



---

## THE EFFECT OF LIQUIDITY AND CAPITAL STRUCTURE ON THE FINANCIAL PERFORMANCE OF FIRMS LISTED ON THE GHANA ALTERNATIVE MARKET (GAX)

**Mohammed MUSAH<sup>1</sup>**

PhD Candidate, School of Finance and Economics, Jiangsu University, 301 Xuefu Road, Zhenjiang, Jiangsu, P.R China; Email: [prophe2013@yahoo.com](mailto:prophe2013@yahoo.com)

**Yusheng KONG<sup>2</sup>**

Professor, School of Finance and Economics, Jiangsu University, 301 Xuefu Road, Zhenjiang, Jiangsu, P.R China; Email: [1000001042@ujs.edu.cn](mailto:1000001042@ujs.edu.cn)

---

### ABSTRACT

*Liquidity and capital structure are fundamental for the survival of all organisations, as such, the management of the two should be accorded a greater attention in every working environment. The purpose of this study was to examine the effect of liquidity and capital structure on the financial performance of firms on the Ghana Alternative Market (GAX), a subsidiary of the Ghana Stock Exchange (GSE). Specifically, the study sought to identify the relationship between liquidity, capital structure and the financial performance of the firms, and to establish the impact of liquidity and capital structure on the firms' financial performance. This study was a quantitative research that employed the purposive or judgemental sampling technique in selecting its sample. Secondary data sourced from the audited and published annual reports of the HORDS, Intravenous Infusions, Meridian-Marshalls Holdings and Samba Foods Ltd for the period 2015 to 2018 was used for the study. Financial performance proxied by Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Issued Capital (ROIC) represented the study's response variable, whilst liquidity proxied by the Current Ratio (CR) and capital structure proxied by the ratio of Debt-to-Total Assets (DA) served as the study's explanatory variables. Descriptive, correlation and multiple regression techniques of data analysis were employed for the study. All the data analysis were conducted through the STATA version 15 software package at  $\alpha=5\%$  ( $p\leq 0.05$ ). From the Pearson Product-Moment Correlation Coefficient output, liquidity surrogated by the current ratio had an insignificant relationship with the firms' financial performance, but capital structure proxied by the debt-to-total assets ratio, had a significant relationship with the firms' financial performance. Finally on the Robust Ordinary Least Squares (OLS) regression estimates, liquidity and capital structure had a combined significant influence on the firms' financial performance as measured by ROCE, ROA and ROIC. As this paper revealed, liquidity and capital structure were significant determinants of the firms' financial performance, as such, careful planning and management of the two is an important way of improving the efficiency of the firms. Adding to this, the firms and all other organisations should embrace the concept of liquidity and capital structure management so as to help them reduce the risks associated with their operations. **Keywords:** Effect, Liquidity, Capital Structure, Financial Performance, Ghana Alternative Market (GAX), Return on Assets (ROA), Return on Capital Employed (ROCE), Return on Issued Capital (ROIC)*

### 1.0 INTRODUCTION

Mahavidylaya and Ray (2012) views liquidity as the capability of a firm to meet its short-term financial obligations (current liabilities) by converting its short-term assets (current assets) into cash without suffering any loss. According to the authors, a firm can maintain liquidity if it holds assets that can be shifted or sold quickly with minimum transaction cost and loss in value. Liquidity and its management determines to a large extent, the growth and profitability of a firm (Owolabi & Obida, 2012). This is because either inadequate liquidity or excess liquidity may be dangerous to the smooth operations of an organisation.

As indicated by Junaidu and Aminu (2014), liquidity management determines the level of profit to be realized and improvement to shareholders wealth. This is because, for firms to survive in business, they must remain liquid as failure to meet their obligations in due course may lead to bad credit ratings by short term creditors; a reduction in their value of goodwill; and may ultimately lead to their liquidation (Bhunja, 2010). On the other hand, capital structure is a mixture of a company's debts (long-term and short-term), common equity and preferred equity (Akintoye, 2008). It is fundamentally on how a firm finances its overall operations and growth by using diverse sources of funds (Tsuji, 2011). As explained by Riahi-Belkaoui (1999), capital structure is tightly related to the ability of firms to fulfill the needs of various stakeholders, and represents the major claims to a corporation's assets which includes the different types of equities and liabilities.

A good financial management policy should seek to maintain an adequate level of liquidity and capital structure so as to finance the operations of the enterprise without impairing profitability. However, the principal focus of most organisations is profit maximization while the need to efficiently manage liquidity and that of capital structure is ignored. This approach leads to the failure of most organisations. Since the management of liquidity and capital structure has a direct impact on the performance of all organisations, proper attention must be paid to it.

Several studies have been conducted to examine the impact of liquidity on corporate financial performance in different geographical environments across the world. Most of these studies established negative impacts whilst others established positive impacts of liquidity on corporate financial performance. For instance, Eljelly (2004) in Saudi Arabia; Akhwale (2014) in Kenya; Vintila and Nenu (2016) in Romania; Samilogu and Dermirgunes (2008) in Turkey; Maaka (2013) in Kenya; and Majeed, Makki, Saleem and Aziz (2013) in Pakistan, all revealed negative impacts of liquidity on corporate financial performance, whilst, Sur, Biswa and Eanguly (2001) in India; Sanghani (2014) in Kenya; Ehiedu (2014) in Nigeria; Kartal (2016) in Turkey; Wambu (2004) in Kenya; and Sheikhdon and Kavale (2016) in Somalia-Mogadishu, all established positive effects of liquidity on corporate financial performance.

Numerous studies have also been conducted on the influence of capital structure on the financial performance of firms. Whilst Rajni (2012) in India; Akhatar, Javed, Maryam and Sadia (2012) in Pakistan; Yoon and Yang (2005) in the U. S; Cheng and Tzeng (2010) in Taiwan; Taani (2012) in Jordan; and Basse, Ukpe and Solomon (2017) in Nigeria, established positive effects of capital structure on firms' financial performance, Taani (2012) in Jordan; Chinamerem and Anthony (2012) in Nigeria; Pratheepkanth (2011) in Colombo; Lawal, Edwin, Monica and Adisa (2014) in Nigeria; Lalith (1999) in Sri Lanka; and Goddard, Molyneux and Wilson (2004) in Europe on the other hand, discovered adverse effects of capital structure on the financial performance of firms. However, there have been limited studies on the effect of both liquidity and capital structure on the financial performance of firms' that traded their shares on the Ghana Alternative Market (GAX), a subsidiary of the Ghana Stock Exchange (GSE). This study was therefore seen as timely and necessary to be undertaken to help fill that gap.

### **1.1 Purpose of the Study**

The purpose of this study was to explore the influence of liquidity and capital structure on the financial performance of firms on the Ghana Alternative Market (GAX). Specifically, the study sought to;

1. Examine the relationship between liquidity, capital structure and the firms' financial performance.
2. Establish the influence of liquidity and capital structure on the firms' financial performance.

### **1.2 Study Hypothesis**

The purpose of this study could not be achieved without the guidance of some research hypothesis. Therefore, based on the specific objectives of the study, the following hypothesis were formulated to help direct the study's focus;

*H<sub>1</sub>*: Liquidity and capital structure have a significant relationship with the firms' financial performance.

*H<sub>2</sub>*: Liquidity and capital structure have a significant effect on the firms' financial performance.

## **2.0 LITERATURE REVIEW**

This aspect of the study presents reviews on literature that supports the topic under study. The reviews cover the link between liquidity and financial performance and the connection between capital structure and financial performance.

### **2.1 Liquidity and Financial Performance**

A research on the “impact of liquidity management on profitability: A study of the adoption of liquidity strategies in financial crisis” was conducted by Lamberg and Valming (2009). The study’s goal was to explore and compare the use and extent of liquidity practices in two time points and to measure, if the change in liquidity strategy was related to profitability. Companies in the small and cap list on the Stockholm Stock Exchange was used as a sample for the study. The quantitative research approach was adopted with data from telephone interviews and financial ratios computed from the annual financial statements of the firms. Using regression analysis, the study revealed that, the adoption of liquidity strategies did not have a significant impact on profitability measured by ROA. However, the increased use of liquidity forecasting and short-term financing during financial crisis had a positive impact on profitability. It was also disclosed that, key ratios that monitored the companies’ liquidity had not changed between the studied time points.

On a sample of 929 joint stock companies in Saudi Arabia, Eljelly (2004) empirically examined the relationship between profitability and liquidity as measured by Current Ratio (CR) and Cash Gap (GP). Through correlation and regression analysis, the study disclosed a significantly negative relationship between the firms’ profitability and liquidity level, as measured by Current Ratio (CR). This relationship was more profound for firms with high current ratios and long cash conversion cycles. However, at the industry level, the study revealed that, cash gap or cash conversion cycle was more vital as a measure of liquidity than the current ratio that affected profitability. The findings by Eljelly (2004) contrasted with that of Wambu (2013) whose study on the relationship between profitability and liquidity of commercial banks in Kenya revealed an insignificantly positive relationship between profitability and liquidity.

Throwing more light on the relationship between liquidity and profitability, Ehiedu (2014) researched into the impact of liquidity on profitability of some selected companies in Nigeria and found out a significantly positive relationship between current ratio and profitability. From the study, two companies showed a negative association between acid test ratio and return on assets, whilst 50% of the companies analysed indicated a significantly negative correlation between current ratio and acid test ratio. Bordeleau, Crawford and Graham (2009) reviewed the impact of liquidity on bank profitability for 55 US banks and 10 Canadian banks between the period 1997 to 2009. The study employed quantitative measures to assess the impact of liquidity on bank profitability. Results from the study suggested that a nonlinear relationship existed, whereby profitability was improved for banks that held some liquid assets, however, there was a point beyond which holding further liquid assets diminished the banks’ profitability, all else equal.

Akhwale (2014) conducted a study on the relationship between liquidity and profitability of companies listed on the Nairobi Securities Exchange (NSE) over a 5 year period (2009-2013) and found out that, current ratio and cash conversion cycle negatively affected the profitability of the companies while the quick ratio as a measure of liquidity did not have any significant effect on profitability of the firms. In conclusion, the study established that, there was a significant relationship between liquidity and profitability of the listed firms. Maaka (2013) also researched into the relationship between liquidity risk and financial performance of commercial banks in Kenya and found out that, the profitability of the commercial banks was negatively affected due to the increase in liquidity gap and leverage.

Kartal (2016) in Turkey studied on the effect of liquidity on financial performance (in terms of profitability) of Borsa Istanbul (BIST) listed retail merchandising firms for the period 1998-2015. Using time series data of the firms, the study revealed a significantly positive relationship between financial performance and liquidity. In Somalia- Mogadishu, a study by

Sheikhdon and Kavalae (2016) established a significant and a positive influence of liquidity management drivers on the financial performance of commercial banks.

Vintilă and Nenu (2016) conducted a study on the liquidity and profitability analyses of listed Romanian Companies. Using correlation and multivariate regression models, the study found out a statistically significant negative relationship between liquidity and corporate financial performance. Durrah, Abdul, Syed and Nour (2016) examined the relationship between liquidity ratios and indicators of financial performance (profitability ratios) in listed food industrial companies in Amman Bursa during the period 2012-2014. The results showed no relationship between all the liquidity ratios and gross profit margin, however, there was a weak positive relationship between the current ratio and each of the operating profit margins and the net profit margin.

## **2.2 Capital Structure and Financial Performance**

Ojo (2012) examined the effect of financial leverage on some selected indicators of corporate performance in Nigeria. The study's main objective was to examine the impact of leverage on earnings per share and net assets per share in some selected firms. It was established from the study that, leverage shocks (debt/equity ratio) significantly affected corporate performance especially when net assets per share was used as corporate performance indicator instead of earnings per share. On a sample of 45 Jordanian industrial firms listed on the Amman Stock Exchange (ASE) for the period 2005-2009, Taani (2012) found out that, leverage, working capital management policy and size had a significant relationship with net income, return on equity and return on assets of the firms. At the individual level, working capital management policy and firm size had a positive effect on the firms' net income whilst financial leverage showed a negative relationship. Achchuthan and Jasinthan (2012) examined the influence of financial and operating leverage on the financial performance of Lanka Orix Leasing Company Plc in Sri Lanka for the period 2001-2010. Using financial performance as the output variable and financial and operating leverage as the input variables, the study showed a significant relationship between operating leverage and financial performance of the firm. There was however no main difference between financial leverage and financial performance.

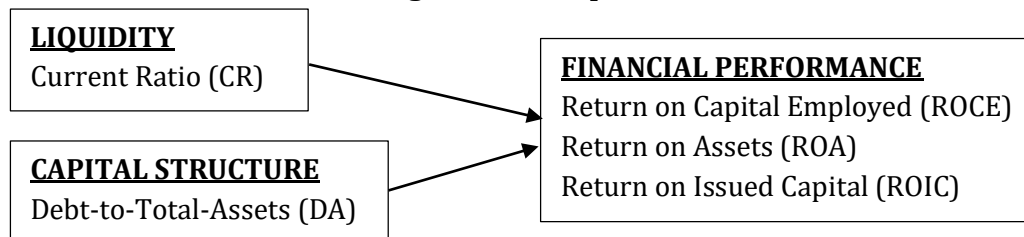
Chinamerem and Anthony (2012) examined the impact of capital structure on the financial performance of thirty (30) non-financial firms listed on the Nigerian Stock Exchange. A seven year period spanning from 2004 to 2010 was considered for the study. Panel data for the selected firms were generated and analyzed using Ordinary Least Squares (OLS) method of estimation. It was disclosed from the study that, firms' capital structure surrogated by debt ratio had a significantly negative impact on the firms' financial measures, Return on Assets (ROA) and Return on Equity (ROE). The results further showed a consistency with prior empirical studies and provided evidence in support of the agency cost theory. The findings of Chinamerem and Anthony (2012) agreed with that of Pratheepkanth (2011) who used data of business firms listed on the Colombo Stock Exchange from 2005-2009 to explore the relationship between capital structure and firms' performance. Using regression, correlation and other statistical tools to analyse the data, a negative relationship was found between net profit and capital structure. From the study, Return on Investments (ROI) and Return on Assets (ROA) also had a negative relationship with capital structure.

A study conducted by Ibrahim (2009) also examined the impact of capital structure choice on firms' performance in Egypt. Using a multiple regression analysis, the study sought to estimate the relationship between leverage level and firms' performance. The study covered the period 1997 to 2005. Three accounting based measures of financial performance (Return on Equity, Return on Assets and Gross Profit Margin) were used. It was revealed that, capital structure choice decision in general, had a weak-to-no impact on firms' performance. Bassey, Ukpe and Solomon (2017) examined the effect of capital structure choice on the performance of agro-based firms in Nigeria. Return on Equity (ROE) and Return on Assets (ROA) were used as proxies for the firms' performance, whilst long-term debt, equity, retained earnings, total debt and short-term debt represented capital structure. Secondary data from 20 quoted agro-based firms on the Nigeria Stock Exchange for the period 2007-2013 were used for the study. Using the Ordinary

Least Square (OLS) regression technique, the study revealed that, long-term debt, equity and retained earnings positively affected the performance of the firms whilst total debt and short-term debt impacted negatively on the firms' performance.

A study on the influence of financial leverage on shareholders return and market capitalization among automotive cluster companies in Pithampur-India was conducted by Pachori and Totala (2012). A sample of seven major automotive public companies from 2006 to 2011 were used for the study. Through simple linear regression analysis, the study revealed that, financial leverage had no significant impact on shareholders' return and market capitalization. It was concluded from the study that, other non-quantitative factors like recession, saturation of the auto industry, competition and government policies may nullify the impact of financial leverage on shareholders return.

**Figure 1: Conceptual Framework**



**(Source: Authors, 2019)**

### **3.0 METHODOLOGY**

This study was a quantitative research. The quantitative research method was adopted because it develops and employs mathematical models, theories and hypothesis pertaining to phenomena (Corrine, 2011; Kasim, Alexander & Hudson, 2010; Mesly, 2015; and Goertzen, 2017). The method was also used because, it quantifies a problem by way of generating numerical data or data that can be transformed into usable statistics; it uses measurable data to formulate facts and uncover patterns in research; and its data collection methods are much more structured than qualitative data collection methods (DeFranzo, 2011). Specifically, the study was experimental in nature because, it sought to examine what would happen to the response variables, when some set of variables were kept constant, while other variables were being manipulated. The study was also correlational in nature because it sought to explore the link or association between variables.

The study was finally panel in nature because it collected repeated measures from the study's sample at different point in time. All non-financial firms that listed and traded their shares on the Ghana Alternative Market (GAX) for the period 2015 to 2018 formed the target population of the study. The purposive or selective sampling technique was employed in choosing the study's sample. As indicated by Crossman (2018), purposive sampling is a non-probability sampling technique in which a sample is selected based on the characteristics of a population and the objective of the study. The purposive sampling technique was used because it was flexible and met multiple needs and interests of the researcher; enabled the researcher to select a sample based on the purpose of the study and knowledge of the population; and it produced a sample that was representative of the entire population understudy (Black, 2010; and Saunders, Lewis & Thornhill, 2012). The HORDS, Intravenous Infusions, Meridian-Marshalls Holdings and Samba Foods Ltd were the firms that were considered for the study because, they were actively operational during the period understudy.

An unbalanced panel data sourced from the audited annual reports of the firms and published on the Ghana Stock Exchange (GSE) was used for the study. The annual reports covered the period 2015 to 2018, and comprised of the comprehensive income statement, statement of financial position, statement of cash flows, statement of changes in equity and notes to the accounts. Data on the Ghana Stock Exchange (GSE) was relied upon because, the GSE contains the most comprehensive and reliable data for all its listed firms, and have been updating and validating the annual reports of the firms. The response variable for this study was financial performance

proxied by Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Issued Capital (ROIC). Liquidity proxied by Current Ratio (CR) and capital structure proxied by Debt to total Assets (DA) served as the predictor variables. The *Robust Ordinary Least Squares (OLS)* regression estimator was employed for the study. This estimator was chosen after taken into consideration the assumptions of the Classical Linear Regression Model (CLRM). The general form of the econometric model adopted for the study was;

$$Y_{it} = \alpha + \beta_0 X_{it} + \mu_{it} \dots \dots \dots (1)$$

Where:

$Y_{it}$  = Response variable of firm ( $i$ ) in time ( $t$ );

$\alpha$  = Intercept;

$\beta_0$  = Parameter or slope of the predictors;

$X_{it}$  = Vector of the predictor variables of firm ( $i$ ) in time ( $t$ ); and

$\mu_{it}$  = Disturbance or error term of firm ( $i$ ) in time ( $t$ )

From the above econometric model, the following functions were deduced:

$$Y_{it} = f(\text{Financial Performance})$$

$$\text{But Financial Performance} = f(\text{ROCE, ROA and ROIC})$$

Therefore,

$$Y_{it} = f(\text{ROCE, ROA and ROIC}) \dots \dots \dots (2)$$

Also,

$$X_{it} = f(\text{Liquidity and Capital Structure})$$

$$\text{But Liquidity} = f(\text{CR})$$

$$\text{Capital Structure} = f(\text{DA})$$

Therefore,

$$X_{it} = f(\text{CR and DA}) \dots \dots \dots (3)$$

Substituting equation (2) and equation (3) into equation (1), the following working models were formulated to help direct the focus of the study;

$$\text{ROCE}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{DA}_{it} + \mu_{it} \dots \dots \dots (4)$$

$$\text{ROA}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{DA}_{it} + \mu_{it} \dots \dots \dots (5)$$

$$\text{ROIC}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{DA}_{it} + \mu_{it} \dots \dots \dots (6)$$

Where:

$\alpha$  = Intercept;

$\beta_1$  = Parameter or partial slope coefficient of the predictor variable  $\text{CR}_{it}$ ;

$\beta_2$  = Parameter or partial slope coefficient of the explanatory variable  $\text{DA}_{it}$ ;

$\text{ROCE}_{it}$  = Return on Capital Employed of firm ( $i$ ) in time ( $t$ ) calculated as the ratio of net profit after tax to capital employed of firm ( $i$ ) in time ( $t$ );

$\text{ROA}_{it}$  = Return on Assets of firm ( $i$ ) in time ( $t$ ) calculated as the ratio of net profit after tax to total assets of firm ( $i$ ) in time ( $t$ );

$\text{ROIC}_{it}$  = Return on Issued Capital of firm ( $i$ ) in time ( $t$ ) calculated as the ratio of net profit after tax to issued capital of firm ( $i$ ) in time ( $t$ );

$\text{CR}_{it}$  = Current Ratio of firm ( $i$ ) in time ( $t$ ) calculated as the ratio of current assets to current Liabilities of firm ( $i$ ) in time ( $t$ );

$\text{DA}_{it}$  = Debt-to-Total Assets of firm ( $i$ ) in time ( $t$ ) calculated as the ratio of total debt to total assets of firm ( $i$ ) in time ( $t$ ); and

$\mu_{it}$  = Disturbance or error term

The *priori expectation* of the study was stated as:  $\beta_1 > 0$ ,  $\beta_2 < 0$ , or  $\beta_1 = \beta_2 \neq 0$ . This is because the Current Ratio (CR) measures the ability of a firm to meet its short-term obligations with its current assets. Thus, the current ratio measures short-term solvency and serves as a margin of safety for short-term payables (Orshi, 2016). The higher the current ratio, the more capable a firm is of meeting its short-term obligations as it has a higher proportion of asset value relative to the value of its liabilities (Orshi, 2016). A CR of 2:1 or more is considered satisfactory and capable of improving financial performance, whilst a CR under 1 is an indication that, a firm's liabilities are greater than its assets and suggests that, the firm in question would be unable to pay off its obligations if they fall due at a particular point in time. On the other hand, the Debt-to-

Total Assets (DA) ratio shows a firm's ability to pay off its liabilities with its assets. In other words, this ratio shows how many assets a firm must sell in order to pay off all its liabilities. The higher the debt ratio, the more leveraged a firm is, implying greater financial risk. Put simply, a high DA ratio introduces inflexibility in a firm's operations due to increasing interference and pressure from creditors. Thus, the claims of creditors or outsiders are greater than those of the owners; whilst a low DA ratio implies a greater claim of owners than creditors (Pandey, 2010).

Both the dependent and independent variables were analysed through the descriptive statistics of mean, standard deviation, variance, minimum and maximum values and range. Correlation analysis was used to measure the strength and direction of the linear relationship that existed between liquidity, capital structure and the financial performance of the firms, whilst the multiple regression analysis was finally adopted to examine the effect of liquidity and capital structure on the firms' financial performance. In order to determine the suitability of the data, Shapiro-Wilk (1965) test for data normality, Breusch-Pagan (1979) and Cook-Weisberg (1983) test for heteroscedasticity, the correlational matrix test for multi-collinearity and the test for serial or autocorrelation were conducted. These tests were undertaken to help in the model specification and estimation. All the tests and data analysis were conducted through the STATA, version 15 statistical software package at  $\alpha=5\%$  ( $p\leq 0.05$ ).

## 4.0 RESULTS

This aspect of the study first presents some diagnostic tests on the assumptions of the Classical Linear Regression Model (CLRM). These tests include the tests for data normality, multi-collinearity, heteroscedasticity and serial or autocorrelation. Secondly, descriptive analysis on both the dependent and independent variables are presented. Thirdly, correlational analysis on the strength and direction of the degree of relationship that existed between liquidity, capital structure and the firms' financial performance are presented, whilst the multivariate regression analysis which catered for the effect of liquidity and capital structure on the firms' financial performance concludes the section.

### 4.1 Test for Multi-Collinearity

Kock and Lynn (2012) explained multi-collinearity as a phenomenon in which one predictor variable can be linearly predicted from the others with a substantial degree of accuracy. Multi-collinearity was viewed as a critical issue because, its presence could make the estimate of one variable's impact on the response variable while controlling for the others, to be less precise than if the predictors were uncorrelated with each other. Thus, multi-collinearity could make it tedious to assess the relative importance of the independent variables in explaining the variations in the response variable (Gujarati & Porter, 2009). One of the features of multi-collinearity is that the standard errors of the affected coefficients tend to be large. In that case, the test of the hypothesis that, the coefficient is equal to zero may lead to a failure to reject a false null hypothesis of no effect of the explanatory variable. Severe multi-collinearity was finally considered as a problem because it could increase the variance of the coefficient estimates and make the estimates very sensitive to minor changes in the model. In other words, small changes in the input data could lead to large changes in the model, even resulting in the change of the sign of the parameter estimates (Gujarati & Porter, 2009). The correlation coefficients between the input variables CR and DA were observed to see whether there existed a serious collinearity among the variables. From the correlational matrix as shown in Table 5, there existed no serious collinearity between CR and DA because, the rule of thumb for multi-collinearity was that, an *r* value greater than 0.8 ( $r>0.8$ ) implied, a serious collinearity (Gujarati & Porter, 2009). Therefore, CR and DA with an *r* value of -0.2379 were deemed fit to be used in the regression model.

### 4.2 Shapiro-Wilk (1965) Test for Data Normality

The Shapiro-Wilk (1965) test was adopted to test the normality of the data. It is a test of normality in frequentist statistics with the null hypothesis that, a sample  $X_1, \dots, X_n$  came from a normally distributed population (Shapiro & Wilk, 1965). Thus, the *null hypothesis* of the Shapiro-Wilk test is that, the population is normally distributed (Razali & Wah, 2011). In other words, if the *p-value* is less than the chosen alpha level, then the null hypothesis is rejected and there is an

evidence that, the data tested is not from a normally distributed population. On the other hand, if the *p-value* is greater than the chosen alpha level, then the null hypothesis that the data tested came from a normally distributed population cannot be rejected (Razali & Wah, 2011).

The chosen alpha level for this study was 5% ( $\alpha=0.05$ ). Therefore, the Shapiro-Wilk test, tested the null hypothesis that, all data values of ROCE, ROA, ROIC, CR and DA were not normally distributed at the 5% level of significance. As depicted in Table 1, ROCE had a *W-test* coefficient of 0.75490, a *V-value* of 2.827, a *Z-value* of 1.718 and a *p-value* of 0.04289. The test was statistically significant at the 5% level of significance ( $p<0.05$ ). Thus, the study rejected the null hypothesis that, all the data values of ROCE were normally distributed and accepted the alternative hypothesis that, all the data values of ROCE were not normally distributed at the 5% level of significance.

**Table 1: Data Normality Test Results**

Variable	W	V	Z	Prob>Z
ROCE	0.75490	2.827	1.718	0.04289
ROA	0.81425	2.142	1.125	0.13033
ROIC	0.65057	4.030	2.793	0.00261
CR	0.68138	3.675	2.463	0.00690
DA	0.73867	3.014	1.880	0.03008

**(Source: STATA Output)**

This also applies to the data values of ROIC, which had a *W-test* coefficient of 0.65057, a *V-value* of 4.030, a *Z-value* of 2.793 and a *p-value* of 0.00261, meaning the test was significant at the 95% confidence interval. Therefore, the study rejected the null hypothesis that, all the data values of ROIC were normally distributed and accepted the alternative hypothesis that, all the data values of ROIC were not normally distributed at the 5% level of significance. Similarly, the *W-test* of 0.68138 for CR, with a *V-value* of 3.675, a *Z-value* of 2.463 and a *p-value* of 0.00690, shows that, the test was significant at  $\alpha=5\%$ . The study therefore rejected the null hypothesis that, all the data values of CR were normally distributed and accepted the alternative hypothesis that, all the data values of CR were not normally distributed at the 95% confidence interval.

The result for CR was synonymous to that of DA which had a *W-test* coefficient of 0.73867, a *Z-value* of 1.880, a *V-value* of 3.014 and a *p-value* of 0.03008, indicating the test's significance at  $\alpha=5\%$ . Hence, the study rejected the null hypothesis that, all the data values of DA were normally distributed and accepted the alternative hypothesis that, all the data values of DA were not normally distributed at the 5% level of significance. Table 1 however revealed a *W-test* coefficient of 0.81425, a *Z-value* of 1.125, a *V-value* of 2.142 and a *p-value* of 0.13033 for all data values of ROA. This indicates that, the test for normality was not significant at the 95% confidence interval. Therefore, the study accepted the null hypothesis that, all the data values of ROA were normally distributed and rejected the alternative hypothesis that, all the data values of ROA were not normally distributed at the 5% level of significance. Apart from the test for ROA which was not significant at the 5% level ( $p=0.13033$ ), all the other tests were significant. Thus, all the data values of ROCE, ROIC, CR and DA were not normally distributed. A more generalized regression estimator was therefore viewed as appropriate to help remedy the problem of data abnormality.

#### **4.3 Bleusch-Pagan (1979) and Cook-Weisberg (1983) Test for Heteroscedasticity**

According to Gujarati and Porter (2009), the existence of heteroscedasticity is a major concern in the application of regression analysis, including the analysis of variance, as it can invalidate statistical tests of significance that assume that, the modelling errors are uncorrelated and uniform. To Muhammad (2012), the presence of heteroscedasticity implies, the Ordinary Least Squares (OLS) estimators are no longer the *Best Linear Unbiased Estimators (BLUE)* because, they become inefficient leading to imprecise predictions. Also, because of the inconsistency in the covariance matrix of the estimated regression coefficients, the tests of hypotheses (*t-test*, *F-test*) become invalid (Muhammad, 2012). The Bleusch-Pagan (1979) and Cook-Weisberg (1983) test for heteroscedasticity was utilized for this study. The test, tested the null hypothesis that, there was absence of heteroscedasticity among all the fitted values of the ROCE, ROA and the ROIC working models at the 5% level of significance, as against the alternative



hypothesis that, there was the presence of heteroscedasticity among the fitted values of the models.

**Table 2: Heteroscedasticity Test Results**

Model	Chi2 (1)	P-Value
ROCE	0.47	0.4941
ROA	0.37	0.5420
ROIC	0.62	0.4303

**(Source: STATA Output)**

As depicted in Table 2, a hettest for all fitted values of ROCE were not statistically significant at the 5% level of significance (Chi2 =0.47; p=0.4941). Therefore, the study accepted the null hypothesis that, there was no heteroscedasticity among the fitted values of ROCE and rejected the alternative hypothesis that, there was the presence of heteroscedasticity among the fitted values of ROCE. Table 2 also shows a hettest (Chi2) of 0.37 which was not statistically significant at  $\alpha=5\%$ , for all the fitted values of ROA (p=0.5420). Therefore, the study accepted the null hypothesis that, there was absence of heteroscedasticity among the fitted values of ROA and rejected the alternative hypothesis that, there was presence of heteroscedasticity among the fitted values of ROA. Table 2 finally revealed a hettest (Chi2) of 0.62 for all the fitted values of ROIC which was not statistically significant at the 5% level (p=0.4303). Therefore, the study accepted the null hypothesis that, there was no heteroscedasticity among the fitted values of ROA and rejected the alternative hypothesis that, there was heteroscedasticity among the fitted values of ROA.

#### 4.4 Durbin-Watson Test for Serial or Autocorrelation

Serial or autocorrelation is a mathematical representation of the degree of similarity between a given time series and a lagged version of itself over successive time intervals (*Verbeek, 2012; and Colberg & Höfling, 2011*). Autocorrelation is consequential because, its existence can lead to wrong conclusions or tests of hypothesis (*Gujarati & Porter, 2009*). The Durbin Watson Test, which tests the null hypothesis that, the errors or residuals in a model are serially uncorrelated (*Durbin & Watson, 1950; Durbin & Watson, 1951; and Field, 2009*), was used for this study.

**Table 3: Serial or Autocorrelation Test Results**

Model	Durbin-Watson d-statistic
ROCE	2.619931
ROA	2.619931
ROIC	2.619931

**(Source: STATA Output)**

The study's Durbin-Watson d-statistic results for the ROCE model was 2.619931. The study therefore failed to accept the null hypothesis that, the errors were serially uncorrelated and concluded that, there existed first order negative autocorrelation in the residuals of the ROCE model. The Durbin-Watson test also revealed a d-statistic value of 2.619931 for the ROA working model. The study therefore failed to accept the null hypothesis that, the errors were serially uncorrelated and concluded that, there existed first order negative autocorrelation in the residuals of the ROA model. Finally, the study's Durbin-Watson d-statistic results for the ROIC model was also 2.619931. The study therefore failed to accept the null hypothesis that, the errors were serially uncorrelated and concluded that, there existed first order negative autocorrelation in the residuals of the ROIC working model.

#### 4.5 Model Specification and Estimation

The researchers had wanted to conduct the Durbin-Wu-Hausman test to choose between the fixed or random effects models, but because of the limited number of the study's observations, such an exercise could not be undertaken. The *Robust Ordinary Least Squares (OLS)* regression estimator was therefore viewed as appropriate for all the fitted values of ROCE, ROA and ROIC models. The Robust OLS regression estimator was viewed as appropriate because, it could help address the issues of data abnormality and serial correlation that were being detected through study's diagnostic tests. The estimator was also viewed as appropriate because it could provide a

much better regression coefficient estimates than that of the OLS regression estimator. The Robust OLS regression estimator was finally viewed as appropriate because, it could provide a reliable hypothesis-testing routine which could help reduce the possibility of drawing misleading conclusions.

**4.6 Descriptive Analysis**

Descriptive statistics on the study’s variables are presented in Table 4, and from the table, the mean ROCE figure of -0.1335 is an indication that, for every cedi invested in capital employed, the company made 13.35 pesewas of losses. In other words, for the period 2015-2018, 13.35 pesewas of losses were generated on each cedi invested into the firm. The negative mean ROCE figure is an indication that, the firms were not efficiently using their capital employed and long-term financing strategies. The figure also means that, for the financial period 2015-2018, investments made by shareholders and creditors were not efficiently used to meet the purposes of investments. The minimum and maximum values of ROCE were -0.3339 and -0.0454 respectively, resulting in a range of 0.2885.

**Table 4: Descriptive Statistics on ROCE, ROA, ROIC, CR and DA**

Variable	Mean	Std. Dev	Variance	Minimum	Maximum	Range
ROCE	-0.1335	0.1349701	0.0182169	-0.3339	-0.0454	0.2885
ROA	-0.109925	0.0965138	0.0093149	-0.2513	-0.0391	0.2122
ROIC	-0.790325	1.378416	1.90003	-2.8574	-0.0681	2.7893
CR	16.53768	24.17171	584.2716	3.177	52.7204	49.5434
DA	0.090525	0.0874295	0.0076439	0.0358	0.2206	0.1848

**(Source: STATA Output)**

In general, investors tend to favour companies with stable and rising ROCE numbers than companies that have their ROCE numbers bouncing around from one year to the other. It is therefore important for management of the firms to put in place proper strategies to help improve upon the firms’ ROCE. The sampled firms also had a standard deviation of 0.1349701 and a variance of 0.0182169 for all the data values of ROCE. This is an indication that, the ROCE of the firms deviated from both sides of the mean by 0.1349701, meaning, the data values were not widely dispersed or departed from their average.

Return on Assets (ROA) which served as one of the indicators of financial performance, sought to assess how efficiently the assets of the firms were being used to generate profits. The mean ROA figure of -0.109925 implies, the firms were making 10.9925 pesewas of losses on each cedi of investments made from the year 2015 to 2018. The minimum and maximum values of ROA were -0.2513 and -0.0391 respectively leading to a range of 0.2122. The negative mean figure for ROA is an indication that, management were not effectively using the assets or investments of the firms to generate profits. ROA of the firms also had a standard deviation of 0.0965138 and a variance of 0.0093149. This implies, data values of ROA deviated from both sides of the average by 0.0965138, which is an indication that, they were not widely dispersed from their mean.

Return on Issued Capital (ROIC) had an average value of -0.790325. This implies, on the average, a cedi of shareholders’ invested capital generated a loss of 79.0325 pesewas for the period 2015-2018. The negative ROIC figure suggests that, the firms’ ability to generate profit on invested resources was very low. In other words, the firms’ management was not deploying shareholders’ capital efficiently. The mean ROIC figure might also mean that, management of the firms were making poor decisions by reinvesting capital into unproductive assets. Unlike the ROA already presented, the ROIC is a profitability ratio from the investors’ point of view. This is because, the figure -0.790325 representing the mean ROIC for the firms shows how much money was lost on the investors’ investments in the companies, not the companies’ investments in assets or something else. That being said, the investors of the companies aim to see a positive and a higher return on their investments rather than what is currently been shown. Such a positive and higher figure will serve as an indication that, the companies are using their funds effectively. Since a sustainable and increasing ROIC overtime means the companies will be generating returns on their shareholders’ investments, it is imperative on the part of management to come out with appropriate strategies to help deal with the current station the firms find themselves.

The minimum and maximum values of ROIC were -2.8574 and -0.0681, leading to a range of 2.7893. The company also had a standard deviation of 1.378416 and a variance of 1.90003 for ROIC. This implies, dispersions or deviations from the mean ROIC stood at 1.378416. This is an indication that, the data values of ROIC were not too much dispersed from the average. However, comparing the standard deviations of the three performance indicators (ROCE, ROA and ROIC), ROIC has the highest dispersion from its mean with a standard deviation of 1.378416. The CR of the firm had an average value of 16.53768, a maximum value of 52.7204 and a minimum value of 3.177 resulting in a range of 49.5434. The figure 16.53768 representing the mean CR for the firms implies, they were in a good financial health. Thus, the firms' assets were greater than their liabilities and suggests that, they could pay off their obligations if they became due at that point. However, the high average CR value of the firms does not necessarily indicate that, they were in a state of complete financial well-being. This is because, their assets allocations, might suggest that, they were not using their current assets efficiently, were not securing financing well or were not managing their working capital appropriately. To better assess whether or not these things were present, the researcher therefore suggests that, a liquid ratio more specific than the current ratio should be considered in further studies. The firms also had a standard deviation of 24.17171 and a variance of 584.2716 for their CR. This implies, dispersions or deviations around the mean CR was 24.17171, which is an indication that, data values of the current ratio were widely dispersed or deviated from the mean.

The DA ratio of the firms had a mean value of 0.090525, a maximum value of 0.2206 and a minimum value of 0.0358, resulting in a range of 0.1848. The average DA figure of 0.090525 shows that, 9.05% of the assets of the firms was being financed by debt. In other words, the firms' had 9.0525 pesewas of debt in every cedi of assets it held from the year 2015 to 2018. The firms' low debt ratio level also indicates that, most of the assets of the firms were fully owned (financed through the firms' own equity, not debt). Thus, the firms could not be in danger if their creditors were to suddenly insist on the repayment of facilities they offered the firms. The firms finally had a standard deviation of 0.0874295 and a variance of 0.0076439 for their DA. This implies, data values of DA were not widely dispersed or deviated from both sides of the mean.

**4.7 Correlational Analysis**

This aspect of the study sought to measure the strength and direction of the linear relationship that existed between liquidity, capital structure and the firms' financial performance. The Pearson Product-Moment Correlation Coefficient technique of data analysis was adopted for that purpose and from Table 5, there was an insignificantly positive relationship between CR and ROCE at the 95% confidence interval ( $r = 0.4522$ ,  $p = 0.5478$ ). The positive relationship between CR and ROCE implies, an increase in CR led to an increase in ROCE and vice-versa, and a decrease in CR also led to a decrease in ROCE and vice-versa.

**Table 5: Correlational Matrix of Study Variables**

Variable	ROCE	ROA	ROIC	CR	DA
ROCE	1				
ROA	0.9972* (0.0028)	1			
ROIC	0.9929* (0.0071)	0.9812* (0.0188)	1		
CR	0.4522 (0.5478)	0.5030 (0.4970)	0.3718 (0.6282)	1	
DA	-0.9712* (0.0288)	-0.9518* (0.0482)	-0.9900* (0.0100)	-0.2379 (0.7621)	1

Note: \* implies significance at 5% and values in parenthesis ( ) represent probabilities.

(Source: STATA Output)

Also, a positive and an insignificant relationship was found between CR and ROA at the 5% level of significance ( $r = 0.5030$ ,  $p = 0.4970$ ). The correlation between CR and ROA is an indication that, an increase in CR led to an increase in ROA and vice-versa, and a decrease in CR also led to a decrease in ROA and vice-versa. Current ratio again had an insignificantly positive relationship with ROIC at  $\alpha = 5\%$  ( $r = 0.3718$ ,  $p = 0.6282$ ). The positive association between CR and

ROIC means, an increase in CR led to an increase in ROIC and vice-versa, and a decrease in CR also led to a decrease in ROIC and vice-versa. Table 5 further revealed a significantly inverse relationship between DA and ROCE at the 5% level of significance ( $r = -0.9712, p=0.0288$ ). The link between DA and ROCE is an indication that, an increase in DA led to a decrease in ROCE and vice-versa. Additionally, a significantly negative relationship was found between DA and ROA at the 95% confidence interval ( $r = -0.9518, p=0.0482$ ). The connection between DA and ROA means, an increase in DA led to a decrease in ROA and vice-versa. Table 5 finally disclosed a significantly inverse relationship between DA and ROIC at  $\alpha=5\%$  ( $r = -0.9900, p=0.0100$ ). The correlation between DA and ROIC implies, an increase in DA led to a decrease in ROIC and vice-versa.

**4.8 Regression Analysis**

Regression analysis which was the focus of this aspect of the study sought to examine the effect of liquidity and capital structure on the firms’ financial performance, and from Table 6, CR had an insignificantly positive effect on ROCE at the 95% confidence interval ( $p=0.141$ ). On the other hand, DA, had a significantly inverse effect on ROCE at the 5% level of significance ( $p=0.041$ ). The beta value of -1.413276 for DA indicates that, on the average, a unit increase in DA led to a 1.413276 decrease in ROCE when all other variables were held constant.

**Table 6: Effect of Liquidity and Capital Structure on Financial Performance (ROCE)**

Variables	Coefficient ( $\beta$ )	Robust Std. Err.	t-Statistic	Probability(t)
CR	0.0013091	0.0002943	4.45	0.141
DA	-1.413276	0.0909893	-15.53	0.041
Cons	-0.027212	0.0211459	-1.29	0.421
R-squared ( $R^2$ )	0.9952,			
F-Statistic	10809.06	AIC	-21.14904	
Probability (F)	0.0068	BIC	-22.99015.	

**(Source: STATA Output)**

In order to test for the overall significance of the estimated multiple model, the *F-test* was computed, and from Table 6, the *F-statistic* of 10809.06 was statistically significant at  $\alpha=5\%$  ( $p=0.0068$ ). On the basis of this, it can be concluded that, collectively, CR and DA significantly accounted for 99.52% of the variations in ROCE ( $R^2 = 0.9952$ ). In other words, CR and DA collectively had a significant effect on ROCE at the 95% confidence interval. Fitting the coefficients into the model,  $ROCE = -0.027212 + 0.0013091CR - 1.413276DA$  was finally obtained. This implies, the partial slope coefficients ( $\beta_1 = 0.0013091$ ) and ( $\beta_2 = -1.413276$ ) for CR and DA, were respectively simultaneously not equal to zero ( $\beta_1 = \beta_2 \neq 0$ ) and was in support of the *priori expectation* of the study.

**Table 7: Effect of Liquidity and Capital Structure on Financial Performance (ROA)**

Variables	Coefficient ( $\beta$ )	Robust Std. Err.	t-Statistic	Probability(t)
CR	0.0011705	0.0003439	3.40	0.182
DA	-0.9737689	0.106307	-9.16	0.069
Cons	-0.0411325	0.0247057	-1.66	0.344
R-Squared ( $R^2$ )	0.9871			
F-Statistic	4272.18	AIC	-19.90432	
Probability (F)	0.0108	BIC	-21.74544.	

**(Source: STATA Output)**

As shown in Table 7, CR had an insignificantly positive effect on ROA at the 5% level of significance ( $p=0.182$ ), whilst the DA ratio had an insignificantly negative influence on ROA at the 95% confidence interval ( $p=0.069$ ). The *F-statistic* value was computed to assess the collective effect of CR and DA on the ROA working model, and from Table 7, the *F-statistic* value of 4272.18 was significant at  $\alpha=5\%$  ( $p=0.0108$ ). This implies, collectively, CR and DA significantly accounted for 98.71% of the variations in ROA ( $R^2 = 0.9871$ ). In other words, the two explanatory variables, CR and DA, had a combined significant effect on ROA at the 5% level of significance. Fitting the coefficients into the model,  $ROA = -0.0411325 + 0.0011705CR - 0.9737689DA$  was finally deduced for the ROA working model. This implies, the parameters or the partial slope coefficients

( $\beta_1=0.0011705$ ) and ( $\beta_2=-0.9737689$ ) for CR and DA, were respectively simultaneously not equal to zero ( $\beta_1 = \beta_2 \neq 0$ ) and was in line with the *priori expectation* of the study.

**Table 8: Effect of Liquidity and Capital Structure on Financial Performance (ROIC)**

Variables	Coefficient ( $\beta$ )	Robust Std. Err.	t-Statistic	Probability(t)
CR	0.0082411	0.0004292	19.20	0.033
DA	-15.06717	0.132681	-113.56	0.006
Cons	0.4373419	0.030835	14.18	0.045
R-Squared ( $R^2$ )	0.9999			
F-Statistic	99999.00	AIC	-18.13139	
Probability (F)	0.0010	BIC	-19.97251	

**(Source: STATA Output)**

As depicted in Table 8, CR had a significantly positive effect on ROIC at the 5% level of significance ( $p=0.033$ ). The beta ( $\beta$ ) value of 0.0082411 for CR implies, on the average, a unit change in CR led to a 0.0082411 change in ROIC when all other variables were held constant. The DA ratio also had a significantly inverse effect on ROIC at the 95% confidence interval ( $p=0.006$ ). Statistically, -15.06717 being the beta ( $\beta$ ) value for DA means, on the average, a unit increase in DA led to a 15.06717 decrease in ROIC when all other variables were held constant. In order to examine the combined effects of CR and DA on ROIC, the *F-statistic* value was computed, and from the results, the *F-statistic* value of 99999.00 was statistically significant at  $\alpha=5\%$  ( $p=0.0010$ ). This implies, collectively, CR and DA significantly accounted for 99.99% of the variations in ROIC ( $R^2=0.9999$ ). Put simply, CR and DA had a combined significant effect on ROIC at the 95% confidence interval. Fitting the values into the ROIC working model,  **$ROIC=0.4373419+0.0082411CR-15.06717DA$**  was finally deduced for the firms. This is an indication that, the partial slope coefficients ( $\beta_1=0.0082411$ ) and ( $\beta_2=-15.06717$ ) for CR and DA, were respectively simultaneously not equal to zero ( $\beta_1 = \beta_2 \neq 0$ ) and was consistent with the *priori expectation* of the study.

## 5.0 DISCUSSIONS

In this section, discussions on the major findings of the study are presented. The discussions are related to the review of relevant literature that supported the topic under study and are arranged in the order of; the relationship between liquidity, capital structure and the firms' financial performance; and the effect of liquidity and capital structure on the firms' financial performance. The tests of *hypothesis* that were formulated for the study are also presented in the sub-sections.

### 5.1 Relationship between Liquidity, Capital Structure and the Firms' Financial Performance

The study revealed an insignificantly positive relationship between CR and ROCE at the 95% confidence interval ( $r=0.4522$ ,  $p=0.5478$ ). There was also a positive and an insignificant relationship between CR and ROA at the 5% level of significance ( $r=0.5030$ ,  $p=0.4970$ ). An insignificantly positive association was further found between CR and ROIC at  $\alpha=5\%$  ( $r=0.3718$ ,  $p=0.6282$ ). Therefore, the null hypothesis ( $H_0$ ) that, there was no significant relationship between liquidity and the firm's financial performance is accepted. The alternative hypothesis ( $H_1$ ) that, there was a significant relationship between liquidity and the firm's financial performance is rejected. These findings supported that of Wambu (2013) whose study disclosed an insignificantly positive relationship between profitability and liquidity. The findings also agreed with that of Durrah *et al.* (2016) who examined the relationship between liquidity ratios and indicators of financial performance (profitability ratios) in listed food industrial companies in Amman Bursa for the period 2012-2014, and disclosed a weak positive relationship between the current ratio and each of the operating profit margins and the net profit margin.

The findings did not however support that of Ehiedu (2014) who researched into the impact of liquidity on profitability of some selected companies in Nigeria and found out a significantly positive relationship between current ratio and profitability. The findings did not also support that of Eljelly (2004) whose study on 929 joint stock companies in Saudi Arabia, disclosed a significantly negative relationship between the firms' profitability and liquidity level,

as measured by Current Ratio (CR). The study's findings were again not in line with that of Akhwale (2014) who found out a significant relationship between liquidity and profitability of some listed firms on the Nairobi Securities Exchange (NSE) in Kenya. The findings were also in contrast with that of Kartal (2016) whose study on the effect of liquidity on financial performance (in terms of profitability) of Borsa Istanbul (BIST) listed retail merchandising firms in Turkey for the period 1998-2015 revealed a significantly positive relationship between financial performance and liquidity. The study's findings were further not in line with that of Sheikhdon and Kavale (2016) whose study on commercial banks in Mogadishu-Somalia found out a significantly positive association between liquidity management drivers and financial performance of the banks. Results of the study did not finally agree with that of Vintilă and Nenu (2016) whose study on the liquidity and profitability analyses of listed Romanian companies found out a statistically significantly negative relationship between liquidity and corporate financial performance.

On the relationship between capital structure and the firms' financial performance, the study revealed a significantly inverse relationship between DA and ROCE at the 5% level of significance ( $r = -0.9712$ ,  $p=0.0288$ ). The study also disclosed a significantly negative relationship between DA and ROA at the 95% confidence interval ( $r = -0.9518$ ,  $p=0.0482$ ). The study finally revealed a significantly inverse relationship between DA and ROIC at  $\alpha=5\%$  ( $r = -0.9900$ ,  $p=0.0100$ ). Therefore, the null hypothesis ( $H_0$ ) that, there was no significant relationship between capital structure and the firm's financial performance is rejected. The alternative hypothesis ( $H_1$ ) that, there was a significant relationship between capital structure and the firm's financial performance is accepted.

These findings supported that of Ojo (2012) who examined the effect of financial leverage on some selected indicators of corporate performance in Nigeria and found out a significant relationship between leverage shocks and corporate performance. The findings were also consistent with that of Taani (2012) whose study on a sample of 45 Jordanian industrial firms listed on the Amman Stock Exchange (ASE) for the period 2005-2009 disclosed that, leverage, working capital management policy and size had a significant relationship with net income, return on equity and return on assets of the firms. The findings did not however support that of Pachori and Totala (2012) who conducted a study on the influence of financial leverage on shareholders return and market capitalization among automotive cluster companies in Pithampur-India for the period 2006-2011, and found out that, financial leverage had no significant influence on shareholders' return and market capitalization.

### **5.2 Effect of Liquidity and Capital Structure on the Firms' Financial Performance**

The coefficient of multiple determination ( $R^2 = 0.9952$ ) indicates that, 99.52% of the variations in ROCE were accounted for by the explanatory variables CR and DA. The *F-statistic* value of 10809.06 was also statistically significant at the 5% level of significance ( $p=0.0068$ ). This implies, the current ratio and the debt-to-total assets ratio had a combined significant effect on ROCE. In other words, CR and DA significantly explained 99.52% of the variations in ROCE. The remaining 0.48% (100-99.52) of the variations in ROCE may be attributed to other factors or inherent variabilities. The current ratio and the debt-to-total assets ratio also accounted for 98.71% of the variances in ROA ( $R^2 = 0.9871$ ). The *F-statistic* value of 4272.18 with a *p value* of 0.0108 was significant at the 95% confidence interval. On the basis of this, it can be concluded that, the two predictors CR and DA, collectively had a significant effect on ROA. Thus, CR and DA significantly accounted for 98.71% of the variances in ROA. The remaining 1.29% (100-98.71) of the variances in ROA may be attributed to other unknown variables or inherent variabilities.

Finally, the coefficient of multiple determination ( $R^2 = 0.9999$ ) shows that, CR and DA caused 99.99% of the variations in ROIC. The *F-statistic* value of 99999.00 was also statistically significant at  $\alpha=5\%$  ( $p=0.0010$ ). This implies, collectively, the CR and the DA had a significant impact on ROIC. Put simply, the CR and the DA significantly explained 99.99% of the variations in ROIC with the remaining 0.01% being accounted for by other factors or inherent variabilities. In summary, liquidity and capital structure had a significant impact on the firms' financial performance as measured by ROCE, ROA and ROIC. Therefore, the null hypothesis ( $H_0$ ) that, liquidity and capital structure had no significant effect on the firms' financial performance is

---

rejected. The alternative hypothesis ( $H_1$ ) that, liquidity and capital structure had a significant effect on the firms' financial performance is accepted.

These findings were in tandem with that of Akhwale (2014) who conducted a study on the relationship between liquidity and profitability of companies listed on the Nairobi Securities Exchange (NSE) over a 5 year period (2009-2013), and found out that, current ratio and cash conversion cycle negatively affected the profitability of the companies, while the quick ratio as a measure of liquidity did not have any significant effect on profitability of the firms. In conclusion, the study established that, there was a significant relationship between liquidity and profitability of the listed firms. The findings also supported that of Chinamerem and Anthony (2012) who examined the impact of capital structure on the financial performance of thirty (30) non-financial firms listed on the Nigerian Stock Exchange, and disclosed that, firms' capital structure surrogated by debt ratio had a significantly negative impact on the firms' financial measures Return on Assets (ROA) and Return on Equity (ROE). The findings were further in support of Eljelly (2004) who empirically examined the relationship between profitability and liquidity as measured by Current Ratio (CR) and Cash Gap (GP) and revealed from his correlation and regression analysis that, the firms' liquidity level had a significantly negative relationship with profitability, as measured by the Current Ratio (CR).

The study's findings were also in line with that of Achchuthan and Jasinthan (2012) who examined the influence of financial and operating leverage on the financial performance of Lanka Orix Leasing Company Plc in Sri-Lanka for the period 2001-2010, and found out a significant relationship between operating leverage and financial performance of the firm. The findings were also in tandem with Maaka (2013) who researched into the relationship between liquidity risk and financial performance of commercial banks in Kenya and found out that, the profitability of the banks was negatively affected due to the increase in liquidity gap and leverage. Additionally, the findings were in agreement with that of Pratheepkanth (2011) who used data of business firms listed on the Colombo Stock Exchange from 2005-2009 to explore the relationship between capital structure and firms' performance. Using regression, correlation and other statistical tools to analyse the data, a negative relationship was found between net profit and capital structure. From the study, Return on Investments (ROI) and Return on Assets (ROA) also had a negative relationship with capital structure. The findings were also in line with that of Bassey, Ukpe and Solomon (2017) who examined the effect of capital structure choice on the performance of agro-based firms in Nigeria and disclosed that, long-term debt, equity and retained earnings positively affected the performance of the firms whilst total debt and short-term debt impacted negatively on the firms' performance.

The study's findings did not however support that of Lamberg and Valming (2009) who studied the impact of liquidity management on profitability during financial crises with a sample of companies listed on the Stockholm Stock Exchange. Adopting a quantitative methodology and regression analysis, it was find out that, the adoption of liquidity strategies did not have any significant impact on profitability as measured by return on assets. The findings did not also agree with that of Bordeleau, Crawford and Graham (2009) who examined the impact of liquidity on the profitability of 55 U.S banks and 10 Canadian banks between the period 1997 to 2009, and disclosed that, a nonlinear relationship existed, whereby profitability was improved for banks that held some liquid assets, however, there was a point beyond which holding further liquid assets diminished the banks' profitability, all else equal. The findings were not finally consistent with that of Ibrahim (2009) who examined the impact of capital structure choice on firms' performance in Egypt and revealed that, capital structure choice decision in general, had a weak-to-no impact on firms' performance.

## **6.0 CONCLUSION AND RECOMMENDATIONS**

This study sought to examine the impact of liquidity and capital structure on the financial performance of firms trading on the Ghana Alternative Market (GAX). Specifically, the study sought to examine the relationship between liquidity, capital structure and the firms' financial performance and to establish the influence of liquidity and capital structure on the firms'

financial performance. Secondary data obtained from the audited and published annual reports of the HORDS, Intravenous Infusions, Meridian-Marshalls Holdings and Samba Foods Ltd for the period 2015 to 2018 was used for the study. From the study's Pearson Product-Moment Correlation Coefficient output, liquidity surrogated by the Current Ratio (CR) had an insignificant relationship with the firms' financial performance as measured by ROCE, ROA and ROIC. However, capital structure proxied by the Debt-to-Total-Assets (DA) ratio had a significant relationship with the firms' financial performance as measured by ROCE, ROA and ROIC. The study's *Robust Ordinary Least Squares* regression estimates finally revealed that, liquidity and capital structure had a combined significant effect on the firms' financial performance as measured by ROCE, ROA and ROIC.

After taken into consideration the major findings of the study, the researcher recommended among others that; management should pay more attention to the capital structure composition of the firms because, in all the three working models, the DA ratio had a negative effect on the firms' financial performance. Thus, on the average, per unit change in the DA ratio, led to a certain degree of change in the financial performance of the firms when all other variables were held constant. Also, the correlation results showed a positive relationship between CR and the firms' financial performance. Thus, an increase in CR led to an increase in the firms' financial performance. Management should therefore try to increase and maintain an acceptable level of liquidity as it will have a positive impact on the firms' financial performance. Additionally, the management of liquidity and capital structure is a vital component of Financial Management. As this paper revealed, liquidity and capital structure are significant determinants of financial performance, as such, careful planning and management of the two is an important way of improving the efficiency of the firms. Adding to this, the sampled firms and all other organisations should embrace the concept of liquidity and capital structure management so as to help them reduce the risks associated with their operations.

To be able to improve the financial performance of firms, there is the need to address the managerial gaps in the areas of training, organisational capability, reliability, risk taking propensity and customer relationship management. Training and manpower development is a major problem affecting the management of financial performances in organisations, as such, authorities should put in place the right policies to ensure that, personnel in charge of the management of finances acquire the necessary skills for their operations. Also, management of firms should try and reduce the amount of cash held in current assets by concentrating more on investments because, investments could yield higher returns to the firms than tying cash down in idle. This will go a long way to enhance the profitability of the firms. It is finally recommended that, the firms should subject themselves to the prudential standards and guidelines of operations laid down by Ghana as a State, so as to protect the funds of their shareholders thereby ensuring the firms' long-term financial sustainability.

## REFERENCES

1. Achchuthan, S., & Jasinthan, T. (2012). Impact of financial, operating leverage on the financial performance: Special reference to Lanka Orix Leasing Company Plc in Sri-Lanka. *International Researches, Vol. 01, Issue 01, ISSN (Online): 2319-6564.*
2. Akhtar, S., Javed, B., Maryam, A., & Sadia, H. (2012). Relationship between financial leverage and financial performance: Evidence from Fuel & Energy sector of Pakistan, *European Journal of Business and Management, ISSN 2222-2839 (Online) Vol 4, No. 11.*
3. Akhwale, E. F. (2014). Relationship between liquidity and profitability of companies listed at the Nairobi Securities Exchange. *Unpublished MBA Project, University of Nairobi.*
4. Akintoye, I. R. (2008). Sensitivity of performance to capital structure. *European Journal of Social Science, 7(1), 163-144.*
5. Ali, S. A. (2015). The effect of the liquidity management on profitability in the Jordanian commercial banks. *International journal of business and management. Vol. 10, No.1.*



6. Bassey, N. E., Ukpe .O. U., & Solomom, U. U. (2017). The effect of capital structure choice on the performance of corporate organizations: A case of quoted agro-based firms in Nigeria. *Bulletin of Business and Economics*, 6(2), 58-67.
  7. Bhunia, A. (2010). A trend analysis of liquidity management efficiency in selected private sector Indian steel industry. *International Journal of Research in Commerce and Management*, Vol. 1, 3 pp.213.
  8. Black, K. (2010). *Business statistics: Contemporary decision making (6<sup>th</sup> ed.)*. John Wiley & Sons.
  9. Bordeleau, E., Crawford, A., & Graham, C. (2009). Regulatory constraints on bank leverage: Issues and Lessons from the Canadian Experience, *Bank of Canada Discussion Paper* 2009- 15.
  10. Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroskedasticity and random coefficient variation. *Econometrica*, 47(5), 1287-1294.  
DOI:10.2307/1911963. JSTOR 1911963. MR 0545960.
  11. Cheng, C., & Tzeng, C. (2010). *The effect of leverage on firm value and how the firm financial quality influence on this effect*. National Chung Cheng University, Taiwan.
  12. Chinaemerem, O. C., & Anthony, O. (2012). Impact of capital structure in the financial performance of Nigerian firms. *Arabian Journal of Business and management Review*, 1(12), 43-61.
  13. Colberg, P., & Höfling, F. (2011). Highly accelerated simulations of glassy dynamics using GPUs: caveats on limited floating-point precision. *Comp. Phys. Comm.* 182 (5), 1120-1129.
  14. Cook, R. D., & Weisberg, S. (1983). Diagnostics for heteroskedasticity in regression. *Biometrika*, 70(1), 1-10. DOI:10.1093/biomet/70.1.1.
  15. Corrine, G. (2011). *Becoming qualitative researchers: an introduction (4th ed.)*. Boston: Pearson. ISBN 0137047975. OCLC 464594493.
  16. Crossman, A. (2018). *Understanding purposive sampling: An overview of the method and its applications*. Retrieved from <https://www.thoughtco.com/purposive-sampling-3026727>.
  17. DeFranzo, S., E. (2011). *What's the difference between qualitative and quantitative research?* Retrieved from <https://www.snapsurveys.com/blog/qualitative-vs-quantitative-research/>
  18. Durbin, J., & Watson, G. S. (1950). Testing for serial correlation in least squares regression, I. *Biometrika*, 37 (3-4), 409-428.
  19. Durbin, J., & Watson, G. S. (1951). Testing for serial correlation in least squares regression, II. *Biometrika*, 38 (1-2), 159-179.
  20. Durrah, O., Abdul, A. A. R., Syed, A. J., & Nour, A. G. (2016). Exploring the relationship between liquidity ratios and indicators of financial performance. An analytical study on food industrial companies listed in Amman Bursa. *International Journal of Economics and Financial Issues*, 2016, 6(2), 435-441. ISSN: 2146-4138.
  21. Ehiedu, V. (2014). The impact of liquidity on profitability of some selected companies: The Financial Statement Analysis (FSA) Approach, *Research Journal of Finance and Accounting*, 5(5), 81-90.
  22. Eljelly, A. (2004). Liquidity-profitability tradeoff: An empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14(2), 48-61.
  23. Field, A. (2009). *Discovering statistics using SPSS (3rd ed.)*. Los Angeles-Thousand Oaks, Calif: SAGE Publications. p. 143. ISBN 978-1-84787-906-6.
  24. Goddard, J., Molyneux, P., & Wilson, J. (2004). The profitability of European banks: A Cross-sectional and dynamic panel analysis. *The Manchester School*, 72(3), 363-381.
  25. Goertzen, M. J. (2017). Introduction to quantitative research and data. *Library Technology Reports*, 53(4), 12-18. ISSN 0024-2586.
  26. Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics (fifth ed.)*. Boston: McGraw-Hill Irwin. p. 400. ISBN 9780073375779.
  27. Ibrahim, E. E. (2009). The impact of capita-structure choice on firm performance: Empirical evidence from Egypt. *The Journal of Risk Finance*, 10(5), 477-487.
-

28. Junaidu, M. K., & Aminu, A. (2014). An evaluation of the impact of liquidity on the profitability of Nigerian Banks. *Researchjournal's Journal of Management* 2(7), 1-10.
  29. Kartal, D. (2016). The effect of liquidity on financial performance: Evidence from Turkish retail industry. *International Journal of Economics and Finance*, Vol. 8, No. 4, 2016 ISSN 1916-971X E-ISSN 1916-9728.
  30. Kasim, R., Alexander, K., & Hudson, J. (2010). *A choice of research strategy for identifying community-based action skill requirements in the process of delivering housing market renewal*. Research Institute for the Built and Human Environment, University of Salford, UK.
  31. Kock, N., & Lynn, G. S. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations (PDF). *Journal of the Association for Information Systems*, 13(7), 546-580.
  32. Lalith, I. S. (1999). The capital structure of Sri Lankan companies. *Sri Lankan Journal of Management*, 4(1 & 2), 18-30.
  33. Lamberg, S., & Valming S. (2009). *Impact of liquidity management on profitability-a study of the adoption of liquidity in a financial crisis*. Master Thesis, Umea School of Business, Umea University.
  34. Lawal, B. A., Edwin, T. K., Monica, W. K., & Adisa, M. K. (2014). Effect of capital structure on firm's performance: Empirical study of manufacturing companies in Nigeria. *Journal of Finance and Investment Analysis*, 3(4), 39-57.
  35. Maaka, Z. (2013). *Relationship between the liquidity risk and financial performance of commercial banks in Kenya*. Unpublished MBA Project, University of Nairobi.
  36. Mahavidyalaya S. S., & Ray, S. (2012). Evaluating the impact of working capital management component on corporate profitability: Evidence from Indian manufacturing firms. *International Journal of Economics Practices and Theories*, 2(3), 127-136.
  37. Majeed, S., Makki, M. A., Saleem, S., & Aziz, T. (2013). The relationship of cash conversion cycle and profitability of firms: An empirical investigation of Pakistan firms. *Journal of Emerging Issues in Economics, Finance and Banking* 1(1), 35-51.
  38. Manyo, T. S., & Ogakwu, V. N. (2013). Impact of liquidity management on the return on assets of firms: Evidence from Nigeria. *International Journal of Management and Information Technology*, 6 (3), 885-894.
  39. Mesly, O. (2015). *Creating models in psychological research*. United States: Springer Psychology, 126 pages. ISBN 978-3-319-15752-8.
  40. Muhammad, I. (2012). *Introduction, reasons and consequences of heteroscedasticity*. Retrieved from <http://itfeature.com/correlation-and-regression-analysis/introduction-reasons-and-consequences-of-heteroscedasticity>.
  41. Ojo, S. A. (2012). The effect of financial leverage on corporate performance of some selected companies in Nigeria. *Canadian Social Science*, 8(1), 85-91.
  42. Orshi, T. S. (2016). *Impact of liquidity management on the financial performance of listed food and beverages companies in Nigeria*. Published Thesis, Federal University Dutsin-Ma. DOI: 10.13140/RG.2.2.2767280644.
  43. Owolabi, A., & Obida, S. (2012). Liquidity management and corporate profitability: Case study of selected manufacturing companies listed on the Nigerian stock exchange. *Business Management Dynamics*, 2(2), 10-25.
  44. Pachori, S., & Totala, K. (2012). *Influence of financial leverage on shareholders return and market capitalization: A study of automotive cluster companies of Pithampur, (M.P), India*, 2<sup>nd</sup> International Conference on Humanities, Geography and Economics (ICHGE'2012), Singapore.
  45. Pandey, I. M. (2010). *Financial management, (10th ed.)*. New Delhi: Vikas Publishing House Pvt Ltd.
  46. Pratheepkanth, P. (2011). Capital structure and financial performance: evidence from selected business companies in Colombo Stock Exchange Sri Lanka. *International Refereed Research Journal*, 2(2), 171-183.
-

47. Rajni, S. (2012). Impact of financial leverage on shareholders returns and market capitalization: Empirical evidence of telecommunication sector companies, India. *International Journal of Research in IT, Management and Engineering*. Volume 2, Issue 12.
48. Razali, N., & Wah, Y. B. (2011). Power comparisons of Shapiro–Wilk, Kolmogorov–Smirnov, Lilliefors and Anderson-Darling tests (PDF). *Journal of Statistical Modeling and Analytics*, 2(1), 21-33.
49. Riahi-Belkaoui, A. (1999). *Capital structure: Determination, evaluation and accounting*. Westport: Quorum Books Publisher.
50. Samiloglu, F., & Dermirgunes, K. (2008). *The effect of working capital management on firms' profitability: Evidence from Turkey*. Being A Research conducted At the Istanbul University.
51. Sanghani, D. A. (2014). *The effect of liquidity on the financial performance of non-financial companies listed at the Nairobi Securities Exchange*. Unpublished MBA Project, University of Nairobi.
52. Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students (6<sup>th</sup> edition)*. Pearson Education Limited.
53. Shapiro, S. S., & Wilk, M. B. (1965). *An analysis of variance test for normality (complete samples)*. *Biometrika*, 52(3-4), 591-611. DOI:10.1093/biomet/52.3-4.591. JSTOR 2333709. MR 0205384. p. 593
54. Sheikhdon, A. A., & Kavalae, S. (2016). Effect of liquidity management on financial performance of commercial banks in Mogadishu, Somalia. *International Journal for Research in Business, Management and Accounting*.
55. Sur, D., Biswas, J., & Eanguly, P. (2001). Liquidity management in India private sector enterprises: A case study of India primary aluminum producing industry. *Indian Journal of Accounting* Vol. 36 No. 10p. 14.
56. Taani, K. (2012). Impact of working capital management policy and financial leverage on financial performance: Empirical evidence from Amman stock exchange-listed companies. *International Journal of Management Sciences and Business Research*, Vol. 1, Issue 8. (ISSN: 2226-8235).
57. Tsuji, C. (2011). Recent development of the agency theory and capital structure. *Economics and Finance Review*, 1(6), 94-99.
58. Verbeek, M. (2012). *A guide to modern econometrics (Fourth ed.)*. Chichester: John Wiley. pp. 112-116. ISBN 978-1-119-95167-4.
59. Vintilă, G., & Nenu, E. A. (2016). Liquidity and profitability analysis on the Romanian listed companies. *Journal of Eastern Europe Research in Business & Economics* <http://www.ibimapublishing.com/journals/JEERBE/jeerbe.html>.
60. Wambu, T. M. (2013). *The relationship between profitability and liquidity of commercial banks in Kenya*. Unpublished MBA Project, University of Nairobi.
61. Yoon, E., & Jang, S. (2005). The effect of restaurant firms. *Journal of Hospitality Financial Management*, Volume 13, Issue 1.