ANNUAL ACCOUNTING INFORMATION AND STOCK PRICE REACTIONS: EVIDENCE FROM NIGERIA DEPOSIT MONEY BANKS IN WEST AFRICA

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Abstract
This paper examined the value relevance of accounting information and stock prices in Deposit Money Banks in Nigeria. Specifically, it assessed the behaviour of share prices in relation to accounting information in terms of earnings per share, book value per share, dividends per share and return on assets. The study adopted the expo-facto research design and the study elements covered all the 18 listed Deposit Money Banks; out of which, 10 Banks were selected as the study participants and this was achieved through a random sampling technique. The study covered 10 years, spanning from 2010-2019 and data were sourced from the fact book of the Nigeria Stock Exchange (NSE) and audited annual financial reports of the sampled banks. The estimation technique adopted in this study was panel data analysis technique. This was carried out after descriptive statistics and Pearson correlation. It was discovered that earnings per share, book value per share and dividends per share exert a positive and significant effect on stock prices and that return on assets exerts a positive and insignificant effect on stock prices. Based on the

findings, it was established that accounting information has a positive effect on stock prices. Thus, it was recommended that timely and adequate accounting information should be made available by the management of Deposit Money Banks in Nigeria to induce the interest of investors and that investors are urged to pay more attention to earnings per share, book value per share and dividend per share in their investment decisions.

Keywords: *value relevance, accounting information, stock prices*

JEL Classification*: A47, S15*

1. Introduction

The indispensability of the stock market to individuals, organizations and the nation at large cannot be overstressed. It is a place where the liquidity state of organizations is fostered by investors and a market for buyers and sellers of securities at a price determined by the market forces. While the buying and selling of securities are always motivated by profit-related reasons, the volume of transactions determines the enhancement of economic growth and development. This underscores the relevance of the stock market to the growth of other sectors in the country. Thus, the Nigerian Stock Exchange (NSE) was established in 1961 to facilitate the improvement of the capital market (Maku & Atanda, 2010).

The capital market avails investors, local and foreign, to invest their money with a singular aim of making a profit. However, there seems to be a general concern about the variability of the stock price. Olowolaju and Ogunsan (2016) (2014) argued that stock prices are more unstable than what is justified by time variation in dividends. Oyerinde (2016) opined that stock price is the current trading price of a security, as a result of the interaction of the traders, investors and dealers. It is the price determined by the extremity of the demand and supply of securities. Stock prices undulate during the trading days as the investors trade stocks. Consequently, when there is a high purchase of stock, the market prices inflate and equally decrease as the investors begin to sell more of the stock.

The intermittent changes in the stock prices appear to be the function of many factors, part of which is accounting information. Accounting information is an avenue where the effectiveness and efficiency of the management team of organizations are known. Accounting information summarizes the efforts of the management team in terms of business transactions and other relevant operational activities, as they relate to the attainment of the stated objectives. While existing and potential shareholders use accounting information to determine investment

decisions, stakeholders like the government uses it for tax-related reasons and other regulations.

Timely and adequate accounting information seems to be needed to make a profitable investment decision. accounting information reveals the financial performance of firms and, in turn, engender investors to make a rational decision. Uniamikogbo, Ezennwa and Bennee (2018) noted that the prices of stock might change at the release of new information in the market. However, the direction of the changes is dependent on the relevance of that new information as well as the degree in which the news surprise investors. Investors are rational thinkers; whose aim is to make a profitable investment. Hence, the value relevance of the accounting information of market operators determines the extent to which investors would be attracted.

Information contained in the accounting information is adjudged "value relevant" if it explains the movement of the stock prices. The value relevance of accounting information is the ability of the accounting figures to summarize the information underlying the changes in the stock price. However, the global financial crises that engulfed virtually every economic sector in 2008 brought value relevance of accounting information under serious criticisms (Olowolaju & Ogunsan, 2016). The claim is that accounting information is not appropriate to evaluate the market value of service-oriented firms, which are high-technology driven (Oyerinde 2011). In Nigeria, particularly in the banking sector, the 2009 crises that saw the collapse of some banks seems to affect the value relevance of the accounting information to investors. This seems to be a reoccurrence issue in the banking industry till date.

A lot of studies have been conducted to examine the relationship between accounting information and stock prices. Using different variables and methods of analysis, reported findings were disaggregated. Uniamikogbo, Ezennwa and Bennee (2018) revealed that earnings per share and dividend per share had a negative and significant effect on stock prices, while book value per share had a positive and significant effect on stock prices in Nigeria. Oliver (2015) reported that it was only EPS, amongst the other variables (ROA and bank age) that has both a positive and significant relationship with MPS. Umar and Musa (2013) discovered that firms' EPS has no predictive power on stock prices and should not be relied upon for the prediction of the behavior of stock prices in Nigeria.

Osundina, Jayeoba and Olayinka (2016) reported that accounting information (Earning per Share, Price-earnings Ratio, Book Value per Share and Dividend per Share) has a strong positive significant impact on stock price volatility. Also,

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Uwuigbe, Uwuigbe, Jafaru, Igbinoba and Oladipo (2016) showed that a significant positive relationship existed between earnings per share (EPS) and last day share price. Adaramola and Oyerinde (2014) reported that information on earnings, dividend, book value and cash flows can be used to predict share prices of quoted firms significantly. The mixed findings created a vacuum for another study and this constitutes the motivation for this present study.

Another motivation for this study is found on the period covered by previous studies. While Uniamikogbo, Ezennwa and Bennee (2018) covered 2013-2017, Oliver (2015) covered 2004-2013, Umar and Musa (2013) covered 2005-2009, Osundina, Jayeoba and Olayinka (2016) covered 2005-2014, Uwuigbe, Uwuigbe, Jafaru, Igbinoba and Oladipo (2016) covered 2010-2014 and Adaramola and Oyerinde (2014) covered 1991-2010. These periods might not reflect the recent development in the industries and findings reported might not be relied upon given the intermittent change of the government policies and the business environment.

The problems solved by this study centered on the mixed findings reported by the previous studies regarding the behaviour of share price in relation to various predictors and the period they covered which might not reflect the recent happenings in the business environment of Nigeria. Based on these premises, the study examined annual accounting information and stock prices in Deposit Money Banks (DMBs) in Nigeria. The timeliness of this study is rooted in the recent happenings in the banking industry that saw the collapsed of Diamond bank and also the usage of recent data (2010-2019). The findings of this study would be useful for investors, creditors, bankers and analysts to make a productive investment decision. In the same vein, the findings of this study might be helpful to students and their teachers interested in a similar topic. The rest of the paper was organized as follows: the next section focused on the literature review, followed by the methodology, results and discussion of findings, and conclusion and recommendations.

2. Literature Review

Every investor, foreign and local, who transacts on the stock market aims to make fortunes rather than misfortunes. This could be accredited to the reason why a better understanding of the stock market prices is important to investors. Stock market prices stand as the basis for the evaluation of monetary institutes in line with its break-even point i.e. to determine the profitability of such a business entity (Okafor, Mgbame & Chijoke-Mgbame, 2011). As an investor, the most significant piece of information needed is when to buy or sell a stock is its market price.

Adequate information indicates the current value to buy or sell a stock. It could also be used to analyze the estimated value of financial institutes and their historic stock trends. Oyerinde, (2016) opined that the stock market price is the current trading price of security based on the market forces.

Changes in the market stock price is an indicator mostly used to detect changes in trends in the market place. However, a decrease or increase in the market stock value is as a result of the investor's reaction changes in the stock market. The change in stock prices tends to upsurge when new information is unconstrained into the stock market. The extent to which it increases is determined by the importance of the released new information together with the degree at which the news astonishes the investors (Ajao, 2012). The change of ordinary stock price is the systematic and organized risk faced by investors who possess ordinary stock investments (Guo, 2012). The greater the unpredictability of stock market price, the greater the opportunity of making great profits or losses in investment within a short period. Therefore, as a result of unstable stock, its price seems to vary over a given time. The slighter the change of a given stock, the better its prestige to investors.

Okafor, Mgbame and Chijoke-Mgbame (2011) asserted that the investors are meticulous in risk-taking, therefore, the instability of their investments is of paramount to them as it is a measure for the level of risk they are being exposed to. He added that the stock volatility is a measure of ambiguity about the productivity of the stock. Also, a market could be said to be unstable if the previous stock prices are mirrored in the future price of the stocks. Therefore, to be able to ascertain the estimates of the instability of stock, one can only observe the stock return series through financial information. Oyerinde, (2016) opined that an efficient stock market serves as an impetus for economic growth and development of a nation and enhances private capital for the development of business entities in Nigeria. In 1961, the Nigerian Stock Exchange (NSE) was established to simplify the development of the stock market (Maku & Atanda, 2010). Thus, a reliable and consistent accounting information is required as a vital prerequisite for the growth and development of the stock market as investors need accurate and reliable accounting information for investment decisions.

Accounting information seems to be the most crucial factor utilized by investors for their investment decision. Serife and Uger (2012) noted that investment decisions made on the financial institution's stock price is a comprehensive reflection of a financial institute's futuristic profit. Accounting information is generated to facilitate the user's decision making. Nevertheless, for the financial

report to be effective, it should be reliable, relevant and complete. High effectiveness also requires that the information must not have the tendency of unfairness, that is, favoring one party over the other. Therefore, accounting information seems to give an investor the ability to make investment decisions. Perera and Thrikawala (2010) opined that accounting information helps to increase its user's knowledge to identify the differences and similarities between two or more types of information. Financial statements help to provide relevant and reliable information to both the external and internal users. Managers, owners, employees, investors, suppliers, financial institutions, creditors, governments and their agencies, customers, and other stakeholders use financial information to make rational decisions on investment.

Deposit money banks generally use financial information contained in the financial statements as one of the basic channels of communicating to shareholders and stakeholders. On this basis, stock market controllers and accounting standards body seems to improve the financial statement's quality order to upsurge the transparency level in financial reports (Menike & Man, 2013). In the stock market, two factors are significant in the determination of the share price; these factors include accounting or non-accounting information (Khanagha, 2011). Accounting information refers to the channel through which economic events are communicated to its users to make investments decision (Abiodun, 2012). It comes in the form of ratios, which include earning per share, price earning ration, dividend per share, return on assets and book value per share.

Earnings per share are the sum of current period incomes (profit or loss) attached to a unit of ordinary share. It is the fiscal value of incomes per outstanding share of common stock for a business entity. Earnings per share is one of the most significant variables for determining an organization's share prices. This implies that high Earnings per Share (EPS) designates that the financial institution is more lucrative and has more earnings to allocate to its shareholders. Osundina, et al (2016), asserted that earnings per share are a digit unfolding a public financial institute's profit per outstanding share of stocks, calculated on an annual or quarterly basis. EPS is obtainable by dividing a company's annual or quarterly net income by the number of its outstanding stocks. EPS is an elementary measure for financial institutes' profitability level and to inform the investors whether the institute is a safe bet. It plays a vital role in the stock market price determination of most financial institutes as it influences the control of the stock market price.

In the long run, most financial institutes generate profits, much of which is paid out as interest to their creditors and as dividends to their shareholders. The leftover

is sum up with the amount publicized as collective retained earnings on the institute's books. The summation of the collective retained earnings and other entries under stockholder's equity is known as the book value per share (Osundina, et al, 2016). Osundina, et al (2016) asserted further that the book value of shares and assets is the worth of these items in a business entity's financial records. The worth could be found in the entity's accounting tools such as journals, ledgers and balance sheets. The book value per share is a market value ratio that weighs stockholders' equity against outstanding shares (Adaramola & Oyerinde, 2014). This implies that the division of the value of all shares by the number of shares issued. Consequently, the book value per share is mostly of use to investors for determining whether a share is undervalued.

Book value per share is one of the most crucial elements which influence the market value of equity share as it expresses the value of shares in a financial institute. The book value is a reflection of the dividend distribution policy, investment decisions and past earnings of a financial institute. Hence, a high book value reveals that a business entity has a huge reserve, while a low book value implies a liberal distribution policy of dividends and bonus, or a weak track record of profitability (Pushpa & Sumangala, 2013). The book value per share is deeply-rooted in financial accounting practice and hence can be recognized relatively easily.

Dividend per Share (DPS) is another financial information needed by investors to determine their decisions. According to Okafor, Mgbame and Chijoke-Mgbame (2011), DPS is a way to evaluate a business entity from the investment point of view and to know whether the business entity is cash propagative or not. It is the digit calculated by dividing the entire dividends paid by a business entity, with interim dividends, over a given period (Siyanbola & Adedeji, 2014). A financial institution's dividend per share is often obtained using the paid dividend in the recent quarter. It reveals the retention policy of a business entity as the investors would prefer a higher ratio to retain their investment. Over the years, dividends are sum together excluding special dividends but interim dividend inclusive for the right calculation of DPS. Special dividends are dividends that are issued once and are not included. While interim dividends are dividends distributed to declared shareholders and are paid before the business entity determines its annual incomes. If a business entity issues its common shares during its calculation period, the aggregate number of the outstanding ordinary shares is calculated by using the weighted average of shares over the reporting period, which is the same figure used for earnings per share (EPS).

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Return on Asset is rank as one of the most widely used variables to determine a business entity's profitability level. Return on Assets (ROA) is a financial ratio that reveals the percentage of profit a business entity receives in coordination with its overall resources. It is generally ascertained by dividing the net income by the total assets. The net income is obtained from the income statement and the profit after taxes of a business entity. Umar and Musa (2013), added that return on assets is an indicator of the profitability level of a business entity relative to its total assets. A high ROA value implies a higher profitability of a firm. It is a communal notion that if a firm is profitable, its share price seems to increase. This implies a positive sign for any investors to invest. Figure 1 showed the conceptual framework of this study.
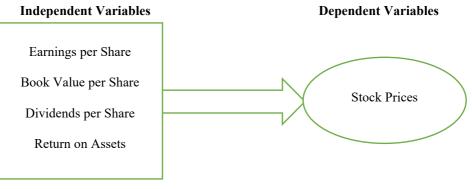

Independent Variables — Dependent Variables

Earnings per Share
Book Value per Share
Dividends per Share
Return on Assets

Stock Prices

Figure 1: Conceptual Framework
Source: Author's Design

2.1. Theoretical Review

Signaling theory and the idea of market efficiency provided the theoretical framework for this research. In 1973, Andrew Michael Spence put out this notion. The concept of asymmetric information (a deviation from perfect information) served as the theoretical basis for the signaling theory, which postulates that inequalities in access to information disrupt the regular market for the exchange of goods and services in some economic interactions. Spence (1973) proposed that a solution to the issue of asymmetric information between two parties may be achieved by having one party send a signal disclosing some of the essential information to the other side. For the stock market, this hypothesis stands in for the possibility that not all participants have access to the same information at the same time. It has been shown that the signaling theory is helpful for assessing behavior

when two entities (individuals or businesses) have access to dissimilar information. Melisa (2013) argued that when markets are imperfect, managers will use cash dividend statements to signal shifts in their expectations for the company's future. In addition, it is hypothesized that company executives use earnings as a type of signaling to provide information about the future of their organizations.

However, Brian, Trevis, Duane, and Christopher (2011) argue that the theory's core premises have grown hazy as it has been applied to organizational challenges, thus the rationale behind the clarification isn't enough to save it from criticism. This hypothesis is relevant because it provides a realistic explanation for why and how financial news might affect stock price volatility. According to the hypothesis, the price of a company's shares will move when its management or shareholders make a statement that includes significant information. In essence, this theory agrees with the idea that financial statement that contains meaningful information might affect the view of a corporation when it is released publicly.

The concept of market efficiency was proposed by Fama (1965). It says that all information about a stock and the stock market as a whole may be reflected in its price at any one moment. According to this hypothesis, no participant in the market (companies, brokers, shareholders, investors, etc.) has any special knowledge that gives them an edge in forecasting the direction of stock prices. When considering the information available to market participants, the efficient market hypothesis takes into account not just its kind and origin but also its speed and quality (Amiri, Ravanpaknodezh & Jelodar, 2015).

According to Jonathan (2008), the basic ideas of this theory cannot be put to the test. The concept that returns are irregular, he went on to say, is wrong and impedes financial economics study. Only by using a risk-free probability measure can returns have any degree of uncertainty. With an actual probability measure, it is possible to foresee one's return, and it is this predictability that financial economists value (Jonathan, 2008). This hypothesis is important because it accurately predicts that most companies' share prices already include their value, profitability, and worth. When a company's value rises, its stock and bonds tend to follow suit on the stock market. Sometimes investors won't have time to go into every detail of a firm, but they may quickly compare stock prices to choose a company with which they feel comfortable investing.

2.2. The Effect of Financial Reporting on Stock Market Values

Numerous investigations on this topic have been conducted all across the globe. For example, Abiodun (2012) did a research on the influence of accounting

numbers on stock price in Nigeria using descriptive statistics paired with the logarithmic regression models. Forty firms from different sectors of the Nigerian economy were used as examples in the research, which spanned the years 1999-2009. Based on the results of the research, it can be concluded that earnings are more important than book values in determining the value of a company, and that information presented in the income statements is more important than data presented in the statement of financial position in determining the value of companies in Nigeria.

To see whether profits per share (EPS) and return on assets (ROA) significantly impacted the share price of publicly listed corporations in the Philippines, Placido (2012) conducted a research. Fifty publicly traded companies' 2009 financial statements were used, all culled from the OSIRIS database. Spearman's Rank Order Formula Outcome A detailed examination of the connection between earnings per share and share price revealed a robust positive relationship between the two. Return on Assets was shown to have a tepidly negative relationship with stock price. The average change in share price was shown to be significantly affected by the selected model in a multiple regression analysis. Umar and Musa (2013) also conducted research on the link between stock prices and earnings per share at various companies between 2005 and 2009. Businesses' EPS were shown to have no predictive value on stock prices when tested using a simple linear regression model on a panel of 140 firms out of a total population of 216 firms' operating on the Nigerian Stock Exchange (NSE).

Hemadivya and Devi (2013) conducted research on the influence of earnings per share (EPS) on the share prices of a number of publicly traded firms. By using regression and correlation analysis, we discovered that shifts in EPS had a considerable impact on the stock price. There is a strong, positive, and statistically significant link between market price and EPS, as evidenced by the correlation between these two variables. According to the data, there is a positive but statistically insignificant correlation between market price and earnings per share.

By using Ordinary Least Squares (OLS) Regression on data from over 500 publicly listed companies obtained from the Value Line Investment Survey database, Profilet and Bacon (2013) investigated the impact of certain financial factors on stock price volatility over time. It was shown that leverage and growth were inversely correlated with share price volatility, whereas the size of the firm and dividend yield had a negative correlation.

In a research published in 2014, Chege, Othieno, and Kodongo looked at monthly and weekly return series from January 1999 to December 2013 to

determine how the environment of return of share prices and volatility on the NSE had changed. In this analysis, we employed the GARCH-in-mean and E-GARCH models. The research concluded that shocks to equities returns tend to stick around for a long time. Further analysis of the data showed that recent disturbances had no effect on the conditional variance at the moment, but that historical variances do. Market volatility was also observed to be attracted to important international and local economic events. Accounting information's value significance in Pakistan's banking industry was also studied by Shehzad and Ismail (2014). Nineteen (19) private banks were analyzed in the research, covering the years 2008 through 2012. The pooled regression method was used. Accounting data explained a significant percentage of the stock price, while earnings per share was shown to be more value relevant.

The value relevance of accounting information in the Nigerian stock market was studied by Adaramola and Oyerinde (2014), who looked at the period from 1991 to 2010. The secondary information was collected from the Fact Books of the Nigerian Stock Exchange, the Annual Financial Reports of firms listed on the Nigerian Stock Exchange, and the Annual Reports of the Nigerian Stock Market. The panel model was analyzed using the Generalized Least Squares (GLS) regression technique. The results indicate that accounting data has a considerable impact on the share prices of firms trading on the Nigerian Stock Exchange. Share prices of publicly traded companies may be predicted using data like profits, dividends, book value, and cash flows.

Oliver (2015) conducted research on the correlations between financial performance measures and stock prices in the Nigerian banking industry, looking at their significance, directionality, causality, strength, and cointegration. Secondary data was collected from the 2004-2013 annual reports and accounts of four different banks in Nigeria: First Bank Plc, Access Bank Plc, Zenith Bank Plc, and United Bank for Africa Plc. Using a multiple regression model, we identified the kind and strength of the relationship between the MPS and the independent variables of Bank Age, Earnings Per Share (EPS), and Return On Assets (ROA). Among the factors tested, it was discovered that only EPS had a positive and statistically significant connection with MPS.

Over the course of 10 years, Osundina, Jayeoba, and Olayinka (2016) analyzed the effect of accounting data on the share price fluctuations of a sample of publicly traded Nigerian manufacturing firms (2005-2014). Ordinary Least Squares were used to estimate values for the study's variables, and econometric views (E-views) were used to do the analysis. Accounting data was shown to have a positive and

statistically significant influence on stock price volatility in a cross-sectional fixed-effects model.

To find out if accounting information could affect the prices and demand for shares of banks listed on the Nigeria Stock Exchange from 2005-2014, Olowolaju and Ogunsan (2016) evaluated the value-relevance of such data. Twelve banks from the Nigeria Stock Exchange were chosen at random for the research. Mean, standard deviation, kurtosis, and skewness are examples of descriptive statistics, whereas panel regression and correlation were employed to test the hypotheses. The findings also show that BVS and DPS have a high degree of predictive power for MPS. According to the results, the dividend per share of Nigerian banks has a beneficial effect on their stock prices. Moreover, the research found that accounting profits reflected by earning per share contribute considerably to the market pricing of bank shares.

The impact of financial statement value relevance on Nigerian company share prices was studied by Uwuigbe, Uwuigbe, Jafaru, Igbinoba, and Oladipo (2016). This study employed the audited financial statements of listed banks that were traded on the Nigerian Stock Exchange Market and the fact book from the Nigerian Stock Exchange Market to accomplish its goals. Purposive sampling was used to pick 15 banks trading on the Nigerian stock exchange for this investigation. However, descriptive statistics and the fixed effects Panel data method of data analysis approach were used in the study to analyze the research hypotheses. The results demonstrated a positive and statistically significant correlation between EPS and the share price on the last trading day (LDSP).

Mori (2016) conducted research on the impact of stock price volatility on the Nairobi Securities Exchange. The analysis spanned the 10 years from 2006 to 2015 and relied on secondary data. The acquired data was evaluated by means of SPSS version 23's Karl Pearson correlation and multiple linear regression. According to the results of the research, share price volatility and interest rates had a negative effect on the stock market, while interest rates and the availability of money had a favorable effect. The research also found that interest rates, money supply, and economic growth were significantly impacted, although share price volatility and stock market performance were not.

Accounting information on financial statements and its effect on the stock price of energy companies listed on Vietnam's stock market was studied by Hung, Viet Ha, and Binh (2018). The authors examined the relationship between stock prices and variables such return on assets (ROA), capital structure (LV), firm size (size), current ratio (CR), and accounts receivable turnover (turnover) using the OLS

regression model and the quantile regression model. Over the years of 2006-2016, data were gathered from 44 energy companies. Stock prices were shown to be positively connected with return on assets (ROA), firm size (size), current ratio (CR), and accounts receivable turnover (turnover), but not capital structure (LV).

An examination of the effect of accounting data on Nigerian stock market volatility was conducted by Uniamikogbo, Ezennwa, and Bennee (2018). The study used a cross-sectional research strategy. Twenty-two (22) company annual reports and accounts were employed as a supplementary source of data generation covering a five-year time frame (2013- 2017). Descriptive statistics and Ordinary Least Square (OLS) regression were used to examine the data derived from the annual reports and accounts. Their research showed that in Nigeria, stock prices were significantly influenced by book value per share but not by profits per share or dividends per share.

2.3. Development of Research Questions and Literature Gap

Several studies have examined the impact of accounting data on stock prices in Nigeria and elsewhere. However, it was clear from the papers examined that the stated outcomes were inconsistent, and that the time period may not be representative of current stock market activity. Following these principles, the following hypotheses were developed::

H_01: Earnings per share would not significantly affect stock prices in Deposit Money Banks in Nigeria;

H_01: Book value per share would not significantly affect stock prices in Deposit Money Banks in Nigeria;

H_01: Dividend per share would not significantly affect stock prices in Deposit Money Banks in Nigeria

H_01: Return on assets would not significantly affect stock prices in Deposit Money Banks in Nigeria.

3. Methodology

The study used an expo-facto research design, and all 18 of the listed Deposit Money Banks were analyzed; however, only 10 of the Banks were included in the study due to a random selection process. Data on predictor and outcome variables came from the fact book of the Nigeria Stock Exchange (NSE) and audited annual financial reports of the selected banks, covering the whole 20-year time frame of the research (2000-2019). The global financial crises of 2008 and 2009, corporate malfeasance, capital market volatility, and bank failure overtook the nation and

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shaped the time period under consideration. The formula, a-priori expectations, and individual variables are listed in Table 1. Panel data analysis, which covers pooled effect panel, fixed effect panel, and random effect panel, was used as the estimate method for this investigation. This was done after descriptive statistics and Pearson correlation were already completed. Taking into account time-series and cross-sectional variables, as well as allowing for variables to be observed across businesses and years, panel regression analysis was deemed suitable. This is because it may significantly lessen the difficulty arising from omitted variables. This is the format that the fixed effect must take:

$$Y_{it} = a_0 + \beta_1 X_{it} + \delta i + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(1)}$$

δi is a time-varying intercept that captures all the variables that affect Y_{it} that vary over time but are constant cross-sectionally. The random effect model follows the forms presented below:

$$Y_{it} = a_0 + \beta_1 X_{it} + W_{it}, W_{it} = \pounds_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(2)}$$

Where $\pounds_{it}$ measures the random deviation from the global intercept a, subscript "it" represents the combination of time and individuality. U_{it} means error term.

This study modified one of the models used by Olowolaju and Ogunsan (2016) to examine the value relevance of accounting information in the determination of the share prices of quoted Nigerian Deposit Money Banks.

$$ASP_{it} = f(EPS_{it} \, BVS_{it} \, DPS_{it}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(3)}$$

Where ASP is Average Share price, EPS is Earnings per Share, BVP is Book Value per Share and DPS is Dividends per Share. However, the model was modified with the incorporation of another predictor variable (Return on Assets). This is to enhance the analysis of the relationship between accounting information and share prices. Hence, the modified model is presented thus:

$$ASP_{it} = f(EPS_{it} \, BVS_{it} \, DPS_{it} \, ROA_{it}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(4)}.$$

While ROA is Return on Assets, the equation of the model becomes:

$$ASP_{it} = \beta_o + \beta_1 EPS_{it}, + \beta_2 BVS_{it}, + \beta_3 DPS_{it} + \beta_4 ROA_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\text{(5)}$$

Where $\beta_1 - - - - - \beta_4$ = the slop parameters, i = cross-sectional variable from 1, 2, 3, 4 and t = time series variable from 1, 2, 3, 4

Table 1: Variables in the Research Model

Variable Names	Type	Code	Measurement	Expected Direction of Impact
Stock Price	Dependent	ASP	Average Share price at the end of the year	
Earnings per Share	Independent	EPS	Net income ÷ Total number of capital stock shares	+
Book Value per Share	Independent	BVS	(Shareholders' Equity − Preferred Shares) ÷ Total Number of Outstanding Shares	+
Dividends per Share	Independent	DPS	Annual Dividends ÷ Number of Shares	+
Return on Assets	Independent	ROA	Profit after tax/total assets	+

Source: Author's compilation

4. Results and Discussion of Findings
4.1 Results

The estimation technique adopted in this study includes panel data analysis technique which consists of pooled effect panel, fixed effect panel and random effect panel. This was carried out after descriptive statistics and Pearson correlation.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ASP	100	13.9938	8.7282	1.11	42.08
EPS	100	1.3039	1.1411	-1.58	5.48
BVS	100	13.8797	6.0323	3.32	30.13
DPS	100	0.9431	1.2412	0.21	11.23
ROA	100	11.3019	8.8802	0.14	39.23

Source: Data Analysis, 2020

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Table 1 showed the summary of the descriptive statistics of the variables. It showed that the mean value of the share price of all the sampled firms was 13.9938, flagged by a minimum and maximum values of 1.11 and 42.08 respectively. The dispersion around the mean indicated by the value of standard deviation was given to be 8.7282. The average value of earnings per share stood at 1.3039 and fluctuates from a minimum value of -1.58 to a maximum value of 5.48. The dispersion around the mean indicated by the value of standard deviation was given to be 1.1411. also, the average value of book value per share was 13.8797 and ranged from a minimum value of 3.32 and a maximum value of 30.13. The dispersion around the mean indicated by the value of standard deviation was given to be 6.0323. The mean value of dividend per share was given to be 0.9431 and fluctuates from a minimum value of 0.21 to a maximum value of 11.23. The dispersion around the mean shown by the value of standard deviation was given to be 1.2412. The mean value of return on assets was 11.3019, flagged by a minimum and maximum values of 0.14 and 39.23 respectively. The dispersion around the mean indicated by the value of standard deviation was given to be 8.8802.

Table 3: Pearson Correlation

Variable	ASP	EPS	BVS	DPS	ROA
ASP	1				
EPS	0.4283	1			
BVS	0.4605	0.2241	1		
DPS	0.3254	0.1255	0.1487	1	
ROA	0.1015	0.0807	0.2498	0.2901	1

Source: Data Analysis, 2020

Table 3 showed that share price maintained a positive correlation with all the predictor variables with a specific correlation coefficient of 0.4283 for share prices and earnings per share, 0.4605 for share prices and book value per share, 0.3254 for share prices and dividend per share and 0.1015 for share prices and return on assets. This implies that share prices move in the same direction with earnings per share, book value per share, dividend per share and return on assets. In the same vein, the correlation between all the predictor variables was positive all through, reflecting that they followed the same direction.

Table 4: Pooled OLS Estimation Result
Series: ASP EPS BVS DPS ROA

Variable	Coefficient	Std Error	T-Test	Probability
C	6.8323	2.466	4.77	0.000
EPS	2.9855	0.7108	4.20	0.000
BVS	0.6207	0.1369	3.06	0.002
DPS	0.6863	0.2442	2.50	0.020
ROA	0.0391	0.0901	0.43	0.655

Source: Data Analysis, 2020. R-square=0.5371, Adjusted R-square=0.4571,
F-statistics=56.17, Prob(F-stat)=0.0000.

Table 4 revealed that when heterogeneity effect across the sampled firms in the study is not given consideration, all the predictor variables exert a positive significant effect on share prices of Deposit Money Banks in Nigeria except return on assets to the tune of $2.9855(p=0.000<0.05)$ for earnings per share, $0.6207(p=0.002<0.05)$ for book value per share, $0.6863(p=0.020<0.05)$ for dividend per share and $0.0391(p=0.655>0.05)$. This indicates that the null hypothesis that earning per share, book value per share and dividend per share would not exert a significant effect on share prices are rejected and that the null hypothesis that return on assets would not exert a significant effect on share prices is accepted. The R-square value given to be 45.7 indicated that the systematic variation in the share prices was jointly caused by earning per share, book value per share, dividend per share and return on assets. The F-statistics along with the probability value given to be 56.17 and 0.0000 respectively showed that the model is fit.

Table 5: Fixed Effects Estimates (Cross-sectional and Period specific)
Series: ASP EPS BVS DPS ROA

CROSS-SECTIONAL SPECIFIC EFFECT			TIME SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
Constant	6.0637	0.000	Constant	6.3875	0.001
EPS	3.0122	0.000	EPS	2.9305	0.000
BVS	0.2057	0.042	BVS	0.2273	0.002
DPS	0.8113	0.023	DPS	0.5884	0.068
ROA	0.0478	0.1102	ROA	0.0747	0.490

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Effects			Effects		
ACCESS	1.7295	0.299	2011	0.7438	0.694
POLARIS	-0.5014	0.780	2012	0.8253	0.658
FIRST	-0.9594	0.580	2013	1.3500	0.449
UBA	0.3895	0.854	2014	-2.8591	0.0.195
ZENITH	1.7607	0.021	2015	3.7364	0.031
FIDELITY	2.1513	0.001	2016	0.4371	0.805
WEMA	1.1337	0.038	2017	0.3949	0.850
STANBIC	-0.7972	0.704	2018	4.7381	0.007
ECO	1.5592	0.373	2019	-1.3418	0.458
R-square=0.782 Adjusted R-square=0.766 F-statistics=44.16 Prob(F-stat)=0.0000			R-square=0.5848 Adjusted R-square= 0.5413 F-statistics=49.75 Prob(F-stat)=0.0000		

Sources: Data Analysis, 2020.

Accounting for each firm's individuality required this estimator to systematically factor in the heterogeneity impact across companies in the sample. Each business and year were given their own unique intercept term in the model to account for the heterogeneity effect and period impact. Table 5 shows that the null hypothesis is rejected due to the positive and significant effect of earnings per share on share prices of 3.0122(p=0.0000.05) for cross-sectional estimation. And the null hypothesis is rejected since book value per share has a positive and substantial influence on share prices, amounting to 0.2057(p=0.0020.05). With a co-efficient of 0.8113 and a p-value of 0.068, dividend per share had a positive and statistically insignificant influence on share prices. For this reason, we accept the null hypothesis. Insignificantly (p=0.0478), a good ROA affects share prices by 0.490% (0.510>0.05). An R-squared value of 76.6% indicates that earnings per share, book value per share, dividends per share, and return on assets are jointly responsible for the systematic variation in share prices. F-statistics of 44.16 and a probability value of 0.0000 both indicate that the model is appropriate. Table 5 displays the results of fixed effect period-specific estimate, which show that earnings per share (2.9305, p=0.0000.05) and book value per share (0.2273, p=0.0020.05) have a positive and substantial influence on the share prices of Deposit Money Banks in Nigeria. This disproves the idea that earnings per share and book value per share would not have any impact on stock prices. Further, dividend per share (0.5884) and return on assets (0.0747) have a positive and

statistically significant influence on share prices (0.068>0.05 and 0.0490>0.05, respectively). This means that investors accept the alternative premise that dividend per share and return on assets do not have a significant impact on stock prices. Earnings per share, book value per share, dividends per share, and return on assets were all found to be significant in explaining the systematic variation in share prices (R-squared = 54.1%). Model fitness was determined using 49.75 and 0.0000 for the corresponding F-statistic and probability value.

Access Bank, Polaris Bank, First Bank, UBA, Zenith Bank, Fidelity Bank, Wema Bank, Stanbic Bank, and Eco Bank all deviated by 1,7295, -0.5014, -0.9594, 0.3895, 1,7607, 2,1513, 1.1337, -0.7972, and 1,5592 from the intercept term (6.0637) corresponding to the reference businesses (GTB). For 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019 the percentage difference from the intercept term (6.3875) of the reference period (2010) was 0.7438, 0.8253, 1.3500, -2.8591, 3.7364, 0.4371, 0.3949, 4.7381, and -1.3418 on Table 6 .

Table 6: Random Effect Estimation
Series: ASP EPS BVS DPS ROA

Variable	*Coefficient*	*Std Error*	*Z-Test Values*	*Probability*
C	8.2392	2.8993	4.08	0.000
EPS	2.4958	0.7913	3.15	0.002
BVS	0.4482	0.1530	2.25	0.041
DPS	0.6705	0.2081	2.34	0.038
ROA	0.9198	2.8993	0.91	0.362

Source: Data Analysis, 2020. R-square=0.4741, Wald chi2(5) =18.66, Prob> chi2 =0.0000

Random effect estimation result presented in Table 6 revealed that when heterogeneity effect across firms and over time is incorporated into the model via the error term, earnings per share, book value per share, dividends per share and return on assets exert a positive effect on share prices of Deposit Money Banks in Nigeria, although the positive effect was only significant for earnings per share, book value per share and dividends per share unlike return on assets that is not significant. Reported coefficient and probability values of earnings per share, book value per share, dividends per share and return on assets stood at 2.4958(0.000<0.05), 0.4482(0.041<0.05), 0.6705(0.038<0.05) and 0.9198(0.362<0.05) respectively. This indicates that the null hypothesis that earning per share, book value per share and dividend per share would not exert a significant effect on share prices are rejected and that the null hypothesis that

return on assets would not exert a significant effect on share prices is accepted. The R-square value given to be 47.4% indicated that the systematic variation in the share prices was jointly caused by earning per share, book value per share, dividend per share and return on assets. The Wald chi2(5) along with the probability values given to be 18.66 and 0.0000 respectively showed that the model is fit.

Table 7: Hausman Test

Null hypothesis	Chi-square stat	Probability
The difference in coefficient not systematic	8.57	0.0727

Sources: Data analysis, 2020.

Table 7 reported a chi-square statistic of 8.57 and a probability value of 0.0727. The result revealed that there is no enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimation and random effect estimation is not significant. Therefore, the most consistent and efficient estimation is given by the random effect estimation as presented in table 7.

Table 8: Other Post Estimation Tests

Wald test		
Null hypothesis	Statistics	Probability
Panel homoscedasticity	4.0017	0.1607
Pesaran test		
Null hypothesis	Statistics	Probability
No cross-sectional dependence	2.116	0.4518
Wooldridge test		
Null hypothesis	Statistics	Probability
No AR (1) panel autocorrelation	0.4419	0.5019

Sources: Data analysis, 2020.

Tabulated probability statistics of 0.1607> 0.05 for the Wald test, 0.4518> 0.05 for the Pesaran test, and 0.5019> 0.05 for the Wooldridge test indicate that there is

insufficient evidence to reject the null hypothesis on panel homoscedasticity, null hypothesis of no cross-sectional dependence, and null hypothesis of no AR (1) panel autocorrelation. Therefore, the analysis proves that the cross-sectional independence, lack of serial autocorrelation, and equal variance of residual terms assumptions for the calculated panel-based model hold true.

Analyzing the Results

Share price movements have been analyzed in connection to accounting data including EPS, book value, dividends, and ROA. Table 7 displays the results of an evaluation test that compared fixed effect and random effect estimators and found that the random effect estimation was the more consistent and efficient choice for the study. It was found that the share prices of Deposit Money Banks in Nigeria are positively influenced by earnings per share, book value per share, dividends per share, and return on assets; however, the positive effect is only statistically significant for earnings per share, book value per share, and dividends per share. Earnings per share (EPS) has shown to be a reliable indicator of future stock price movements for Deposit Money Banks in Nigeria, in line with a priori expectations. This might be due to the fact that investors are logical creatures with a vested stake in a profitable company. Oliver's (2015) and Osundina, Jayeoba, and Olayinka's (2016) conclusions that earnings per share affects stock prices were bolstered by this result. This finding hints to the possibility of using changes in earnings per share to forecast stock prices. Similarly, the beneficial impact of book value per share confirms the earlier belief that this metric is superior for analyzing stock price fluctuations. This suggests that the historical value of a Deposit Money Bank in Nigeria's assets per share has a significant impact on the stock price volatility in Nigeria. Adaramola and Oyerinde's (2014) observation that book value per share may be utilized to forecast share prices of listed corporations considerably is supported by these results. Therefore, the beneficial influence of dividend per share on stock prices was in line with the a-priori hypothesis, suggesting that dividend per share data might provide useful insight into stock price behavior. One possible explanation is that shareholders value banks that have a track record of regular dividend payments. It follows from this finding that dividends per share may be used as a predictor of stock price movements. Despite contradicting the conclusion reached by Uniamikogbo, Ezennwa, and Bennee (2018), this result bolstered the conclusions reached by Osundina, Jayeoba, and Olayinka (2017) that dividends per share has a negative and substantial influence on stock prices (2016). Additionally, the a-priori anticipation that return on assets would have a positive and negligible

influence on stock prices was verified. As a result, Oliver's (2015) finding that EPS is the sole variable (together with return on assets and bank age) that has a positive and substantial link with stock prices was confirmed.

Conclusion and recommendation

Finally, some recommendations and a summary are presented. Accounting data and stock prices at Nigerian deposit money banks were analyzed for their potential value significance in the research. The research concluded that the dissemination of accounting data is beneficial to the market as a whole. Based on the data, it was determined that earnings per share, book value per share, and dividends per share trends were significantly more predictive of stock prices than the prediction of return on assets. Therefore, it was suggested that the management of Deposit Money Banks in Nigeria make accessible timely and appropriate accounting information to attract investors. Financial reports should be prepared and presented in accordance with legislation and international standards to win over both domestic and international investors. Increasing the management team's efficiency and effectiveness in order to increase profits is strongly promoted. Some investors might be enticed by this. Earnings per share, book value per share, and dividends per share are all important metrics that investors should consider closely when making portfolio allocations. The top banks should keep an eye on the accounting data presented by the rest to prevent any misinformation of investors. Although the scope of this study was narrowly focused on Nigeria's Deposit Money Banks, researchers interested in this issue might easily broaden their investigation to include other industries, such as healthcare or manufacturing.

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