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Article

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Trends Economics and Management

Provided in Cooperation with:

Faculty of Business and Management, Brno University of Technology

Suggested Citation: Osazevaru, Henry Osahon (2020) : Measuring the value relevance of financial information for strategic decision-making and performance of Nigerian listed firms, Trends Economics and Management, ISSN 2336-6508, Brno University of Technology, Faculty of Business and Management, Brno, Vol. 14, Iss. 36, pp. 33-48,
<https://doi.org/10.13164/trends.2020.36.33>

This Version is available at:

<https://hdl.handle.net/10419/308920>

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Measuring the Value Relevance of Financial Information for Strategic Decision-Making and Performance of Nigerian Listed Firms

Henry Osahon Osazevbaru

Abstract

Purpose of the article: Management has traditionally used financial information for strategic decision-making. This study investigates the value relevance of financial information contained in earnings per share and operating cash flow per share for strategic decision-making and hence performance. It utilized secondary data extracted from annual reports and accounts of forty-three (43) listed firms on the Nigerian Stock Exchange over the period of 2006–2017.

Methodology/methods: The collected data were subjected to analysis using the non-linear symmetric Generalized Autoregressive Conditional Heteroscedasticity (*GARCH* (1 1)) model, which is capable of handling time varying properties of financial time series to measure the statistical significance of the association between the variables of interest.

Scientific aim: The paper is aimed at empirically investigating the value relevance of financial information to ascertain its potency for handling strategic decisions of listed firms in Nigeria. This is to digress from the contextual factors in the decision-making process and construct an integrated link between value relevance research and strategic management.

Findings: The study found that earnings per share and operating cash flow per share are individually and jointly value relevant in strategic decisions and performance.

Conclusion: It is necessary to pay attention to the financial information system of an organization to enhance the quality of services it can provide to strategic management. It is necessary to pursue the fundamental quality of relevance that guarantees predictive, materiality and confirmatory values and enhancing quality that measures usefulness by both management and regulators.

Keywords: conditional variance, information system, persistence function, announcement effect, predictive value

JEL Classification: M1, M21, L25

Introduction

Strategic decision-making is largely the responsibility of senior management of firms and it is concerned with choosing from among alternative corporate level strategies, *i.e.* among expansion, stability, retrenchment and combination strategies. Strategic decisions are usually complex, non-routine, highly unstructured and shaped by contextual influences of the past, present and future (Nororaie, 2012). Socea (2012) characterized a decision by the following: seeing a problem and the need for a solution, using relevant information to illuminate the problem by bringing out its ramifications and possible alternatives, and making selection on the basis of selection criteria.

It is the expectation of the management that the organization's information system should support strategic decision making for effective performance (Laudon, Laudon, 2010). Unarguably, decision-making will be a futile exercise without financial information. Socea (2012) found that financial information helps managers to know about the past and present conditions of their organizations and then prepare for future activities and decisions. Thus, basic financial reports serve as important sources of information for strategic decisions. Ebiaghan (2018) alluded to this in his investigation of the extent to which earnings and operating cash flow data can predict future operating cash flows. Financial information is usually prepared according to standard rules and regulations. The indicators of financial stability, liquidity, self-financing, general efficiency, and profitability are revealed by financial information and are believed to be useful in strategic decisions (Butterfield, 2016).

Clearly, for financial information to impact on strategic decision-making, it must be value relevant. The value relevance literature seeks to determine the degree to which a specific financial variable affects users' decisions and consequently, the value of a firm. Amir *et al.* (1993) were the first to use the

term value relevance with the meaning of how well accounting data reflect information used by equity investors. Holthausen, Watts (2001) state that a financial variable is value relevant, if it exhibits the predicted association with a measure of market value. Brimble (2003) added that the impetus to examining value relevance is that the accounting function provides information which reflects firm performance and consequently should be reflected in stock prices as a relevant metric of returns to shareholders. In view of the foregoing, this current study is motivated largely by the need to investigate the value relevance of a firm's financial information on its performance as reflected by the strategic decisions made on the basis of such information.

A plethora of studies has looked at the impact of accounting variables on firm performance. However, the issue of whether financial information is value relevant for strategic decision of a firm has not received rigorous study from the perspective of emerging economies of Africa in general and Nigeria in particular. Even studies that have examined financial variables and firm performance have adopted ordinary least square methodology and assume homoscedasticity in the data. This study differs from these prior works in the following ways. Firstly, the financial variables selected for this study are those that value relevant studies have established as value relevant in Nigeria (see Omokhudu, Ibadin, 2015). Secondly, this paper adopts the non-linear Garch model, which enables us to control for time varying properties present in share price and other financial variables. This is to ensure that the weakness pointed out by Appiah-Kusi, Mennyah (2003) that any efficiency test models which do not control for time varying risk premium are likely to be using an inappropriate model is catered for. It is believed that the outcome of this study will present the results which are more realistic than those where heteroscedasticity in data is not captured in the method of analysis.

1. Objectives/ rationale

The concept of information and decision-making is multifaceted and has been approached from different fields. Accordingly, agreement is yet to be reached on the mechanism of decision-making (Nooraie, 2012). The literature on strategic decision-making has concentrated on the processes and factors affecting decision-making. Contextual factors, namely: decision specific, internal organizational, external environmental and management team characteristics, influencing strategic decision-making process have been rigorously studied (see, Dean, Sharfman, 1993; Fredrickson, 1986; Hitt, Tyler, 1991; Miller, 1987; Noorarie, 2011, 2012; Schilit, 1987; Sinha, 1990; Wally, Baum, 1994). However, the perceived gap in the existing literature is that not much has been done to advance our understanding of the qualitative characteristics of the information used in strategic decision-making. There have been no concerted efforts to link value relevance in capital market research with strategic management research. To this end, the understanding that the strategic decisions of a firm must result to an increase in the firm's market value seems to have been ignored.

Generally, both financial and non-financial information is considered in decision-making. With respect to financial information, the basic question can be posed as: Is the information contained in earnings per share (*EPS*) and operating cash flow per share (*OCFPS*) value relevant in the firm's strategic decision-making and performance measured by the share price volatility? Resolving this issue is the fulcrum of this study. To this end, secondary data on earnings per share, operating cash flow per share, and share price of listed equities are analysed to address the following specific objectives:

- (i) To examine the value relevance of information contained in *EPS* on strategic decision-making and performance;

- (ii) To determine the value relevance of information contained in *OCFPS* on strategic decision-making and performance; and
- (iii) To investigate the value relevance of information contained in both *EPS* and *OCFPS* on strategic decision-making and performance.

2. Literature review

2.1 The financial information function

Essentially, the financial information activities of any organization are handled by the accounting information system. An organization's accounting function is an integral part of the management information system which collects, processes, stores, and disseminates information about the economic activities of an organization. The essence is to allow informed decision by users (Hall, 2010). Generally, there are two broad categories of users namely; internal users and external users. The management, as an example of internal users, draws information from both the strategic management accounting function and the financial accounting function.

Atrill *et al.* (2014) believed that when accounting is viewed as an information system, it entails four sequential phases:

- (i) Identification and capturing of relevant financial data;
- (ii) Recording of the collected data;
- (iii) Analysis and interpretation of data; and
- (iv) Reporting the relevant information in a manner that meets users' expectations.

The analysis and reporting activities facilitate the decision-making process. Accounting is a framework of analysis constituting common references and a representation system. Therefore, what is accounted shows the vision and the sense that organizational members have about the reality of their organizations (Boland, 1993). Anderson (2008) has shown that the economic analysis of

financial accounting information is an indispensable tool to support decisions. Hall (2010) added that it helps managers develop knowledge about the organization. Socea (2012) encapsulates financial information role in managerial decision-making to include:

- (i) Helps managers know what happened in the past and what the current situation is;
- (ii) Makes visible those events that are not perceptible by daily activities;
- (iii) Provides a quantitative overview of a firm; and
- (iv) Helps managers prepare for future activities and decisions.

With respect to the fact that accounting provides services to strategic management, the quality of this service has a profound effect on the quality of strategic decisions (Calvasina *et al.*, 2006). In the accounting literature, the quality of financial information that makes it useful is categorized into fundamental qualities and enhancing qualities. Butterfield (2016) identified relevance and faithful representation as the two elements under fundamental quality. Relevance means having predictive value, materiality, and confirmatory value. The enhancing qualities that add to the usefulness of information are the comparability, timeliness, verifiability, and understandability. Financial information which meets these criteria certainly enhances decision-making (Atrill, McLaney, 2009).

2.2 The concept of value relevance of financial information

Strategic decisions are facilitated by the availability of information to decision makers. The information could be firm-specific information or macro-economic information. Firm-specific information is obtained from the financial reports produced by the accounting system. Therefore, the relevance of any accounting information lies on the fact that it assists in analysing the firm's current performance and value, as well as

in predicting future financial performance (Menike, Prabath, 2014). Clearly, the literature on value relevance is concerned with investigating the nexus between a particular financial information and firm performance in order to provide an assessment of its use or proposed use in financial analysis. Thus, relevance is concerned with the ability of information to exert influence on management's decisions. Information in this context is understood to mean a change of expectations in the outcome of an event such that financial information is value relevant if it lead to a change in the management's assessment of the probability distribution of future returns (Ali, 2017). Beaver (1968) added that a sufficiently large change must occur to induce a change in decision marker's behaviour.

As suggested by Francis, Schipper (1999), there are four possible alternative interpretations of value relevance. The first views accounting information as leading stock prices by capturing intrinsic or theoretical share values. Thus, profit generated from implementing accounting trading rules such as the filter rule, becomes a measure of value relevance. The second interpretation of value relevance is that a valuation model takes variables from the financial statement information. Also, a statistical association between accounting information and market value especially where the aim is to measure whether investors actually use the information in setting prices serves as the third interpretation. The final interpretation is where the correlation between accounting information and market values are statistically examined in a long window perspective.

Beaver (2002) avers that value relevance research examines the association between a security price as dependent variables and financial variables as independent variables. Dontoh *et al.* (2004) and Delkhosh, Poorkazem (2016) clarify this by highlighting four perspectives of value relevance. The first is the predictive view of value relevance which states that an accounting number is relevant

if it can be used to predict future earnings, cash flows and dividends. The second is the information view which measures value relevance in terms of market reactions to new information. Thirdly, the fundamental analysis view which measure relevance in terms of whether the portfolios formed on the basis of accounting information are associated with abnormal returns. Finally, there is the measurement view where the ability of the financial statement to capture or summarize information affecting equity value makes it value relevant.

To illustrate the concept of value relevance, studies have empirically analysed the statistical significance of financial numbers. These studies used the coefficient of determination, R^2 as the primary measure of relevance and usually estimate the following three models:

$$P_{it} = \beta_o + \beta_1 E_{it} + \varepsilon_{it}, \quad (1)$$

$$P_{it} = \beta_o + \beta_1 BV_{it} + \varepsilon_{it}, \quad (2)$$

$$P_{it} = \alpha_o + \alpha_1 E_{it} + \alpha_2 BV_{it} + \varepsilon_{it}. \quad (3)$$

The equation (1) is to examine the value relevance of earnings while the equation (2) is to examine the value relevance of book value. The equation (3) is to examine the combined impact of earnings and book value within Ohlson (1995) framework. P is the share price which is a measure of firm value or performance.

Holthausen, Watts (2001) categorized value relevance studies into three groups, namely, relevance association studies, incremental association studies and marginal information content studies. Relevance association studies are concerned with comparing the association between stock market values or changes therein and alternative bottom line measures (Harris, Muller, 1999; Osundina *et al.*, 2016). The justification for comparing the explanatory power of income numbers as suggested by Dhaliwal

et al. (1999) is that the one with the highest association is more consistent with the information used in the determination of performance. This submission emanates from the theory underlying many value-relevance studies that view accounting as supplying inputs for equity or firm valuation (Lambert, 1996). Incremental association studies focus on investigating, using the regression model, whether the accounting number of interest is helpful in explaining value or returns over long windows given other specified variables. If the estimated regression coefficient is significantly different from zero, then that accounting number is deemed to be value relevant (Alam *et al.*, 2011; Malik, Ali, 2013). Marginal information content studies investigate whether a particular accounting number adds to the information set available to management and investors. Typically, they use event studies or short window return studies to determine if the release of accounting information (conditional on other information released) is associated with value changes. Stock price reaction would constitute evidence of value relevance (Amir, Lev, 1996; Vincent, 1999).

2.3 The concept of strategic decision and performance

Decision-making is one of the most important functions of any manager. It involves choosing from among alternatives that course of action which will facilitate the realization of set objectives. While decision pertains to all managerial functions, strategic decision-making largely relates to the responsibilities of senior management. Ideally, strategic decisions should produce some strategic outcomes which reflect the expected results at the end of a specified period. Accordingly, a strategic outcome is a desired societal state or end result to which an organisation's efforts are ultimately directed (Constantinos, Vassilis, 2003). It signifies performance which is the achievement of organizational objectives (Bourguignon, 1995). According to Marn,

Romuald (2012), corporate performance relates to the process by which limited resources at the disposal of an organisation are utilised effectively and efficiently to meet the general objective of the organisation for both present and future opportunities.

Despite the fact that firm performance is a common construct and frequently used dependent variable in strategic management, there is yet no consensus on its dimension and measurement. However, the multi-dimensional model of performance presented by Santos, Brito (2012) based on their review of 117 empirical articles in ten journals over the period 1995 to 2006, and applying confirmatory factor analyses with data from 116 senior managers of Brazilian firms, indicates market value as a construct of performance and stock price volatility as its measure. Al-Farah *et al.* (2014) added that the performance of a firm's stock is the real face relied on by investors and management to judge firm's success and appropriateness of management policies and procedures. Accordingly, this study adopts stock price volatility as a proxy for strategic decision and performance and it will be modelled as the conditional variance of stock return.

2.4 Empirical review

Stock price reaction to earnings has been examined to measure the effect of accounting information on share price and to predict future financial performance and decision-making. Lee, Park (2000) examined the relationship between the stock price and earnings announcement. Specifically, the study investigated which between interim quarter earnings and fourth quarter earnings has more influence on the stock price. A sample of 265 listed companies on the New York Stock Exchange was used with data covering the period from 1994 to 1999. Applying the *OLS* framework, and focusing on the value of R^2 , the study found a lower earnings' response coefficient, albeit rapid adjustment to new equilibrium levels of prices, and a

higher R^2 of fourth quarter announcement than interim quarter announcement.

Belkaoui, Picur (2001) investigated the impact on the market share price of cash dividend and retained earnings. The study used 256 US multinational companies with data spanning from 1992–1998. Using the linear model of valuation, the study revealed that the market share price of the companies are greatly determined by retained earnings than cash dividend. The study concluded that accounting information positively influences the share price.

Wang *et al.* (2013) examined accounting information and stock price reaction of listed companies at the Shanghai Stock Exchange. Using data from 60 listed firms in 2011, the study considered the following accounting variables: *EPS*, receivable turnover ratio, return on equity (*ROE*), income from main operation ratio, liquidity ratio, quick ratio, and inventory turnover ratio. Applying the correlation analysis and stepwise regression, it was found that all the accounting variables were positively correlated with the stock price. However, only the *EPS* and *ROE* showed a statistically significant correlation. When these two accounting variables were fitted into a regression model, they maintained a positive and statistically significant relationship with the share price and jointly explain 49% of the variations, judging from the R^2 value of 0.486.

Menike, Prabath (2014) investigated the impact accounting variables have on the stock price using a sample of 100 firms listed on the Colombo Stock Exchange over the period 2008 to 2012. The accounting variables studied were dividend per share (*DPS*), *EPS*, and book value per share (*BVPS*). Using simple and multiple regression models, the study found each of the accounting variables to have a positive and significant relationship with the share price. Both in the case of the year by year analysis and analysis of the entire period, the data produced significant positive values for the parameter estimates.

The R^2 reported in the multiple model was 37%. The study concluded that the three accounting variables impact on the share price but with the highest influence coming from the *DPS* followed by the *EPS*. The study recommended that investors should use the information contained in the *DPS* first, before considering the other two variables in making investment decisions.

In Nigeria, some empirical studies have addressed accounting information and stock price reaction and volatility. The study by Mgbame, Ikhatua (2013) examined the effect of the *EPS*, *DPS*, and *BVPS* on stock price volatility. The study used ten randomly selected quoted firms at the Nigerian Stock Exchange and data for the period 2000 to 2010. It implemented the *GARCH* (1 1), *EGARCH* (1 1), and *TGARCH* (1 1) models and found evidence of price volatility. The *DPS* was reported to significantly affect price volatility in the three models while the *EPS* and *BVPS* were significant in the *EGARCH* (1 1) and *TGARCH* (1 1) models only. In conclusion, the study submits that stock price volatility is influenced by accounting information and recommends the regulation of accounting disclosure by relevant accounting agencies.

Omokhudu, Ibadin (2015) examined the extent of association of accounting information with firm value to ascertain value relevance of accounting information in Nigeria. Data on the *BVPS*, *DPS*, *EPS*, and operating cash flow per share (*OCFPS*) for the period 1994 to 2013 of 47 randomly selected firms were collected and analysed using the pooled and panel *OLS* estimation techniques. It was found that the *EPS*, *OCFPS*, and *DPS* were significantly associated with firm value measured by the share price. Though the *BVPS* was related to the share price, it was not statistically significant. They recommended that investors should focus on the significant accounting variables when making investment decisions.

Osundina *et al.* (2016) investigated accounting information and stock price volatility

using five selected listed manufacturing firms in Nigeria. The study covered a period of ten years from 2005 to 2014. The secondary data on the daily stock price, *EPS*, *BVPS*, P/E ratio, and *DPS* were collected and the *OLS* method was applied. The results obtained showed that apart from the P/E ratio, the other accounting variables have a positive and significant impact on stock price volatility. The cross-sectional fixed effect model also revealed that the four accounting variables jointly impact on price volatility. The F-statistics was significant at 1% and R^2 was 89.1%. Based on the statistical evidence, the study recommends better disclosure of accounting information and maintenance of high ethical standards in accounting information preparation and presentation.

3. Data and methods

The secondary data used for this study were collected from a population comprising all listed firms on the Nigerian Stock Exchange (NSE) over the period January 1 2006 to December 31 2017. The Nigerian Stock Exchange (2017) puts the number of listed firms at 29 December 2017 to be 172. However, sample was drawn from this population using a simple random technique. This study used the data of forty-three (43) firms, which is 25% of the population. Clearly, the sample is adequate. Again, the firms selected were those that met certain requirements such as: the firms have published financial statements consistently over the time frame of the study, and there have been active trading on their shares.

The data for the study are the accounting data on earnings per share, operating cash flow per share, and share price at the last trading day of the year. These were obtained from the financial statements of the firms concerned, NSE Fact book, Central Securities Clearing System (CSCS) Ltd, and NSE daily price quotation.

3.1 Model specification

Stylized facts in the empirical literature characterised stock prices by volatility pooling (large changes in return is followed by large changes in volatility), leptokurtic distribution (returns tend to be fat-tailed) and leverage effect (bad news tends to increase volatility more than good news) (Frimpong, Oteng-Abayie, 2006; Okpara, 2010; Omokehinde *et al.*, 2017; Owidi, Mugo-Waweru, 2016). As a result of these characterizations, the auto-regressive conditional heteroscedasticity (*ARCH*) family models are more potent means of estimation than the ordinary least square (*OLS*). One of the essential assumptions in the use of the *OLS* model is homoscedasticity which specifies the constant variance and standard deviation of the error term, that is, time invariant. Where however the error term is time varying or changes for some range of data, then we have a situation of heteroscedasticity. In addition, the estimated errors, as well as the confidence interval, tend to be too thin when the *OLS* is applied to heteroscedastic data and will yield spurious result.

Again, in modelling stock price volatility, it is more appropriate to simultaneously model stock return and its variability measured by the conditional variance of the residuals. This makes the modelling process more informative from the perspective of decision-making. Clearly, *OLS* modelling is inappropriate in these circumstances. Using the above background, the analytical model for this study is the *GARCH* (1 1) model.

3.1.1 GARCH Model

The *GARCH* model, usually credited to Bollerslev (1986), is an extension of the basic *ARCH* model of Engle (1982). It is known to capture volatility clustering better than the *ARCH* (q) model because of its small number of predictors and simple structure. The basic *GARCH* (1 1) model is expressed as:

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + u_t, \quad (4)$$

$$u_t / \phi_t \cong iid N(0, ht),$$

$$h_t = \beta_0 + \beta_1 u_{t-1}^2 + \beta_2 h_{t-1} + \beta_3 AV_t, \quad (5)$$

$$\beta_0 > 0, \beta_1 \geq 0, \beta_2 \geq 0.$$

Equation (4) is the mean equation and it is essentially an autoregressive model for returns. R_t is the returns at time t and R_{t-1} is its lagged values. ϕ_t is the information set available at time t .

$$R_t = (P_t - P_{t-1}) / P_{t-1}, \quad (6)$$

where:

P_t the share price at time t ,
 P_{t-1} previous period's price.

The equation (5) is the variance equation and it states that the value of the variance scaling parameter, h_t , depends on the past values of the shock captured by the lagged square residual term, u_{t-1}^2 , and on its own past value, h_{t-1} . Now, if the estimates β_1 and β_2 are positive and significant, then there is volatility clustering. Clearly, the conditional variance, ht , is the volatility at time t and it is a weighted average of variance forecast arising from β_0 , β_1 and β_2 . β_0 is the constant variance corresponding to the long-run average. β_1 transmits news about volatility from the previous period and it is the first order *ARCH* term, and β_2 is the information that was unavailable when the previous forecast was made and it is the first order *GARCH* term (Emenike, Aleke, 2012).

AV_t captures the accounting variables of the *EPS* and *OCFPS* (operating cash flow per share). This will help determine the influence of accounting information on the share volatility. If the estimate β_3 is positive, then, that particular accounting variable has positive effect on volatility and otherwise if it is negative. Of course, the statistical significance needs to be considered.

Furthermore, β_1 , the estimate of the *ARCH* term, can be seen as news announcement

Table 1. Definition of Variables and Parameters.

R_t	Share returns at time t and it is equal to share price at time t less its previous period's price divided by previous period's price.
R_{t-1} (also $RET(-1)$)	Lagged value of returns.
EPS	Earnings per share (measured as profit after tax less preference dividend divided by number of ordinary shares ranking for dividend.
$OCFPS$	Operating cash flow per share (measured as operating cash flow divided by the number of ordinary shares.
Φ_t	Information set that is available at time t .
β_1	Coefficient of Arch term, which measures the magnitude of the shock of the news. Alternatively, it measures the symmetric effects of the last period shocks on current volatility.
β_2	Parameter that measures persistence in the conditional variance or parameter of the Garch component. It measures the asymmetric effect or leverage effect of the shock on volatility.
β_3	Coefficient of the accounting variables.
u_{t-1}^2 (also $RESID(-1)^2$)	Arch term squared error term at time $t-1$.
h_{t-1} (also $GARCH(-1)$)	Lagged conditional variance and it indicates volatility clustering.

Source: Researcher's Compilation, 2019.

effect and β_2 , the estimate of the *GARCH* term, as the persistence or response function. The sum of β_1 and β_2 is an estimate of the rate at which the impulse response function decays. A very high value, *i.e.* close to or exceeding the unity, signifies that shock dies down slowly. Implicitly, if there is a new shock, it will have an impact on the return for a long time. A stock market that exhibits this behaviour is symptomatic of a market where old information is more important than recent information. Technical analysis as a means of analysing market behaviour can be profitably employed in such markets (Dimitrios, Hall, 2007).

4. Presentation and discussion of results

The results of the descriptive statistics of the variables is presented in Table 2.

Table 2 shows the mean value of all the variables, namely share returns, earnings per share (*EPS*) and operating cash flow per share (*OCFPS*). For instance, the mean return is 0.28 (28%), while the mean *EPS* and *OCFPS* are 3.71 and 7.95 respectively. The mean *EPS* implies that the average value of the *EPS* for all firm-year observations is 3.17 kobo. Similarly, the *OCFPS* mean value implies that for all firm-year observations, average value is 7.95 kobo. The maximum

Table 2. Descriptive Statistics of the Variables.

	<i>SHARERET</i>	<i>EPS</i>	<i>OCFPS</i>
Mean	0.276899	3.708225	7.949436
Maximum	28.63000	247.1000	347.3903
Minimum	-0.890000	-20.23000	-56.32000
Std. Dev.	1.935160	16.84440	29.57036
Skewness	10.73303	12.07476	7.380557
Kurtosis	138.2758	170.5950	74.49399
Jarque-Bera	403347.0	616432.4	114579.6
Probability	0.000000	0.000000	0.000000
Observations	516	516	516

Source: Researcher's Compilation, 2019.

and minimum values of the variables are also shown. For share returns, these values are 28.63 and -0.89 respectively. The standard deviation measures how far apart the individual values are from their mean values. For share returns this value is 1.94, implying that returns deviated from mean value by about 1.94% during the examined period. Similarly, the *EPS* deviated by about 16.84% and *OCFPS* by 29.6%.

The descriptive statistics also revealed the skewness, Kurtosis (flatness or peakedness) and Jarque-Bera statistics and its *p*-value for each variable. Generally, the skewness value of zero and kurtosis value of three implies that the observations are normally distributed. Using this benchmark, the results show that none of the variables is normally distributed. This is supported by Engle, Patton (2001), who state that kurtosis value ranging from 4 to 50 and above is an extreme deviation from normality. However, the skewness value is positive for all variables implying that they have the tendency to rise than to fall and the excess kurtosis implies leptokurtic distribution. This result is consistent with Mgbame, Ikhatua (2013). The Jarque-Bera statistics and its *p*-value are used to test the null hypothesis that the variables are normally distributed. The *p*-value is statistically significant at the 1% level implying that the null hypothesis should be rejected. Therefore the variables are not well approximated by normal distribution. For this reason, non-linear model is more appropriate for the data.

4.1 Correlation matrix

As an extension of the descriptive statistics, the correlation matrix is used to analyse the

Table 3. Correlation Matrix.

	<i>SHARERET</i>	<i>EPS</i>	<i>OCFPS</i>
<i>SHARERET</i>	1.000000		
<i>EPS</i>	-0.006236	1.000000	
<i>OCFPS</i>	-0.010298	0.177826	1.000000

Source: Researcher's Compilation, 2019.

direction of the relationship among the variables of interest and can also be used to detect the presence or otherwise of multicollinearity among the independent variables. In general, multicollinearity is present if the correlation coefficient exceeds 0.80 (Molyneux *et al.*, 2014).

A cursory look at the results in Table 3 shows that the *EPS* and *OCFPS* have a negative relationship with the share return. Specifically, the correlation coefficient of -0.006236 between the *EPS* and *SHARERET* shows that the information contained in the *EPS* decreases volatility in returns. Also, the *OCFPS* has a negative correlation (-0.010298) with the *SHARERET*. Therefore, it has the ability to decrease volatility. However, none of the correlation coefficient value exceeds 0.8 and so; there is no problem of multicollinearity among the explanatory variables.

Model 1: *EPS* has no significant value relevance on strategic decision and performance.

The study's first hypothesis is tested using the *GARCH* (1 1) model captured by equations (4) and (5) with the *EPS* as the accounting variable. The results are presented in Table 4. In the mean equation of the result in Table 4, the coefficient of the lagged value of return (*RET* (-1)) is positive, yet not statistically significant. However, it implies

Table 4. Results of the *GARCH* (1 1) Model on the *EPS* and Strategic Decision and Performance.

Variables	Coefficient	z-statistic	Probability
Mean Equation			
<i>C</i>	0.207056	0.815237	0.4149
<i>RET</i> (-1)	0.016393	0.150370	0.8802
Variance Equation			
<i>C</i>	1.992982	1.105962	0.2687
<i>RESID</i> (-1) ²	-0.005643	-4.986822	0.0000*
<i>GARCH</i> (-1)	0.564466	1.428578	0.1531
<i>EPS</i>	-0.011184	-3.025721	0.0025*

*Significant at 1% level.

Source: Researcher's Compilation, 2019.

that current returns are influenced by previous returns, but the influence is a weak one. In the variance equation, the estimate of the $EPS(\beta_3)$, which is -0.011184 , is negative, meaning that the information conveyed by this financial variable reduces stock price volatility. β_3 is statistically significant at the 1% level, as the probability value of the z-statistic, 0.0025, is less than 0.01. On the basis of this evidence, the null hypothesis that EPS has no significant value relevance is not accepted.

Model 2: $OCFPS$ has no significant value relevance on strategic decision and performance.

Again, using the $GARCH$ (1 1) model captured by equations (4) and (5) with the $OCFPS$ as the financial variable, the result is as presented in Table 5.

Table 5 shows the results of operating cash flow on stock price volatility. The results of the mean equation show that past returns do influence the current return, though the influence is not very pronounced because the estimate is positive, yet not statistically significant. The estimate of the financial variable $OCFPS$, as shown in the variance equation panel, is -0.011206 . This negative value means that the $OCFPS$ reduces stock price volatility. The statistical significance of the $OCFPS$ determined by the probability value

Table 5. Results of the $GARCH$ (1 1) Model on the $OCFPS$ and Strategic Decision and Performance.

Variables	Coefficient	z-statistic	Probability
Mean Equation			
C	0.347595	1.369740	0.1708
$RET(-1)$	0.011723	0.105936	0.8156
Variance Equation			
C	1.950157	4.478524	0.0000*
$RESID(-1)^2$	-0.005653	-10.70039	0.0000*
$GARCH(-1)$	0.571439	5.979279	0.0000*
$OCFPS$	-0.011206	-16.51003	0.0000*

*Significant at 1% level.

Source: Researcher's Compilation, 2019.

of the z-statistic shows that it is statistically significant at the 1% level. With this result, the hypothesis that the $OCFPS$ has no significant value relevance on strategic decision-making and performance is not accepted.

Model 3: EPS and $OCFPS$ have no significant influence on strategic decision and performance.

To test this hypothesis, the $GARCH$ (1 1) model is implemented with the EPS and $OCFPS$ combined as the financial variables. The results are presented in Table 6.

From Table 6, the mean equation shows that the lagged value of return ($RET(-1)$) is positively related with the current return. However, the probability value of the z-statistics 0.9270 shows that it is not statistically significant as it is greater than 0.05. In the variance equation, the coefficient of the two accounting variables, the EPS and $OCFPS$, are negative with the values of -0.010129 and -0.007719 respectively, meaning that more extensive information conveyed by the EPS and $OCFP$ is related to lower stock price volatility. However, only the EPS is significant at 5% level. With respect to the fact that both financial variables reduce stock price volatility and at least one is statistically

Table 6. Results of the $GARCH$ (1 1) Model on the EPS and $OCFPS$ and Strategic Decision and Performance.

Variables	Coefficient	z-statistic	Probability
Mean Equation			
C	0.274755	0.957634	0.3413
$RET(-1)$	0.014156	0.091653	0.9270
Variance Equation			
C	2.447352	1.752874	0.0796
$RESID(-1)^2$	-0.007009	-1.530742	0.1258
$GARCH(-1)$	0.568331	2.295841	0.0217*
EPS	-0.010129	-2.069338	0.0385*
$OCFPS$	-0.007719	-1.295782	0.1951

*Significant at 5% level.

Source: Researcher's Compilation, 2019.

significant, we can reject the hypothesis that the *EPS* and *OCFPS* have no significant influence on strategic decision-making and performance.

4.2 Discussion

A detailed look at the result of model 1 in Table 4 revealed that the news announcement effect captured by $\beta_1(RESID(-1)^2)$ also referred to as the *ARCH* effect or spillover effect is negative and significant at the 1% level. Implicitly, there is a negative relationship between the past conditional variance and the current conditional variance, *i.e.* the past conditional variance reduces the current conditional variance. The *GARCH* (-1) parameter β_2 , which explains the persistence of past volatility, is not significant. The estimate of the *EPS* (β_3) is negative, meaning that the information conveyed by this financial variable reduces stock price volatility. This is also evident from the rate at which the impulse response function decays, normally calculated as $\beta_1 + \beta_2$. This value is 0.558823, which is quite low, as it is far from unity. Implicitly, shock dies down quickly and if there is a new shock, it will have an impact on the return for a short period. A stock market exhibiting this is symptomatic of a market where recent information is more important than old information. β_3 is also statistically significant at the 1% level, which makes the *EPS* value relevant information in strategic decisions and performance of the firm. Therefore, the *EPS* conveys significant value relevant information in strategic decisions affecting firm performance. This result concurs with Mgbame, Ikhatua (2013) or Wang *et al.* (2013), who used the *OLS* for the Chinese market, Shehzad, Ismail (2014), who used the panel least square regression for the Pakistani market, and Ali (2017) for the Tunisian market.

The results of the *OCFPS* analysis on strategic decision-making and performance presented in Table 5 shows all estimates in the variance equation to be statistically significant at the 1% level. The value of β_1

(measure of the spillover effect) is negative, meaning that the size of the impact of past shock on the current volatility is reduced. Again, there is weak volatility clustering from this variable, as β_1 is negative while β_2 , the persistence or response function, is positive. The sign of the estimate of this financial variable is negative, meaning that the *OCFPS* significantly reduces stock price volatility. In all, the results show that information contained in operating cash flow is value relevant for strategic decision-making and performance. This result corroborates Wahlen, Wieland (2011), Khaled (2012), and Omokhudu, Ibadin (2015), who reported that the *OCFPS* has significant influence on the share price.

The results of the combination of the two financial variables to examine their joint impact on strategic decision-making and performance is presented in Table 6. In the variance equation panel, the coefficient of the lagged value of the residual squared (β_1) is negative, yet not significant. β_2 , the coefficient of the first order *GARCH* term) is positive and statistically significant at 5% level. Again, the impulse response function, which is the sum of β_1 and β_2 , is 0.561322 and it is quite low implying that the shock from these financial variables dissipates quickly. The coefficients of the two variables, the *EPS* and *OCFPS*, are negative, yet only the *EPS* is significant at 5% level. Implicitly, the two variables negatively influence share price volatility. They both contribute to reducing volatility with the stronger influence coming from the *EPS* when they are combined together in decision-making. Again, turning to the estimates β_1 and β_2 , if they are both positive and significant, then there is volatility clustering. However, the statistical evidence here suggests weak volatility clustering, as only the persistence or response function (β_2) is positive and significant. It is therefore symptomatic of a situation where old information is equally as important as recent information to decision makers. Clearly, the

null hypothesis is not accepted and this result is consistent with Omokhudu, Ibadin (2015), though they used pooled and panel data regression techniques.

5. Conclusion

This paper has attempted to examine value relevance of financial information for a firm's strategic decision-making and performance. The management expects their organization's information system to provide support to decision making. The financial information system is not an exception. Using this background, the value relevance of such information is worth investigating. To examine this, a non-linear asymmetric *GARCH* (1 1) model was used on the financial information contained in the *EPS* and *OCFPS*. The findings of the study provide evidence that the information conveyed by the *EPS*

and *OCFPS* are individually and jointly value relevant for strategic decisions.

Accordingly, it is recommended that financial information be prepared according to available standards, rules and regulations. In this context, the regulatory body of accounting activities should ensure compliance with relevant accounting standards. Enforcement of compliance through sanctions should be put in place. Notwithstanding, this study has used data of firms spread across all the economic activity sectors of the Nigerian stock market. The peculiarities of the different sectors have therefore not been highlighted. This is considered a limitation to this study which is hereby recommended for future researchers. In this regards, further studies could be conducted to address the concerns of this current study by expanding the scope to also look at the possible impact which differences in firms' operation, sector or major lines of businesses may have on our findings.

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Received: 20. 11. 2019

Reviewed: 13. 5. 2020

Accepted: 28. 12. 2020

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