane & Seward, 2011), widening the confidence intervals for the true coefficients  $b$  and  $c$  and making the  $t$  statistics less reliable. It can thus be difficult to identify the separate contributions of each predictor to explain the response variable, due to the entanglement of their roles. If a set of independent variables is uncorrelated, each VIF is equal to 1. If the set is highly correlated, then a VIF might even exceed 10 (Berenson, Levine, & Krehbiel, 2009). Marquardt (1980) suggests that if VIF is greater than 10, there is too much correlation between the first independent variable and the second independent variable. However, other statisticians suggest a more conservative criterion. Snee (1973) recommends using alternatives to least-squares regression if the maximum VIF exceeds 5. Therefore, our VIF threshold is 5.

Also, autocorrelation, which is usually found when a set of data is collected over sequential time periods, has the capacity to affect the validity of a regression model. Hence, in this study, autocorrelation is measured using the Durbin-Watson statistic. We need to determine whether the autocorrelation is large enough to make the Durbin-Watson statistic,  $D$ , fall sufficiently below 2 to conclude that there is significant positive autocorrelation. After computing  $D$ , we will compare it to the critical values of the Durbin-Watson statistic found in a Durbin-Watson table that was downloaded from Google. The critical values are determined by the significance level chosen, the number of observations, and the number of independent variables in the model ( $k$ ). In this study, the observation size,  $n = 24$ , the number of independent variables,  $k = 2$ , and the significance level,  $\alpha = 0.05$ .  $d_L$  represents the lower critical value of  $D$ , below which we conclude that there is evidence of positive autocorrelation among the residuals, while  $d_U$  represents the upper critical value of  $D$ . from which we would conclude that there is no evidence of positive autocorrelation among the residuals.

**RESULTS AND DISCUSSION**

Table 1. Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
LogPRICE	.114	24	.200*	.968	24	.627

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 2. Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.217 <sup>a</sup>	.047	-.126	.23868	1.603

a. Predictors: (Constant), BVS, EPS

b. Dependent Variable: PRICE

Table 3. ANOVA<sup>a</sup>

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.031	2	.015	.271	.768 <sup>b</sup>
	Residual	.627	11	.057		
	Total	.658	13			

a. Dependent Variable: PRICE

b. Predictors: (Constant), BVS, EPS

Table 4. Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics		
	B	Std. Error				Beta	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.319	.367		.870	.403	-.488	1.126						
1 EPS	.037	.096	.151	.391	.704	-.173	.248	.207	.117	.115	.580	1.726	
BVS	.115	.521	.086	.222	.829	-1.031	1.262	.184	.067	.065	.580	1.726	

a. Dependent Variable: PRICE

The Significance value of the Shapiro-Wilk Test in the Tests of Normality table is .627 and it is greater than 0.05 significance level, hence, we conclude that the transformed stock price data is normally distributed. The normality condition for linear model has been met. Therefore, linear model is appropriate for our analysis.

In this study the coefficients table above show a VIF of 1.726 for both EPS and BVS which is less than 5, hence, we conclude that there is no multicollinearity problem in the multiple regression model used in this study.

For the data in this study, with two independent variables ( $k = 2$ ) and 24 values ( $n = 24$ ),  $d_L = 1.188$  and  $d_U = 1.546$ . Because  $D = 1.603 > 1.188$  and  $D = 1.603 > 1.546$ , we conclude that there is no autocorrelation among the residuals. The least-square regression analysis of the data is appropriate because of the absence of significant positive autocorrelation among the residuals. In other words, the independence of errors assumption is valid.

The  $R^2$  of .047, which is the coefficient of determination in Model Summary table indicates how well EPS and BVS, in linear combination, predict Stock Price in the sample. The  $R^2$  of .047 indicates that our estimate in the population is that only 4.7% of the variance of Stock Price is accounted for by its insignificant relationship with two predictors.

EPS and BVS, in linear combination, do not significantly predict at the .05 level Stock Price,  $F(2, 11) = .271$ ,  $p = .768$ .

The partial regression coefficient of .037 indicates that the stock price increases by .037 for every 1 unit of EPS, holding constant the BVS.

As shown in the Coefficients table, the confidence interval for the .037 coefficient ranges from -.173 to .248, The same hypothesis is evaluated with a t test,  $t(11) = .391$ ,  $p = .704$ , these results indicate that the hypothesis cannot be rejected at the .05 level that EPS (holding BVS constant) is not linearly related to the stock price; while the confidence interval for the .115 coefficient ranges from .184 to .067. Both interval are quite wide. Note the confidence interval for the partial regression coefficient for BVS contains the value of zero. These results indicates the hypothesis cannot be rejected at the .05 level that BVS, holding EPS constant, is not linearly related to the stock price in the population. The same hypothesis is evaluated with a t test,  $t(11) = .222$ ,  $p = .829$ .

The above results are inconsistent with the results of many relevant empirical studies (Dontoh, 2004; Francis, 1999; Beaver, 1968; Ball and Brown, 1968), which were carried out in several stock markets of developed and developing countries.

## CONCLUSION AND RECOMMENDATION

In the current study, we used a methodology that focused on the coefficients of determination and the significance level of the executed regression to investigate the relationship between accounting information and stock prices of listed pharmaceutical companies on the Nigerian Stock Exchange during the years 2009 to 2014. The findings imply that accounting information

does not substantially affect or forecast stock market behavior. It is discovered that neither book value nor earnings seem to have a substantial impact on stock price prediction. In an effort to make sense of this finding, it is argued that investors focus more on stock market data than on the core characteristics of companies. The Financial Reporting Council of Nigeria (FRCN) and the Security and Exchange Commission (SEC) should issue clear and detailed guidelines on accounting information, it is recommended in this document based on the study's findings, to improve the relevance of accounting information for quoted companies.

### **ADVANCED RESEARCH**

This research still has limitations so that further research is still needed on this topic.

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