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The Mediating Effect of Corporate Governance on the Relationship Between Accounting Information and Stock Market Return of Listed Entities in Ghana

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The study examined the mediating effect of corporate governance on the relationship between accounting information and stock market returns of listed entities on the Ghana Stock Exchange. The population of the study was forty (40) listed entities from 2007-2019 with 520 firm-year observations. The study applied a panel regression model that takes unobserved individual heterogeneity and distributional heterogeneity into consideration. In addition, the study employed cross-section dependence test, Levin-Lin-Chu, ImPesaran, Pesaran, Kao, and Larsson cointegration test, fully modified ordinary least square (FMOLS), and dynamic ordinary least square (DOLS). The results of unit root test showed that all the variables are integrated at first difference. Moreover, the results of cointegration test revealed that accounting information variables were cointegrated in the long run. The result of FMOLS and DOLS further revealed that all the accounting information variables with the exception of OCFPS and NTA have a direct insignificant relationship with the stock market return. The study revealed that corporate governance which was proxied by board size also strengthens the relationship between TAT and stock market return and NTA and stock market return at 5% significant level under FMOLS and DOLS respectively.

Keywords: accounting information, corporate governance, stock market return, board size

Introduction

The capital market in Ghana can be used to enhance the economic activities by providing direct benefits to the society and investors. Therefore, the existence of capital market in Ghana is paramount for entities and investors. Entities trade their stocks and bonds at the capital market. Investors in addition put their monies into the capital market with the aim of getting returns. Investors conduct preliminary analysis concerning the entity's stock returns before they invest their funds. This preliminary analysis will help the investors to be aware of factors that can contribute to the entity's future stock returns. Financial statements and the economic

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conditions of a country are the common sources of information used to predict future stock returns of entities. However, investors normally use accounting measures as a tool to select the best entities for investments. Accounting measures are ratios ascertained and calculated from the financial statements such as income statement, statement of financial position, and statement of cash flow to predict the stock market returns and stock prices (Huian, 2015).

Huian (2015) mentioned that investors see accounting information to be relevant only when it has a reflection on stock returns. Drake, Roulstone, and Thornock (2015) also affirmed that the effect of accounting information on stock markets is often based on the relationship between accounting signals and changes in measures of trading activity, such as stock returns. The content of accounting information variables in obtaining stock returns is one of the most essential issues in accounting and finance. Ball and Brown (1968) are considered as beginners of accounting information studies. The authors disclosed that there is a significant relationship between unexpected earnings and abnormal stock returns. Since then, a number of researchers have examined the content of accounting information variables in various markets.

Jumawan and Muhammad (2018) mentioned that investors are enthused to invest in entities that make profits continuously. The authors further mentioned that increase in stock market returns is a signal for growth of stock market in every country. The authors again said that profit from the entities' operations which is distributed in the form of dividends can be used to improve the wealth of shareholders. This means that a profitable entity is able to provide returns to investors. Potential invested will be attracted by entities that make more profit thereby increasing the stock returns (Jumawan & Muhammad, 2018). Joyiyanto (2010) stated that return is the result of investment. Tandelilin (2010) also mentioned that return is an advantage gained from investment. However, investors can get stock returns in the form of capital gains and dividends.

Sultana and Pardhasaradh (2012) claimed that investing in equity shares is like investing into ownership of an entity, which no other investment instrument can give. Investors in equity shares are the primary and major capital providers in the listed entities. Okechukwu (2004) referred to an equity share investment as buying and holding stock of shares on a stock market by individuals and entities in anticipation of income from dividends and capital gains, as the value of the stock rises.

However, there is scarcity of studies on the mediating effect of corporate governance on the association between accounting information measures and the stock market returns of listed entities. Eleke-Aboagye and Opoku (2013) emphasized that investors depend on accounting information for efficient financial decisions. Oshodin and Mgbame (2014) affirmed that accounting information has been considered to be a major factor influencing stock market returns and stock prices of listed entities. Obamuyi (2013) on the other hand, indicated that empirical studies on the relationship between accounting information and stock market return of listed entities are limited. Oyerinde (2011) also affirmed that investors are unaware of any extensive study that has explored the relationship of accounting information and stock market returns. Negah (2008) stated that scarcity of accounting information is as result of unavailability of accurate financial statements.

In the Ghanaian context, Osei (1998) and Gnanarajah (2015) indicated that the availability of accurate and reliable accounting information about entity's financial performance and financial position are key indicators of the level of development of the capital market. Osei (1998) observed that there seems to be appropriate and effective legal and regulatory structures in Ghana to promote the development of the Ghanaian capital market. Salami and Acquah-Sam (2013) also stated that non-reflection of accounting information on stock market

returns is a problem in Ghana. The authors further stated that the accounting information provided by listed entities in Ghana is not reliable because it does not provide a true reflection of stock market returns.

Additionally, Aveh and Awunyo-Vitor (2017) indicated that investors' confidence in Ghana Stock Exchange is low due to lack of information on how accounting information variables affect stock market return. Aveh and Awunyo-Vitor (2017) further mentioned that accounting information should be made available to investors so that they will know whether their invested capital is yielding returns or not. Aveh and Awunyo-Vitor (2017) again made a recommendation that those interested in investing in stocks should monitor the performance of specific variables such as EPS, NBVPS, and ROE and the corporate governance structure before making a decision to expand their portfolio.

Furthermore, Chapman (2018) indicated that accounting information is a key for financial decision making. Shahid, Abbas, Latif, Attique, and Khalid (2020) mentioned that investors need information that can be helpful for them to earn as much return as they can. With the aim to build investor confidence in the stock market, prior studies have indicated that firm-specific factors such protection of investors, corporate governance, and effective monitoring systems are needed (Mohammed et al., 2017; Isidro & Raonic, 2012; Chaney et al., 2011).

Enofe, Asiriuwa, and Ashafoke (2014) mentioned that the stream of research of accounting information is based on the assertion that if information is useful, investors will adjust their behavior, and the market will respond quickly through changes in stock market returns. Therefore, accounting information is considered useful if stock market returns in Ghana are associated with the provision of information. There have been a number of studies since Ball and Brown (1968) empirically showed the significance of accounting information for investors (Ewereoke, 2018; Adebimpe, Paul, & Ebi, 2018; Musallam, 2018).

Ntim, Danbolt, and Dewotor (2011), Appiah-Kusi and Menya (2003), Dewotor and Gborglah (2004), Jefferis and Smith (2005), and Magnusson and Wydick (2002) conducted studies involving the Ghanaian stock market focusing on the efficiency of the GSE and some African stock markets. Kyereboah-Coleman and Gyire-Tettey (2008) focused on how macro-economic factors affect stock price in the Ghanaian stock market. Asamoah and Quartey-Papafio (2011) examined how to estimate the beta risks of listed firms in Ghana. Onyuma (2006) also focused on stock market integration. From the ongoing studies, attention has not been given to how corporate governance and accounting information variables affect the stock market returns. Opoku (2016) indicated that investors react to unexpected information about stock markets and take decisions. Therefore, establishing the mediating effect of corporate governance on the relationship between accounting information and stock market return of listed entities in Ghana is imperative. This study sought to provide financial information to investors on how corporate governance strengthens the relationship between accounting information and stock market return of listed financial, non-financial, and full entities.

Literature Review

Accounting information is information contained in the financial statements used to determine the financial performance of entities (Amahalu, Nweze, & Obi, 2017). This information provides the external parties such as to stockholders, investors, creditors, and government agencies the assurance that the entity is doing well or not in terms of its financial operations. Accounting information is measured in monetary terms. In order to make sound investment decisions, accounting information is essential because it reduces the information asymmetry problem between the managers and the investors (Amahalu et al., 2017). Jinadu Oluwafemi, Soyinka, and Akanfe (2017) opined that accounting information is used to assess the profitability,

liquidity, activity, growth, and leverage of an organization. Accounting information is essential for current and future investors to take financial decisions. Management needs accounting information in the area of new product or service development, price decisions, production decisions, procurement decisions, and borrowing decisions. In this study, accounting information is those accounting variables or measures used in predicting the stock market return of an entity. The accounting information variables used in this study to predict the stock market return are dividend per share (DPS), earnings per share (EPS), return on equity (ROE), net book value per share (NBVPS), operating cash flow per share (OCFPS), total assets turnover (TAT), price earning ratio (PER), net tangible asset per share (NTA), and net profit margin (NPM). These accounting information variables were used to assess the stock market returns performance of listed entities.

Stock return is the profit attributable to the investor's investment or stock for a specific period usually one year. A strong market can be seen as one that incorporates new information on stock prices, hence making the stock prices for the firms stable and accurately valued (Mwangi & Mwiti, 2015). A stock market return has predictive power for investment because it is a forward-looking variable that combines future cash flows expectations and discounts. A stock market return serves as an index to an investor or government when making their investment decisions. An investor of different financial capacity is able to invest in the stock market so far as he or she is able to get a return that is higher than his or her cost of capital (Wang, 2012). The rate of stock returns is considered as one of the criteria used to evaluate the performances of entities (Omid et al., 2000). However, stock market return is used for the performance evaluation of the whole stock market (Omid et al., 2000). When the rate of stock market returns decreases, entities should be alert because a low rate of stock returns shows poor stock market performance (Omid et al., 2000). This criterion contains a great deal of information because the performance evaluation can reflect information on investors when it is based on the market value (Omid et al., 2000). In the investment process, the rate of stock market returns is a drive for motivation and also a reward for investors (Omid et al., 2000). Total return refers to the set of advantages allocated to shares during the year. Such advantages include the stock price, cash dividends, benefits obtained from the priority of the stock purchase, and benefits obtained from stock dividends or bonus shares (Omid et al., 2000). In this study, stock market return refers to the logarithmic return on shares, which was determined by price changes of the entire stock market. It is the dividend-adjusted stock market return of an entity at the fiscal year-end *t.* Stock market return was derived by deducting the preceding-year market value of equity from the current-year market value of equity and adding the current-year dividend to the subtraction. The whole is then divided by the preceding-year market value of equity.

Corporate governance is recognized as a mechanism that can influence the provision of accounting information to investors. Ntow-Gyamfi, Bokpin, and Gemegah (2015) expressed that shareholders are required to put in place mechanisms that will curb managers' opportunistic behavior and hence cause them to report reliable accounting information. Therefore, Vafeas (2000) expressed that board of directors are responsible for the preparation of financial statements and disseminating of accounting information to investors. The author further expressed that boards of directors are responsible for quality of accounting information. This implies that boards of directors have influence on accounting information. In order to provide useful accounting information to investors, an effective internal corporate governance is needed (Shahid et al., 2020). Ssekiziyivu, Mwesigwa, Bananuka, and Tumwebaze (2018) explained corporate governance as a manner in which the affairs of entities are directed and controlled. One of the internal governance mechanisms is the board of directors who make sure that the decisions of managers are in the best interest of shareholders (Jackling & Johl,

2009). The board is also responsible for the preparation of financial statements and dissemination of useful accounting information to investors and other stakeholders of entities (Ssekiziyivu et al., 2018). In this study, corporate governance refers to the board of directors who prepare financial statements in the form of income statement, statement of financial position, statement of cash flows, and disseminate useful accounting information to the stakeholders. Board of directors could influence the availability of accounting information (Shahid et al., 2020; Ssekiziyivu et al., 2018). The size of the board is also recognized as one of the essential attributes of the board which may influence their effectiveness (Shahid et al., 2020; Ssekiziyivu et al., 2018). This study aimed to establish whether corporate governance mediates the relationship between accounting information and stock market returns of financial, non-financial, and full listed entities. To achieve this objective, this study used board size to proxy corporate governance and measured it as the total number of board of directors of a particular listed entity (Outa, Eisenberg, & Ozili, 2017). Therefore, board size was expected to strengthen the relationship between accounting information variables and stock market return of listed entities.

Theoretical Foundation

The study was grounded on both agency and signaling theories' perspective to provide more explanations to the mediating effect of corporate governance on the relationship between accounting information and stock market return. The agency theory provides implications of corporate governance and accounting information on financial performance thereby helping shareholders to make meaning financial decisions (Copeland, Weston, & Shastri, 2005; Brealey, Myers, & Allen, 2016). Brealey et al. (2016) indicated that accounting information and corporate governance mechanisms can provide interested parties with information about an entity's financial position and performance. Accounting information summarizes the financial reports in the form ratios as the basis for the estimation of future financial performance, which shareholders may use as a basis for their investment decisions (Brown, Beekes, & Verhoeven, 2011). According to agency relationship, listed entities face agency problems as a result of asymmetric information between the shareholders who serve as principals and the managers who also serve agents in the decision-making process. This information asymmetry may result in an incomplete contract as a result of random disturbances on the outcome of their decisions, such as inefficient behavior of all parties (i.e. shareholders and managers) in satisfying their own interests (Schroeck, 2002). In agency theory, an agent plays an important role in determining the policies within the company in order to give a sign and a good signal to investors to invest. Signaling theory explains why entities provide financial statement information to external parties. However, good corporate growth will give a signal (Signaling theory) or information to stakeholders that the entity has been able to maintain its viability and able to grow. Brigham and Houston (2012) explained signaling theory as an action taken by entities to give information for investors about how management views the prospects of the entity. Information issued by an entity is important, because it affects the investment decisions outside the entity. Therefore, this study intended to provide information relating to various accounting ratios to shareholders in order to avoid information asymmetry. The study provided information on how board size and accounting information variables support the stock market return of listed entities.

Literature Review and Hypotheses Development

The model above depicts the relationship between the constructs: accounting information, corporate governance, and stock market return. The independent variables are the accounting information variables (EPS,

ROE, NBVPS, OCFPS, TAT, PER, NTA, NPM, and DPS). The mediating variable is corporate governance proxied by board size. The dependent variable is the stock market return. As already discussed, the mediating variable in this study is corporate governance proxied by board size. Accounting information variables (EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, NPM, and DPS) and stock market return were independent and dependent variables respectively. In order to achieve the objective of the study and to answer the research questions, the following hypotheses were discussed and formulated based on the conceptual framework below.

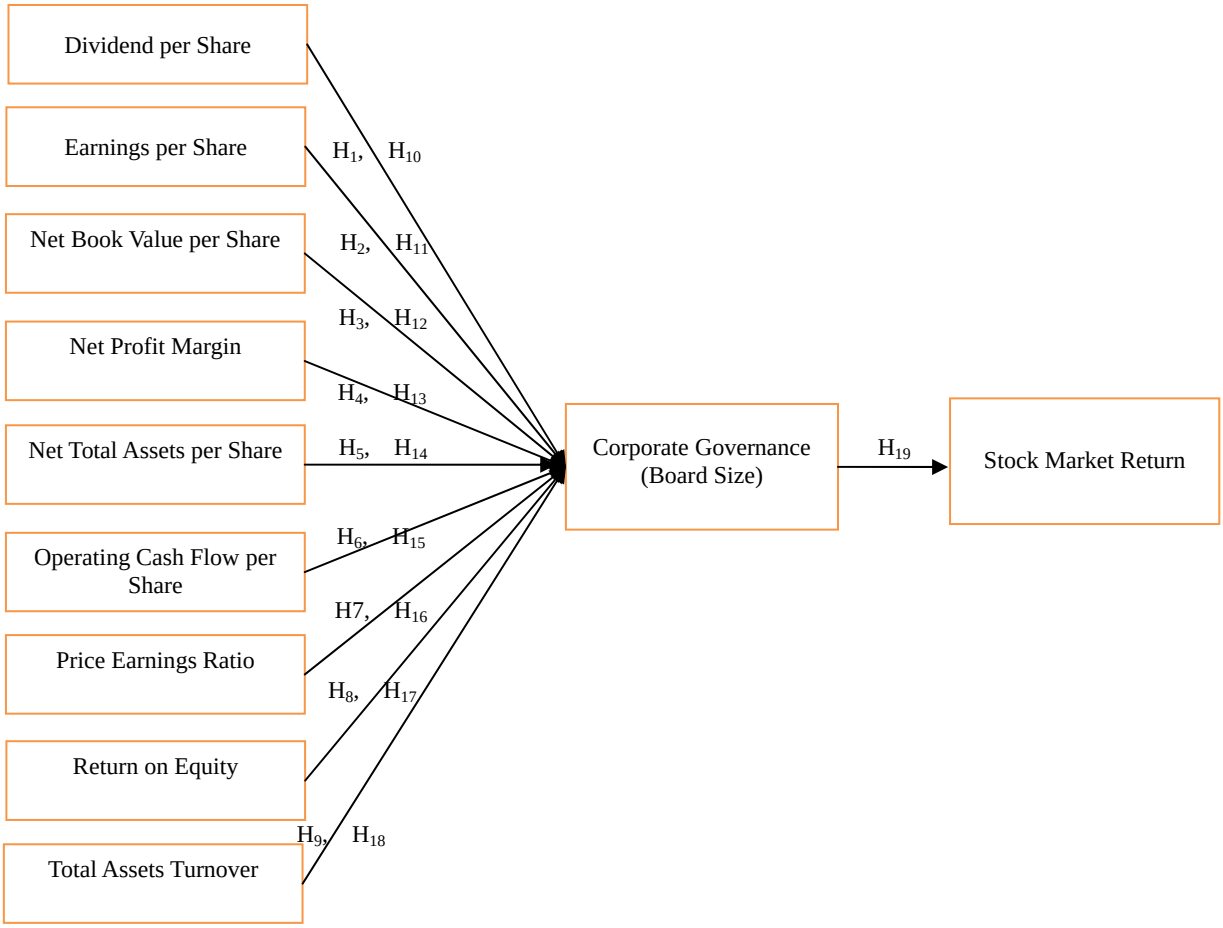

Figure 1. Conceptual model.

Dividends per Share and Stock Market Returns

Arkan (2016) examined how financial ratios can predict stock returns of listed firms. The study employed a data sample of 15 firms distributed on three sectors of Kuwaiti Financial market over a period from 2005 to 2014. The study indicated that the most effective ratios in predicting stock market return in the industrial sector are return on equity, return on assets, and net profit ratio. The study also indicated return on equity, return on assets, price earnings ratio, dividends per share, and earnings per share ratios are the most effective ratios in predicting stock market return in the service sector. Moshavegh and Montazerhojat (2016) concluded that DPS has a positive relationship with stock market return of chemical and non-metallic minerals industry of entities listed on Tehran Stock Exchange. Therefore, this study hypothesized that:

H_1: There is a significant relationship between dividends per share and stock market return of listed entities in Ghana.

Earnings per Share and Stock Market Return

For the years 2008 to 2013, Sbei and Trabelsi (2014) looked at the value relevance of accounting information for banks listed on the Dubai Financial Market. The study showed that EPS has a significant association with stock market return. Khanagha (2011) and Khanna (2014) concluded that EPS has a positive relationship with stock returns. This means that an increase in EPS will attract more investors. Mburu (2014) found an insignificant relationship between stock returns and EPS. Moshavegh and Montazerhojat (2016) looked at the impact of total debt on earnings before interest and taxes, earnings before interest and taxes rate, stock market price to book value, dividends, and earnings per share on market stock returns in the chemical products and non-metallic minerals industries listed on the Tehran Stock Exchange. Earnings per share have a negative link with stock market returns, according to the study's findings. Over a ten-year period from 2001 to 2011, Allozi and Obeidat (2016) investigated the relationship between net profit margin, gross profit margin, return on assets, return on equity, earnings per share, and debt to equity ratio with market stock returns of a sample of 65 manufacturing companies listed on the Amman Stock Exchange. Earnings per share have a significant association with market stock returns, according to the study. Anwaar (2016) used all firms listed on the London Stock Exchange from 2005 to 2014 to evaluate the relationship between return on equity, net profit margin, return on assets, earnings per share, and market stock return. Net profit margin and return on assets show a positive link with stock market return, according to the results of a panel regression model. Earnings per share have a negative link with stock returns, according to the study. This is a direct contradiction that calls for further research in this area. Therefore, this study hypothesized that:

H_2: There is a significant relationship between earnings per share and stock market return of listed entities in Ghana.

Net Book Value per Share and Stock Market Returns

Pathirawasam and Chandrapala (2013) investigated the relationship between book- and share-value. The study was conducted in Sri Lanka Colombo Stock Exchange (CSE) from 2005 to 2009. The study used pooled cross-sectional regression. The study uncovered that book-value is a more value significant than the income in the Sri Lanka. Prabath (2014) used DPS, EPS, and NBVPS. The study indicated that all the variables have positive influence on stock returns of listed entities on Colombo Stock Exchange. According to Khanna (2014); Khanagha (2011), and Omokhudu and Ibadin (2015), book value of stock is one of the determinants that influence stock returns. Mburu (2014) found a significant relationship between stock returns and NBVPS and ROA. Wijaya (2015) examined the effect of financial ratios on market stock returns using a sample of 20 major manufacturing companies that are listed on Indonesian composite index during period of 2008 to 2013. The study indicated that net book value has a significantly effect on market stock returns. Zaheri and Barkhordary (2015) investigated the relationship between financial characteristics such as return on equity, return on assets, earnings per share, net book value, and net profit margin ratio with market stock return using a panel data of listed companies on the Tehran stock exchange from 2004 to 2011. The study showed that net book value has a significant effect on market stock returns. Piralanasih and Mustafa (2018) conducted a study to analyze fundamental factors' effect on stock return of property in a construction sector of companies listed on the

Indonesia stock exchange in 2012-2016. The results showed that net book per share has a positive significant effect on stock return. Therefore, this study hypothesized that:

H_3: There is a significant relationship between net book value per share and stock market return of listed entities in Ghana.

Net Profits Margin and Stock Market Returns

According to a study by Hapsari (2007), NPM has a significant positive influence on profits growth and stock market returns. NPM, according to Adisetiawan (2012), has a favorable and significant impact on earnings growth and stock returns. Purwanto and Bina (2016) conducted a study in Indonesia to examine financial ratios in relation to earnings growth in mining firms. Total assets turnover has a positive significant link with stock returns, according to the study's findings. Zaheri and Barkhordary (2015) studied the relationship between financial ratios and firm performance of companies listed on Tehran stock exchange over a period from 2004 to 2011. The study used panel data to determine the relationship between return on equity, return on assets, price to earnings ratio, book to market equity ratio, and net profit margin ratio with stock market return. The study indicated that book to market equity ratio, return on assets, and returns on equity are significantly associated with stock market returns. However, the study revealed that NPM has no effect on stock market returns. Therefore, this study hypothesized that:

H_4: There is a significant relationship between net profits margin and stock market return of listed entities in Ghana.

Net Tangible Assets per Share and Stock Market Returns

The relationship between accounting information and share price was investigated by Asif, Arif, and Akbar (2016). Earnings per share, book value per share, and operational cash flow per share were utilized as independent variables, in while share price was used as a dependent variable. The information was gathered from firms in the KSE-30 index. The time period covered was 2006 to 2013, and the relationships were investigated using OLS regression models. The findings showed that accounting information variables like net tangible assets have a significant impact on stock returns and have a combined explanatory power in determining stock prices. Arkan (2016) investigated the most importance of financial ratios derived from financial statements to predict stock return using a data sample of 15 firms distributed on three sectors of Kuwaiti Financial market over a period from 2005 to 2014. The study showed that ROE, NTA per share, and EPS have significant positive relationships with stock market return. Furthermore, the study concluded the sector will determine how these ratios affect stock market returns. Moshavegh and Montazerhojat (2016) investigated the effect of total debt to earnings before interest and taxes, earnings before interest and taxes rate, stock market price to book value, dividends, and earnings per share on market stock returns in the chemical products and non-metallic minerals industries listed on the Tehran Stock Exchange. The results from the study indicated that total debt to earnings before interest and taxes ratio and net tangible assets have positive effect on market stock return. The study also revealed that earnings per share have negative relationship with market stock returns. Musallam (2018) empirically examined the influence of financial ratios on market stock return. A sample of 26 listed entities on Qatar Stock Exchange has been selected from a total number population of 44 companies after excluding 18 banks and financial institutions. The data were collected for seven years for a period of 2009 to 2015. The findings indicated that ROE and NTA have a positive insignificant relationship with stock market return. Piralanasih and Mustafa (2018) conducted a study to analyze fundamental factors'

effect on stock return of property in a construction sector of companies listed on the Indonesia Stock Exchange in 2012-2016. The results showed that net book per share has a positive significant effect on stock return. Therefore, this study hypothesized that:

H5: There is a significant relationship between net tangible assets per share and stock market return of listed entities in Ghana.

Operating Cash Flow per Share and Stock Market Returns

Dwi and Ratfink (2009) looked at the impact of financial ratios, business size, and cash flow from operating activities. Using 39 manufacturing organizations that are publicly traded in Indonesia, profitability, turnover, and market ratio all have a considerable impact on stock return, according to the findings. Cash flow from investing operations, gross profit, and firm size all affect projected return on shares, according to Daniat and Suhairi (2006). Cash flow from operations per share, on the other hand, has no impact on predicted return. Between 1992 and 2002, Meythi (2006) conducted a study in BEJ with 100 industrial enterprises. According to the study, cash flow from operating activities has little impact on stock return. Cash flow from operations per share has a positive link with stock return, according to Omokhudu and Ibadin (2015) and others. Khanji and Siam (2015) investigated the impact of cash flow operations on the stock price of Jordanian commercial banks listed in Amman. It was discovered that cash flow from operations per share and stock returns of Jordanian commercial banks have a significant link. Sayed (2017) studied the relationship between cash flows and stock returns of investment banks on the Khartoum Stock of Exchange. The results from Spearman Correlation Coefficient indicated that there is no significant relationship between operating cash flow per share and the stock returns of financial investment banks on the KSE. Therefore, this study hypothesized that:

H_6: There is a significant relationship between operating cash flow per share and stock market return of listed entities in Ghana.

Price Earnings Ratio and Stock Market Return

Price earnings ratio, as defined by Osundina, Jayeoba, and Olayinka (2016), is used to evaluate and compare the level of stock prices to the level of an entity's profits, which provides investors with a stock value. According to the authors, a price earnings ratio indicates how long a stock will take to pay back an investor's investment if the firm does not change. The price-earnings ratio is a valuation ratio that shows how an entity's equity shares are valued in the capital market. Valuation ratios are the most comprehensive measures of a company's success since market value of equity reflects the combined influence of risk and return. As a result, the price-earnings ratio is a summary indicator that essentially indicates an organization's development potential, risk characteristics, shareholder orientation, corporate image, and degree of liquidity (Prasanna, 2006). Zaheri and Barkhordary (2015) use a panel data of listed companies on Tehran Stock Exchange over a period from 2004 to 2011 to investigate the relationship amid financial characteristics such as price to earnings ratio and market stock return. The study revealed that price to earnings ratio has no positive effect on market stock returns. Fun and Basana (2012) conducted a research on the relationship between stock return and price earnings ratio. The study was conducted using 45 listed entities on the Indonesia Stock Exchange during the period 2005 to 2010. The results from the study indicated that there is no significant relationship between price earnings ratio and stock returns. Arkan (2016) used a data sample of 15 firms divided across three sectors of the Kuwaiti financial market from 2005 to 2014 to evaluate the most important financial ratios generated from financial statements in predicting stock return. Some ratios, such as the price earnings ratio, have significant

connections with stock market return, according to the research. The price to earnings ratio has a significant link with stock market return, according to the research. Therefore, this study hypothesized that:

H_7: There is a significant relationship between price earnings ratio and stock market.

Return on Equity and Stock Market Return

The percentage of profit made by an entity for every monetary unit of equity invested in the company is known as return on equity. The amount of cash returned to shareholders is not specified in the ROE because it is determined by the company's dividend policy and the stock price appreciation. It is, however, a good indicator of earning a return that is worth the risk of the investment (Berman, Knight, & Case, 2013). Return on equity is one of the ratios used by Wong and Ghafar (2015) to determine how effective an organization is at creating profit over a certain accounting period. Investors invest in companies for a variety of reasons, according to Satryo et al. (2016). Arkan (2016) used a data sample of 15 firms divided across three sectors of the Kuwaiti financial market from 2005 to 2014 to evaluate the most important financial measures generated from financial statements in predicting stock return. Return on assets has a significant positive link with stock market return, according to the study. Over a ten-year period from 2001 to 2011, Allozi and Obeidat (2016) investigated the relationship between net profit margin, gross profit margin, return on assets, return on equity, earnings per share, and debt to equity ratio with market stock returns of a sample of 65 manufacturing companies listed on the Amman Stock Exchange. Return on assets has a significant association with market stock returns, according to the study. Anwaar (2016) used all firms listed on the London Stock Exchange from 2005 to 2014 to evaluate the relationship between return on equity, net profit margin, return on assets, and earnings per share, and stock market return. There was a significant link between return on assets and stock market return, according to the results of a panel regression model used in the study. Piralanasih and Mustafa (2018) conducted a study to analyze fundamental factors' effect on stock return of property in a construction sector of companies listed on the Indonesia Stock Exchange in 2012-2016. The results showed that there was an insignificant association between stock market return and return on equity. Mulyadi (2001) found that return on equity does not have a significant influence on stock market return. Therefore, this study hypothesized that:

H_8: There is a significant relationship between return on equity and stock market return.

Total Assets Turnover and Stock Market Returns

Purwanto and Bina (2016) defined total assets turnover as the ratio of an entity's sales to total assets. According to the authors, this ratio explains the rotation speed of the entity's total assets over time. Total assets turnover is a ratio that measures how efficient a company's overall assets are at achieving a specific sales volume (Mohammed, 2012). Total assets turnover is a ratio that describes asset turnover as a percentage of sales volume. The total assets turnover ratio is used by creditors and owners to determine if the organization has made efficient use of all of its assets. TAT is used to determine an entity's ability to generate total net sales using its assets. Purwanto and Bina (2016) conducted a study in Indonesia to examine financial ratios in relation to earnings growth in mining firms. Total assets turnover has a positive significant link with stock returns, according to the findings of the study. Therefore, the study hypothesized that:

H_9: There is a significant relationship between total assets turnover and stock market return.

Mediating Effect of Corporate Governance on the Relationship Between Accounting Information Variables and Stock Market Return

Matthew and Ann (2017) referred to a mediating variable as any variable that has an impact and strength

on a relationship between independent and dependent variables in a study. Baron and Kenny (1986) mentioned that a mediating variable is introduced to determine the strength or weakness of a relationship that can be qualitatively and quantitatively measured. The mediation effect in this study was tested by following (Baron & Kenny, 1986). In this study, the corporate governance which was proxied by board size was used as a mediating variable between the accounting information variables (DPS, EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, and NPM) and stock market return.

Ali et al. (2016) analyzed 435 large capitalization firms in Australian from 2001 to 2008. The study revealed that there is a significant association between corporate governance (board size) and stock market returns. Chung et al. (2010) studied the relationship between corporate governance and stock return. The study indicated that entities that have strong governance structure have more liquid markets for their share compared to other entities. Habib and Azim (2008) found that better corporate governance structures such as board size increase the value relevance of accounting information. With evidence from India, Arora and Sharma (2016) conducted a study on corporate governance and firm performance in developing countries. For the years 2001-2010, the empirical analysis focused on a large number of enterprises from 20 different industries in the Indian manufacturing sector. It looked into the corporate governance mechanism board size and measured it using accounting information variables like ROA, ROE, and NPM, as well as market performance measurements like modified Tobin's Q (TQ) and stock returns (SR). Large boards, according to the studies, improve financial performance.

Njenga (2017) examined the effect of corporate governance on financial performance of listed commercial and services entities on the Nairobi Security Exchange. The study adopted a correlation research design for data analysis. The data were sourced from the published annual statements for the period 2012 to 2016. The study used descriptive statistics while qualitative data were analyzed using content analysis. Financial performance was measured using ROA. The study indicated that large board size has significant effect on financial performance. Saha (2018) explored the relationship between corporate governance and firm performance by considering the role of board and audit committee. The results of the study showed that board size was not statistically significant and had a negative relationship with financial performance of entities.

The study of Mak and Li (2001) showed that there is a significant relationship between board size and financial performance. Sanda et al. (2011) also established that there is a significant relationship between small board size and financial performance. The authors argued that small board size is efficient as compared to large board size. Huse (2007) argued that larger boards are easily manipulated than smaller boards. The author indicated that CEOs are able to gain dominance over the large board through coalition building. Ahmed and Manab (2016) indicated that a mediator variable is introduced to determine the strength or weakness of this relationship which can both be measured qualitatively and quantitatively. It was therefore expected that corporate governance which was proxied by board size can strengthen the relationship between accounting information variables and stock market return of the listed entities. Therefore, the following hypotheses were tested:

H_{10}: Corporate governance significantly mediates the relationship between dividends per share and stock market return of financial, non-financial, and full listed entities.

H_{11}: Corporate governance significantly mediates the relationship between earnings per share and stock market return of financial, non-financial, and full listed entities.

H_{12}: Corporate governance significantly mediates the relationship between net book value per share and stock market return.

H_{13}: Corporate governance significantly mediates the relationship between net profit margin and stock market return of financial, non-financial, and full listed entities.

H_{14}: Corporate governance significantly mediates the relationship between net tangible assets per share and stock market return of financial, non-financial, and full listed entities.

H_{15}: Corporate governance significantly mediates the relationship between net profits margin and stock market return of financial, non-financial, and full listed entities.

H_{16}: Corporate governance mediates the relationship between operating cash flow per share and stock market return of financial, non-financial, and full listed entities.

H_{17}: Corporate governance significantly mediates the relationship between price earnings ratio and stock market return of financial, non-financial, and full listed entities.

H_{18}: Corporate governance significantly mediates the relationship between total assets turnover and stock market return of financial, non-financial, and full listed entities.

H_{19}: Corporate governance significantly mediates the relationship between accounting information and stock market return of financial, non-financial, and full listed entities.

Research Methodology

To answer research questions of the study, the study used a quantitative approach. The quantitative approach allows one to measure and analyze data objectively. This also allows one to test hypotheses because of its ability to measure data using statistics. This study adopted a descriptive research design. The descriptive research design is considered appropriate since it provides answers to the questions of who, what, when, where, and how associated with the particular research problem (Cooper & Schindler, 2008). Besides, the descriptive research design enables the researcher to obtain information on stock market returns of listed entities and thereafter describe the influence of accounting information factors (EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, NPM, and DPS) on stock market return with corporate governance proxied by board size as a mediating variable.

For the purpose of this study, the population comprises all the listed entities in the Ghana Stock Exchange from the year 2007 to 2019. This study intends to generalize the mediating effect of corporate governance on the relationship between accounting information and stock market return in Ghana. Therefore, all the listed entities in Ghana were used except those entities whose financial statements were not up to date from 2007 to 2019. The target population for the study is all the 40 listed entities at the GSE during the years 2007 to 2019 with 520 firm-year observations.

The study sourced secondary data from the published financial reports of the listed entities which entailed the annual financial reports and statistics. Secondary data relating to accounting information measures and corporate governance (board size) were obtained from the published annual financial reports of the sampled listed entities. The secondary data for this study were the annual time series data for the period between 2007 and 2019, collected from annual financial statements of listed entities. The data used in this study were secondary data including financial data and ratios (EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, NPM, and DPS), daily data such as stock prices and stock market returns of entities listed on the Ghana Stock Exchange were sampled. Data relating to accounting measures were obtained from the websites of the listed entities. The

study used the GSE website to source data on stock market return which is represented by all share indexes for each entity from the year 2007 to 2019. The study also used the GSE Handbook (2007-2019) and the annual financial reports downloaded from the entities' website and the website of GSE to obtain data on various accounting measures and the stock market return. Each data collected was recorded in the secondary data collection sheet and template. The study employed 520-year observations (40 companies ×13 year). That is, the study period is from 2007-2019. These listed companies commit to disclosure standards and compliance with regulations.

Operational Definitions and Measurement of Study Variables

Table 1

Summaries of Variables and Measurement

Variable	Nature of variable	Measurement
Stock market return	Dependent	Current market value of equity minus the opening market value of equity plus the current dividend all divided by the opening market value of equity
Earnings per share (EPS)	Independent	Net profit after tax - Preference dividend / Number of outstanding shares (Malhotra & Tandon, 2013)
Return on equity (ROE)	Independent	Net profit after taxes / Total shareholders' equity (Kabajeh, 2012)
Net book value per share (NBVPS)	Independent	Equity share capital + Shareholders reserves / Total No. of equity shares outstanding (Srinivasan, 2012)
Operating cash flow per share (OCFPS)	Independent	(Operating cash flow - Dividends on preferred shares) / Number of shares in circulation (Cheng & Shamsher, 2008)
Total assets turnover (TAT)	Independent	Net sales / Total assets (Purwanto & Bina, 2016)
Price earnings ratio (PER)	Independent	Share price / Earnings per share (Arkan, 2016)
Net profits margin (NPM)	Independent	Operating profit after tax / Operating revenue (Bastian, 2006)
Dividends per share	Independent	Dividend / Current share price × 100 (Irala, 2005)
Net tangible assets per share	Independent	Net tangible assets / Total number of shares outstanding (Piralanasih & Mustafa, 2018)
Board size	Mediating	Dummy variables coded 0 if the boards' number is not between 7-13, 1 if otherwise

Model Specification

The study used Baron and Kenny's (1986) regression approach to examine the mediating effect of corporate governance on the relationship between accounting information numbers and stock market return. Baron and Kenny (1986) stated that in testing the mediation effect, there should be independent variables (in this case accounting information variables) influencing dependent variable (in this case stock market return). The authors further mentioned that the study must treat the mediator as if it was an outcome variable; that is, the independent variables (accounting information variables) that influence the mediator (CG) and the mediator (CG) must also influence the dependent variable (stock market return). The authors finally mentioned that the effect of the independent variable (accounting information variables) on the dependent variable (stock market return) is diminished after controlling for the effect of the mediator. If all the above conditions are satisfied, and the influence of the accounting information on stock market return becomes insignificant in the presence of corporate governance, then the effects of the accounting information variables are "completely" mediated by corporate governance. On the contrary, if the influence of the accounting information variables remains

insignificant in the presence of corporate governance, then the effect of the independent variable is partially "mediated". There is no mediating effect if any of the above conditions are not satisfied. Therefore, in this study, the corporate governance which was proxied by board size was used as a mediating variable between the accounting information variables (DPS, EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, and NPM) and stock market return. For the purpose of testing the mediating effect of corporate governance on the relationship between accounting information and stock market return, the study designed a general panel data regression model similar to the one used by Thao et al. (2014) so as to combine time series for several cross-sections. The regression equation helped to analyze repeated observations on fixed units. The model for this study is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots \beta_n X_n + \mu \quad (1)$$

where,

Y = dependent variable,

X_1:::n = independent variables (DPS, EPS, ROE, NBVPS, OCFPS, TAT, PER, NTA, and NPM),

β_0 = intercept of Y,

β_1 = the regression coefficient or slope of the explanatory variable modeled, and

u = error term that represents the unexplained variation in the dependent variable.

By substituting the accounting measures on stock market return into equation, the following stock market return function will be obtained:

Direct effect

$$SMR = \beta_0 + \beta_1 EPS + \beta_2 NBVPS + \beta_3 ROE + \beta_4 OCFPS + \beta_5 TAT + \beta_6 PER + \beta_7 NTA + \beta_8 NPM + \beta_9 DPS + \mu \quad (2)$$

where:

SMR = stock market return (the stock market returns, is the returns on share price measured as the current market value of equity minus the opening market value of equity plus the current dividend all divided by the opening market value of equity), β_0 = constant term, β_1~β_9 = parameters of accounting information and mediating variable, μ = error term, EPS = earnings per share, NBVPS = net book value per share, ROE = return on equity, OCFPS = operating cash flow per share, TAT = total assets turnover, NTA = net tangible assets per share, PER = price earnings ratio, NPM = net profits margin, and DPS = dividends per share.

Mediating effect

$$SMR = \beta_0 + \beta_{10} EPS + CG + \beta_{11} NBVPS + CG + \beta_{12} ROE + CG + \beta_{13} OCFPS + CG + \beta_{14} TAT + CG + \beta_{15} PER + GC + \beta_{16} NTA + CG + \beta_{17} NPM + CG + \beta_{18} DPS + CG + \mu \quad (3)$$

where:

CG = mediating variable (corporate governance measured as board size). The other variables remain as they have been defined above.

Data from the data collection instruments were compiled and edited in Excel spreadsheet using an acceptable format to enable data analysis by STATA. The data were then transferred from Excel to STATA econometric software for analysis. This study will use STATA for data analysis because the software has ability to analyze panel data in a range of time and since the study used panel data for a twelve-year period, the software was most appropriate for the study (Cameron & Triredi, 2009).

The researcher then analyzed the descriptive statistics for each of the study variables so as to get their mean, standard deviation, minimum, and maximum values for each of the sectors. Afterwards, the researcher run the

Pearson's correlation analysis in STATA, so as to get the pairwise correlation matrix which helped determine the direction and strength of the relationship between the study variables. The researchers thereafter run the Modified Ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) regression models with stock market return as the dependent variable, for both the direct effect and the moderation effect, so as to test the fitness of the models by use of the *F*-statistics. The results for the *F*-statistics were used to gauge whether the models were fit for analysis. Thereafter, the study carried out diagnostic tests for each of the FMOLS and DOLS regression models so as to test whether the econometric assumptions relating to the FMOLS and DOLS regression were met. The study constructed non-graphical tests for homoskedasticity, multicollinearity, normality, and autocorrelation. The problem of heteroskedasticity found present in the multiple regression models for the direct effect, was dealt with by use of the panel cointegration tests. The multiple regression models for both the direct effect and moderation effect were estimated and their results presented in the form of tables for interpretation. Finally, the study used the results obtained from the estimated multiple regression models to test the research hypothesis of the study under each sector. The hypotheses were tested for both the direct and mediated multiple regression models so as to determine the strength of the relationship between the study variables. Afterward, a comprehensive summary of the estimated regression results was given in a table form for easy interpretation of the findings.

Modified Ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) estimators are all available in the literature for estimating a cointegration vector using panel data, including with- and between-group data. Despite the fact that basic OLS estimators of cointegrated vectors are super-convergent, their distribution has been found to be asymptotically skewed and to be dependent on nuisance parameters associated with the presence of serial correlation in the data (Pedroni, 2001). Many of the issues that arise in time-series analysis can also occur in panel data analysis, and they are more common when heteroskedasticity is present (Kao & Chiang, 2000). As a result, in the cointegrated literature, various additional estimators have been developed. However, two panel cointegration estimators, the between-group fully modified OLS (FMOLS) and dynamic OLS, were used in this work (DOLS). Both FMOLS and DOLS were shown to provide consistent standard error estimates, making them useful. Furthermore, the study used FMOLS and DOLS which Pedroni (2000) proposed, to investigate the long-run relationship among modeled variables. Moreover, this study used FMOLS and DOLS results to test the mediation effect of board size on the relationship between dependent and independent variables. FMOLS and DOLS results were used to test whether a mediator variable significantly bridges the relationship between the independent and dependent variable (Ramayah, Lee, & In, 2011) or in other words the mediating relationship between the dependent and the independent variables is either significant or not significant.

Empirical Results and Analysis

The average value of BSIZE was 1.000000, with a maximum of 1.000000 and a minimum of 1.000000. The standard deviation of BSIZE's natural logarithm was 0.000000. This means there was 0.000000 dispersion or variance around the mean BSIZE. The BSIZE distribution was strongly positively skewed, with a skewness value of 0.000000. The kurtosis value of 0.000000 indicates that the BSIZE distribution was not normally distributed (excess [*K*] = 0.000000 - 0.000000 = 0.000000).

The mean value of DPS of the full listed firms was 0.669964, with a maximum of 4.020000 and a minimum of 0.000000. The standard deviation of DPS's natural logarithm was 0.981536. This indicates that

there was 0.981536 dispersion or variance around the mean DPS. The DPS distribution was strongly positively skewed, with a skewness value of 1.687796. The DPS distribution was not normally distributed, as indicated by the kurtosis coefficient of 4.466345.

Table 2

Descriptive Statistics

	SMR	B_SIZE	DPS	EPS	NBVPS	NPM	NTA	OCFPS	PER	ROE	TAT
Mean	4.6110	0.8953	1.1377	1.9484	19.8150	19.0197	0.7495	0.2449	11.3695	7.7395	0.2918
Median	0.0540	1.0000	0.2000	0.1800	20.1500	19.0000	0.3950	0.1700	11.2200	0.2100	0.2300
Maximum	58.1600	1.0000	76.9000	170.9000	62.4000	62.4000	15.3000	0.9900	34.5000	51.0000	1.1000
Minimum	-0.4658	0.0000	0.0000	0.0000	0.0000	0.0000	0.0300	-2.9700	2.0000	-0.3700	0.0300
Std. Dev.	15.5415	0.3064	5.8708	10.0629	8.0032	8.7181	2.0776	0.3267	4.1948	12.5207	0.1918
Skewness	3.1575	-2.5831	11.0063	11.7923	0.7417	0.9065	6.2770	-2.6147	1.8379	1.3163	0.9369
Kurtosis	10.9753	7.6724	132.3316	172.0433	7.1182	6.0358	40.9819	26.6569	9.9924	3.3861	3.4109
J-Bera	2,224.904	1,043.211	370,041.0	626,335.2	411.9435	268.8119	34,404.83	12,620.45	1,341.714	152.2054	79.1136
Prob.	0.0000	0.0000	0.00000	0.000000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

The average value of EPS of the sampled full listed firms studied was 1.324000, with a maximum of 18.28000 and a minimum of 0.000000. The standard deviation of EPS's natural logarithm was 2.985043. This indicates that there was dispersion or variation from the mean DPS of 2.985043. The EPS distribution was strongly positively skewed, with a skewness score of 3.932111 for DPS. The EPS distribution was not normally distributed, as indicated by the kurtosis coefficient of 18.74278.

The mean value of NBVPS of the sampled full listed firms was 23.05000, with a maximum of 62.40000 and a minimum of 0.000000. The standard deviation of NBVPS's natural logarithm was 8.861455. This indicates that there was dispersion or variation from the mean NBVPS of 8.861455. The NBVPS distribution was strongly positively skewed, with a skewness score of 1.489493. The NBVPS distribution was not normally distributed, as indicated by the kurtosis coefficient of 8.211330.

The sampled full listed firms' mean value of NPM was 23.45060, with a maximum of 62.40000 and a minimum of 0.000000. The natural logarithm of NPM had a standard deviation of 9.475578. This means there was 9.475578 variance or dispersion around the mean NPM. With a skewness score of 1.157749, the NPM distribution was significantly positively skewed. The kurtosis coefficient of 6.683652 suggested that the NPM distribution was not normally distributed.

The mean value of NTA of the sampled full listed firms was 0.424226, with a maximum of 0.910000 and a minimum of 0.110000. The standard deviation of NTA's natural logarithm was 9.475578. This indicates that there was dispersion or variation from the mean NTA of 9.475578. The DPS distribution was strongly positively skewed, as indicated by the skewness value of 0.526644 for NPA. The NTA distribution was not normally distributed, as indicated by the kurtosis coefficient of 2.451923.

The mean value of OCFPS of the sampled full listed firms was 0.558155, with a maximum of 0.990000 and a minimum of 0.120000. The standard deviation of OCFPS's natural logarithm was 0.196407. This means there was 0.196407 dispersion or variance around the mean OCFPS. The OCFPS distribution was negatively skewed, with a skewness value of -0.419771. The OCFPS distribution was not normally distributed, as indicated by the kurtosis coefficient of 2.712061.

The mean value of PER of the sampled full listed firms was 11.08935, with a maximum of 34.50000 and a minimum of 2.000000. The standard deviation of PER's natural logarithm was 6.230390. This means that the variances or dispersion around the mean PER were 6.230390. The skewness score of 1.662650 for PER denotes a substantially positively skewed PER distribution. Because the kurtosis coefficient was 6.163006, the PER distribution was not normally distributed.

The mean value of ROE of the sampled full listed firms was 23.48054, with a maximum of 51.00000 and a minimum of 0.140000. The standard deviation of ROE's natural logarithm was 10.66607. This indicates that there was dispersion or variations from the mean ROE of 10.66607. The ROE distribution was negatively skewed, with a skewness value of -0.347143. The ROE distribution was not normally distributed, as indicated by the kurtosis coefficient of 3.474727.

TAT had a mean value of 0.221637, a maximum value of 0.550000, and a minimum value of 0.030000 for the selected full listed firms. TAT had a standard deviation of 0.096059 for its natural logarithm. This indicates that the TAT was 0.096059, with dispersion or variances around it. The TAT distribution was strongly positively skewed with a skewness score of 0.191832. The TAT distribution was not normally distributed, as seen by the kurtosis coefficient of 2.887331.

Multi-Collinearity Test

The Variance Inflation Factor and Tolerance Statistics were used to test for multicollinearity. A variance inflation factor greater than 10 (vif > 10) or Tolerance Statistics less than 0.10 (1/vif < 0.10) indicates trouble with multicollinearity. The results of the tests are shown in Table 3.

Table 3

Variance Inflation Factor

Variable	VIF	1/VIF
DPS	1.09	0.921584
EPS	1.07	0.931566
NBVPS	2.60	0.384375
NPM	2.50	0.400500
NTA	1.09	0.919101
OCFPS	1.61	0.620744
PER	1.05	0.956587
ROE	1.58	0.632711
TAT	1.23	0.811667
Board size	1.25	0.797343
Mean VIF	1.51	

Cross-Sectional Dependence Tests

Table 4

Residual Cross-Section Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	9,871.997	780	0.456
Pesaran Scaled LM	230.1956		0.765
Pesaran CD	99.34279		0.897

Notes. Null hypothesis: No cross-section dependence (correlation) in residuals; Equation: Untitled; Periods included: 13; Cross-sections included: 40; Total panel (unbalanced) observations: 516; Non-zero cross-section means detected in data; Test employs centered correlations computed from pairwise samples.

Unit Root Tests

Many time-dependent data utilized in econometric analysis are non-stationary, which means that they tend to rise or decrease over time. Such data, according to Engle and Granger (1987), might lead to erroneous results or inferences if utilized for regression analysis. This claim is backed up by Hegwood and Papell (2007), who claim that unit root causes erroneous behavior because the analysis assumptions aren't accurate (for instance, *t* ratios will not follow *t* distribution). As a result, it was critical to analyze the input variables' stability before conducting a co-integration test to see if there was a long-term relationship between the explained and explanatory variables.

Because multiple unit root tests exist, it was required to confirm that all variables are integrated in order 1 before defining a long-term relationship between the variables. As a result, ADF file chi square, Levin, Lin, and Chu Version (LLC), Im, Pesaran, and Shin (1997 IPS), and PP-chi Fisher square were employed in the study. These tests are based on the Dickey-Fuller method. Although the test Levin, Lin, and Chu (LLC) has a homogeneity restriction, the Im, Shin, and Pesaran (IPS) test eliminates this problem by assuming heterogeneity between units in a dynamic panel data frame. After these tests, the study presented the unit root test of ADF Fisher Chi-quare for the analysis.

Table 5

Unit Root Tests Results

Variables	ADF-Ficher Chi-square			
	At level		At first difference	
	Statistic	Prob.	Statistic	Prob.
SMR	736.827	0.9956(1)	736.827	0.000*(0)
BSIZE	52.4885	0.8956(1)	59.1242	0.000*(0)
DPS	219.874	0.1645(2)	155.060	0.000*(0)
EPS	152.736	0.6715(1)	326.207	0.000*(0)
NBVPS	97.6270	0.5878(1)	214.275	0.000*(0)
NPM	88.7292	0.2361(1)	216.056	0.000*(0)
NTA	131.690	0.2032(1)	259.189	0.000*(0)
OCFPS	146.486	0.1769(1)	250.801	0.000*(0)
PER	149.777	0.6711(1)	250.927	0.000*(0)
ROE	114.531	0.7869(1)	248.348	0.000*(0)
TAT	131.866	0.5672(1)	261.351	0.000*(0)

Notes. * indicates significant level at 5%; optimal lag lengths are provided between the parentheses. (1): Optimal lag lengths are provided between the parentheses.

Because the Pesaran's test revealed cross-sectional independence in the panel, first-generation unit root tests such as the LL & C *t* test, the Im, Pesaran, and Shin W-stat (IPS) test, the Augmented Dickey-Fuller-Fisher (ADF-Fisher) test, and the PP-Fisher test were used to diagnose the unit root. The examined variables were not stable at levels, as shown in Table 5, resulting in the failure to reject the null hypothesis of non-stability. However, because the variables did not achieve stability, the study supports the null hypothesis at first difference. Therefore, all the lagged independent and mediating variables can jointly influence stock market return and there is a causal link running from the independent variables to stock market return in the short-run at 5% level of significance.

Cointegration Test

The FMOLS and DOLS estimators were used to estimate the cointegrating connection between accounting information variables and SMR. The deterministic trend was incorporated in the cointegrating relationship for the FMOLS, however the trend was suppressed in the DOLS estimation due to the specification of the regression in dynamic terms. The FMOLS and DOLS estimators were pooled and aggregated in both situations, with grouped mean estimations computing the cross-section average of the individual cross-section estimates.

Table 6

Pedroni Residual Cointegration Test

Alternative hypothesis: Common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-statistic	-2.473238	0.9933	-3.574168	0.9998
Panel rho-statistic	1.961144	0.9751	2.116217	0.9828
Panel PP-statistic	-5.266182	0.0000	-4.667929	0.0000
Panel ADF-statistic	-4.137367	0.0000	-3.658320	0.0001
Alternative hypothesis: Individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-statistic	3.687022	0.9999		
Group PP-statistic	-6.245887	0.0000		
Group ADF-statistic	-4.948845	0.0000		

Notes. Series: SMR BOARD_SIZE DPS EPS NBVPS NPM NTA OCFPS PER ROE TAT; Date: 01/23/21; Time: 21:06; Sample: 2007-2019; Included observations: 520; Cross-sections included: 16 (24 dropped); Null Hypothesis: No cointegration; Trend assumption: No deterministic trend; User-specified lag length: 1; Newey-West automatic bandwidth selection and Bartlett kernel.

Table 7

Kao Residual Cointegration Test

	t-statistic	Prob.
ADF	-17.81628	0.0000
Residual variance	572.9806	
HAC variance	67.40938	

Notes. Series: SMR BOARD_SIZE DPS EPS NBVPS NPM NTA OCFPS PER ROE TAT; Date: 01/23/21; Time: 21:07; Sample: 2007-2019; Included observations: 520; Null Hypothesis: No cointegration; Trend assumption: No deterministic trend; User-specified lag length: 1; Newey-West automatic bandwidth selection and Bartlett kernel.

Since the first differences of the variables were stationary using the ADF unit root test, the study further went ahead to establish the co-integration among the variables. The study established long-run relationships between the variables. Tables 6 and 7 show the co-integration results of the variables in the study. The Pedroni (1999) panel cointegration tests results are shown in Table 6 above. As indicated in Tables 6 and 7 above, the study went further to determine whether the variables were co-integrated in the long run or not because all the variables were stationary at first difference. In this study, Pedroni and Kao co-integration tests were used for that purpose. In the Pedroni and Kao cointegration tests, Barlett Kernel method and the Bandwith is determined by the Newey-West method. As a result of the results of seven of Kao's test statistics as shown in Table 6, for three (3) of the seven (7) tests of the null hypothesis, there is no co-integration amongst the variables that were not supported at 5% significant level. Therefore, it is concluded that there is a long-run cointegration between accounting information variables and stock market return. The result of Pedroni displayed in Table 6 does not

support this conclusion. This means that corporate governance which is proxied by board size mediates the relationship between all the accounting information variables and stock market return (SMR).

Discussion of Results (Direct Effect)

Diagnostic testing for the residual normality distribution and the serial correlation has been discussed. Now, panel fully modified least squares FMOLS and panel dynamic least squares DOLS estimation results are presented in Tables 8 and 9 below. Tables 8 and 9 show a summarized FMOLS and DOLS results of panel of nine accounting information variables over the period of 2007-2019.

Table 8

Model Summary of Direct Effect

Fully modified least squares (FMOLS)			Panel dynamic least squares (DOLS)		
R-squared	Adjusted *R*-squared	*F*-statistic	*R*-squared	Adjusted *R*-squared	*F*-statistic
0.914884	0.896902	233.3606	0.915969	0.885173	197.2004

Table 8 above indicated the direct association between the accounting information variables and the stock market return of listed entities. As Table 8 above, the coefficient of determination *R*-squared of FMOLS results gave a value of 0.914884. This means that 91.4884% of the variation in *p* as measured by SMR can be explained by changes in DPS, EPS, NBVPS, NPM, PER, ROE, and TAT while only 8.5116% could not be explained. The value of $F = 233.3606$, is large enough to conclude that the set of independent variables as a whole were contributing to the variance of SMR. Therefore, the model represents the actual performance of listed full entities on GSE.

Table 8 above indicated the direct association between the accounting information variables and the stock market return of listed full entities on the Ghana Stock Exchange Market. As Table 8 above, the coefficient of determination *R*-squared of DOLS results gave a value of 0.915969. This means that 91.5969% of the variation in *p* as measured by SMR can be explained by changes in DPS, EPS, NBVPS, NPM, PER, ROE, and TAT while only 8.4031% could not be explained. The value of $F = 197.2004$, is large to draw a conclusion that the set of independent variables as a whole were contributing to the variance of SMR. Therefore, the model represents the actual performance of listed full entities on GSE.

Table 9

Summary of Multiple Regression Results of Direct Effect

	Fully Modified Least Squares (FMOLS)			Panel Dynamic Least Squares (DOLS)		
Variables	Beta (β) coefficient	*t*-statistic	*p*-value	Beta (β) coefficient	*t*-statistic	*p*-value
DPS	-0.036670	-0.224248	0.8227*	0.045249	-0.307597	0.7585*
EPS	-0.074906	-0.758775	0.4484*	-0.018573	-0.210887	0.8331*
NBVPS	-0.220070	-1.306034	0.1923*	-0.158584	-1.076344	0.2823*
NPM	0.229745	1.512033	0.1313*	0.183150	1.395273	0.1636*
NTA	-10.42146	-2.769473	0.0059	-6.709223	-2.107278	0.0356*
OCFPS	-9.099594	-2.596974	0.0097	3.432775	-1.129020	0.2595*
PER	-0.225542	-0.816493	0.4147*	-0.180092	-0.730224	0.4656*
ROE	0.079838	0.431721	0.6662*	0.154651	0.938921	0.3483*
TAT	-8.510596	-1.085963	0.2781*	-2.876756	-0.443543	0.6576*

Note. * indicates rejection of hypothesis at 5% insignificant level.

With FMOLS results as per Table 9 above, the *p*-value for NTA (0.0059) is less than 0.05, denoting that this variable is statistically significant in explaining SMR. However, the *p*-values for OCFPS (0.0097), NPM (0.1313), NBVPS (0.1923), ROE (0.6662), EPS (0.4484), PER (0.4147), TAT (0.2781), and DPS (0.8227), are greater than 0.05, denoting that these independent variables are statistically insignificant in explaining SMR. The findings from FMOLS indicate that there is a significant negative relationship between NTA, OCFPS, and SMR of full listed entities. The findings from FMOLS indicate that there is an insignificant negative relationship between DPS, EPS, NBVPS, NPM, PER, and ROE and SMR of full listed entities. Therefore, the null hypotheses of DPS, EPS, NBVPS, NPM, PER, and ROE are rejected at 0.05 levels of insignificance. The finding from this study under FMOLS supports Ewereoke (2018) whose study revealed insignificant relationship between accounting information variables and SMR. This finding from the study with the exception of NTA and OCFPS do not support Ewereoke (2018), Zaheri and Barkhordary (2015), Anwaar (2016), Arkan (2016), Mohammed and Lode (2016), and Yathra and Anuradha (2017) whose study revealed a significant positive relationship between NTA, OCFPS, and SMR of full listed entities.

With DOLS results as per Table 9 above, the *p*-value for NTA (0.0356) is less than 0.05, denoting that this variable is statistically significant in explaining SMR. However, the *p*-values for OCFPS (0.2595), NPM (0.1636), NBVPS (0.2823), ROE (0.3483), EPS (0.8331), PER (0.4656), TAT (0.6576), and DPS (0.7585), are greater than 0.05, denoting that these independent variables are statistically insignificant in explaining SMR. The findings from DOLS indicate that there is a significant negative relationship between NTA and SMR of listed entities. On the contrary, the findings from DOLS indicate that there is an insignificant negative relationship between DPS, EPS, NBVPS, NPM, PER, and ROE and SMR of full listed entities. Therefore, the null hypotheses of DPS, EPS, NBVPS, NPM, PER, and ROE are rejected at 0.05 levels of insignificance. The finding from this study supports Ewereoke (2018) whose study revealed insignificant relationship between accounting information variables and SMR. This finding from the study under DOLS with the exception of NTA also does not support Ewereoke (2018), Zaheri and Barkhordary (2015), Anwaar (2016), Arkan (2016), Mohammed and Lode (2016), and Yathra and Anuradha (2017) whose study revealed a significant positive relationship between EPS and SMR of full listed entities.

Summary of Hypotheses Testing of Direct Effect

Table 10 below summarizes the hypothesis testing of direct effect.

Table 10

Summary of Hypotheses Tests Results of Direct Effect

Code	Hypotheses	*p*-value		Hypotheses results	
Direct effect of constructs		FMOLS	DOLS	FMOLS	DOLS
H_1	Dividends Per Share (EPS) significantly affects Stock Market Return (SMR)	0.8227*	0.7585*	Rejected	Rejected
H_2	Earnings Per Share (EPS) significantly affects Stock Market Return (MSR)	0.4484*	0.8331* 0.8331*	Rejected Rejected	Rejected Rejected
H_3	Net book Value per Share (NBVPS) significantly affects Stock Market Return (SMR)	0.1923*	0.2823* 0.2823*	Rejected Rejected	Rejected Rejected
H_4	Net Profit Margin Per Share significantly affects Stock Market Return (MSR)	0.1923*	0.1636* 0.2823*	Rejected Rejected	Rejected Rejected
H_5	Net Tangible Assets Per Share (NTA) significantly affects Stock Market Return (SMR)	0.0059	0.O356	Support	Support

Table 10 to be continued

H_6	Operating Cash Flow Per Share (OCFPS) significantly affects Stock Market Return (SMR)	0.0097	0.2595*	Supported	Rejected
H_7	Price Earnings Ratio (PER) significantly affects Stock Market Return (SMR)	0.4147*	0.4656*	Rejected	Rejected
H_8	Return on Equity (ROE) significantly affects Stock Market Return (SMR)	0.6662*	0.3483*	Rejected	Rejected
H_9	Total Assets Turnover (TAT) significantly affects Stock Market Return (SMR)	0.2781*	0.6576*	Rejected	Rejected

Note. * indicates rejection of hypothesis at 5% insignificant level.

Discussion of Results of Mediating Effect

This study examined the mediating effect of board size on the relationship between DPS, EPS, NBVPS, NPM, PER, ROE, and TAT, and SMR for full entities. For this purpose, the study took support from FMOLS and DOLS for two reasons; first, the modeled variables of this study are integrated of order I (1) and second is that for panel co-integrated regression models, FMOLS provides more promising estimators than OLS because the asymptotic properties of estimators of regression coefficient and statistical test are different among panel co-integrated models than time-series co-integrated models. Corporate governance which was proxied by board size was introduced in the study as a mediating variable in order to test its mediating effect on SMR. Theoretically, board size has an effect on DPS, EPS, NBVPS, NPM, PER, ROE, and TAT, and SMR of listed entities. The summarized results were tabulated in Table 11 below.

Table 11

Model Summary of Mediating Effect

Fully modified least squares (FMOLS)			Panel dynamic least squares (DOLS)		
R-squared	Adjusted *R*-squared	*F*-statistic	*R*-squared	Adjusted *R*-squared	*F*-statistic
0.9273487	0.825667	583.3745	0.915972	0.874199	197.1938

With board size introduced as a mediating variable, as Table 10 above, the regression results of FMOLS had an adjusted *R*-squared of 0.825667which means that 82.5667% of variations in SMR can be explained by the changes in the independent variables.

With board size introduced as a mediating variable, as Table 11 above, the regression results of DOLS had an adjusted *R*-squared of 0.874199 which means that 87.4199% of variations in SMR can be explained by the changes in the independent variables.

Table 12 above indicated the mediating effect of corporate governance (CG) which was proxied by board size (BSIZE) on the relationship between accounting information variables and stock market return of listed financial entities on the Ghana Stock Exchange Market.

With FMOLS results as per Table 12 above, in terms of significance only ROE had a significant relationship with SMR. This means board size has a mediating effect on the relationship between ROE (0.0000) and SMR. The *p*-values of DPS (0.9504), EPS (0.8657), NBVPS (0.3970), NPM (0.6810), NTA (0.9251), OCFPS (0.6007), PER (0.1071), and TAT (0.4862) are statistically insignificant at 5%. The means with the exception ROE, BSIZE has no mediating effect on the relationship between OCFPS, NTA, DPS, EPS, NBVPS, NPM, PER, TAT, and SMR.

Table 12

Summary of Regression Results of Mediating Effect

	Fully modified least squares (FMOLS)			Panel dynamic least squares (DOLS)		
Variables	Beta (β) coefficient	*t*-statistic	*p*-value	Beta (β) coefficient	*t*-statistic	*p*-value
DPS	-0.018279	-0.062345	0.9504*	0.045922	0.309395	0.7572*
EPS	-0.029521	-0.169440	0.8657*	-0.018589	-0.210844	0.8331*
NBVPS	-0.399348	-0.849673	0.3970*	-0.158274	-1.071313	0.2846*
NPM	0.143283	0.412031	0.6810*	0.182858	1.388978	0.1655*
NTA	-0.847356	-0.094147	0.9251*	-6.706000	-2.103226	0.0360
OCFPS	-3.703630	-0.524547	0.6007*	-3.431487	-1.127329	0.2602*
PER	-1.333057	-1.621802	0.1071*	-0.180112	-0.729536	0.4660*
ROE	53.23981	4.273926	0.0000	0.154660	0.937982	0.3487*
TAT	12.36114	0.698309	0.4862*	-2.882893	-0.443869	0.6573*
BSIZE	2.582651	0.462141	0.6447*	0.100354	0.036257	0.9711*

Note. * indicates rejection of hypothesis at 5% insignificant level.

With DOLS results as per Table 12 above, in terms of significance only NTA was negatively significant with a significance level of 0.0360. This means that board size had a mediating effect on the relationship between NTA and SMR of entities listed on GSE. DPS, EPS, NBVPS, NPM, OCFPS, PER, ROE, and TAT had a negative insignificant relationship with SMR with insignificant levels of *p*-values 0.7572, 0.8331, 0.2846, 0.1655, 0.2602, 0.4660, 0.3487, and 0.6573 respectively. This means board size does not have effect on the relationship between DPS, EPS, NBVPS, NPM, OCFPS, PER, ROE, and TAT and SMR of listed entities on GSE.

Corporate governance significantly mediates the relationship accounting information and stock market return of full listed entities in Ghana. The results from this study indicate statistical significance of board size on accounting information variables and stock market return. It is seen that increasing the size of the board improves stock market return which supports Anderson et al. (2004) but contrary to Jensen (1993). The findings from this study also support Fama and Jensen (1983) who argued that the role of the board involves monitoring managerial behaviour, which is likely to be more effective with a large board size. In this respect, one can follow Williams et al. (2005) arguing that stock markets place a high premium on large board size, perceived to be better resourced for monitoring and or skills transfer abilities.

Summary of Hypotheses Testing of Mediating Effect

Table 13 below summarizes the hypothesis testing of mediating effect.

Table 13

Summary of Hypotheses Test Results of Mediating Effect

Code	Hypotheses	*p*-value		Hypotheses results	
Mediating effect of constructs		FMOLS	DOLS	FMOLS	DOLS
H_{10}	Corporate Governance (CG) significantly mediates the relationship between Dividends Per Share (DPS) and Stock Market Return (SMR)	0.9504*	0.7472* 0.7472*	Rejected	Rejected
H_{11}	Corporate Governance (CG) significantly mediates the relationship between Earnings Per Share (EPS) and Stock Market Return (SMR)	0.8657*	0.8331*	Rejected Rejected	Rejected Rejected
H_{12}	Corporate Governance (CG) significantly mediates the relationship between Net Book Value Per Share (NBVPS) and Stock Market Return (SMR)	0.3970*	0.2846*	Rejected Rejected	Rejected Rejected

Table 13 to be continued

H_{13}	Corporate Governance (CG) significantly mediates the relationship between Net Profit Margin (NPM) and Stock Market Return (SMR)	0.6810*	0.1655*	Rejected Rejected	Rejected Rejected
H_{14}	Corporate Governance (CG) significantly mediates the relationship between Net Tangible Assets Per Share (NTA) and Stock Market Return (SMR)	0.9251*	0.0360	Rejected	Supported
H_{15}	Corporate Governance (CG) significantly mediates the relationship between Operating Cash Flow Per Share (OCFPS) and Stock Market Return (SMR)	0.6007*	0.2602*	Supported	Supported
H_{16}	Corporate Governance (CG) significantly mediates the relationship between Price Earnings Ratio (PER) and Stock Market Return (SMR)	0.1071*	0.4660*	Rejected	Rejected
H_{17}	Corporate Governance (CG) significantly mediates the relationship between Return on Equity (ROE) and Stock Market Return (SMR)	0.0000	0.3487*	Supported	Rejected
H_{18}	Corporate Governance (CG) significantly mediates the relationship between Total Assets Turnover (TAT) and Stock Market Return (SMR)	0.4862*	0.6573*	Rejected	Rejected
H_{19}	Corporate Governance (CG) significantly affects Accounting Information (AI)	0.6447	0.9711*	Rejected	Rejected

Note. * indicates rejection of hypothesis at 5% insignificant level.

Conclusion, Policy Implications, and Limitations

The study investigated the mediating effect of corporate governance on the relationship between accounting information and stock market returns of listed entities on Stock Exchange Market of Ghana. The study used forty (40) listed entities from 2007-2019. The study employed FMOLS, DOLS, and DH Causality analysis for the econometric analysis. The outcomes of the study suggest that all the accounting information variables with the exception of EPS and DPS have insignificant relationship with the stock market return of listed entities. Board size which served as a proxy for corporate governance is not significantly connected with stock market return of listed entities in Ghana. Board size significantly affects the relationship between NTA of listed entities on GSE. Even though board size did not have significant relationship between the other accounting information variables and stock market return but it strengthened their relationship insignificantly. This implies as board size increases the relationship between the accounting information variables also increases. This means large board size could help monitor executive management and disseminate accounting information to shareholders to make investment and financial decisions. It could be concluded that Agency and signal theories were used to support the effect of board size on the relationship between accounting information and stock market return of listed entities on GSE at 5% level of significance and insignificance. Even though based on the research results, only few accounting information variables had a significant relationship with stock returns. However, the role of financial indicators in predicting stock market returns cannot be ignored or underestimated as there is still lack of information on how accounting information variables support stock returns. This study has shown that accounting information variables still have a certain degree of explanatory power towards stock market returns.

Every study has its own limitations and there is no perfect study in this world. An insight of a new study and view are observed and the result would be used to improve future study. In terms of the limitation, this study only considered nine (9) financial ratios of listed entities on GSE. The study also considered observations from 2007 to 2019. Therefore, it is suggested that future studies may increase the number of ratios and increase the number of observations. Extending the number of observations or years for analysis may give more meaningful results. Another limitation of the study was that the listed entities were not classified. Therefore, it

is suggested that future studies could classify the listed entities such as industrial products, mining, plantation, properties, technology, trading/services, financial or non-financial, etc. This may increase the robustness of the study and the findings might be applicable to the future study in other regional market. Another limitation was that the accounting ratios were selected randomly which provided a limited scope to certain selected financial indicators only. Therefore, it is suggested that future studies may classify the accounting ratios into liquidity ratio, activity ratio, debt ratio, profitability ratio, and common stock ratio against stock returns. This will contribute more towards the literature of discovering the relationship between financial indicators and stock returns. The study used board size only as a proxy for corporate governance as a mediating variable. It is therefore suggested that future research should use other corporate governance variables such as board gender diversity, board independence, board competence, audit committee size, audit committee independence, audit committee competence, internal audit size, internal audit independence, and internal audit competence as mediating or moderating variables on the relationship between accounting information and stock market returns.

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