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Working Capital Management and Financial Performance of Deposit Money Banks in Nigeria

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Abstract
Working capital is regarded as the lifeblood and nerve of a business concern, it is therefore essential to accommodate the smooth operations of any organization, but Studies in working capital management have provided inconclusive results. The objective of this study is to examine the effect of working capital management of Deposit Money Banks in Nigeria. The study covers the period of six years 2007 to 2013. Data for the study were extracted from the firms' annual reports and accounts. After running the OLS regression, a robustness test was conducted for validity of statistical inferences, the data was empirically tested between the regressors and the regressed, A multiple regression was employed to test the model of the study using OLS. The results from the analysis revealed a strong positive relationship between current ratio and quick ratio and ROA of Listed Deposit Money Banks in Nigeria, while cash ratio was found to be inversely but significantly related to ROA of Listed Deposit Money Banks in Nigeria. In line with the above findings, the study recommended that the management should put more attention on their liquidity in order to maintain an adequate liquidity as the study has empirically proved that higher liquidity signifies more profitability, the listed Deposit Money Banks in Nigeria should try and maintain a higher quick ratio as it will have a positive impact on their profitability. Finally, the management should reduce the amount held in cash as current asset and concentrate more in investing them, so that it could yield higher return rather than tie down the idle cash.
Keywords: Current ratio, Quick ratio, Cash ratio, Firm size, Return on asset and Trade-off theory

1. Introduction

Contemporary competitive business environment demands efficient use of resources, which underscores the importance of working capital management. It has been widely accepted that the profitability of a business concern largely depends upon the manner in which its working capital is managed (Brigham & Houston, 2003). The inefficient management of working capital not only reduces profitability but may ultimately lead to distress and financial crises in an organization. An investigation regarding working capital practice in banking sector is therefore of utmost importance. Working capital refers to the firm's investment in short- term assets. Padachi (2006) emphasized that the management of working capital is important to the financial health of businesses of all sizes. This importance is hinged on many reasons. First, the amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient manner. Second, the management of working capital directly affects the liquidity and the profitability of a firm, and consequently its net- worth (Smith, 1980). Working capital management therefore aims at maintaining a balance between liquidity and profitability in conducting the day to day operations of a business concern.

Beaumont and Begemann (1997) emphasized that the major concepts of the working capital management are profitability and liquidity. They point out that there exists a trade-off between profitability and liquidity. Thus, the relationship between profitability and working capital helps understand the relationship between profitability and liquidity, which represents the dual goals of the working capital management. Although it seems that scholars who have written on this relationship have not completely synthesized their various hunches into a theory, there is noticeable consistency in the use of few guiding concepts in working capital management literature.

Working capital management is an important component of corporate finance because it directly affects the liquidity and profitability of the company. Indeed, interaction between working capital management practices and profitability should be a major area of research focus. According to Kargar and Bluementhal (1994), any firm that puts inaccurate working capital management procedures into practice may likely face bankruptcy even though its profitability is constantly positive. Hence, it must be avoided to exceed from optimal working capital level by making an emphasis on the aim of profit maximization or just in direct contradiction, to focus only on liquidity and consequently pass over to profitability. In general, excessive levels of working capital will result in a substandard return on assets while inadequate amount of it will lead to shortages and difficulties in maintaining day-to-day operations.

Moreover, working capital constitutes an important source of capital for small and medium scale enterprises as well as high flying firms. In most developing countries, these categories of firms face limited

access to long term capital markets. To overcome this constraint, these firms tend to rely more heavily on owner financing, trade credit and short term capital bank loans (Chittenden, Poutziouris & Michaelas, 1998; Saccurato, 1994). Hence, working capital position of such firms is not only an internal firm-specific matter, but also an important indicator of risk for creditors (Moyer, McGuigan & Kretlow, 1992). Firms with high amount of working capital are able to meet their short term obligations easily thereby decreasing the risk of default and enhancing their borrowing capability. And, as increase in borrowing capability is often perceived as indication of decrease in cost of debt (and also in cost of capital), it is possible to state that the efficiency in working capital management affects not just the short term financial Performance (profitability) but also long-term financial performance. Though efficient management of the working capital is crucial for both profitability and prosperity of any firm, not many studies have been conducted on the issue in Nigeria.

Bank is the main financial institution which plays an important role in the economic development of the nation. It is the backbone as well as the foundation for the development of the country. Its principal operations are concerned with the accumulation of temporary idle money of the public for advancing to others for expenditures. In other words, bank is an institution that deals in money and its substitutes and also provides other financial services. Banks accept deposit and make loans and derive a profit from the difference in the interest rates paid and charged, respectively. Depositors may be either individual or institutions. These deposits may be current, saving or fixed and the tenure depends upon the mutual agreements between the bank and with either an individual or institutions. The tenure of the loan may vary as per the demand, criteria and the usefulness of the loan. Some banks also have the power to create money. The principal types of banking in the contemporary industrial world are commercial banking and central banking. A commercial banker is a dealer in money and in substitutes for money, such as cheques or bills of exchange. The banker also provides a variety of other financial services. The basis of the banking business is borrowing from individuals and firms, and occasionally, receiving “deposits” from them. With these resources and also with the bank’s own capital, the banker makes loans or extends credit and also invests in securities. The banker makes profit by borrowing at one rate of interest and lending at a higher rate and by charging commissions for services rendered.

Commercial banks are the major financial institutions that play quite an important role in the economic development as well as in saving and investment sectors. Commercial banks are suppliers of finance for trade and industry and play a vital role in the economic and financial life of the country. They also provide an opportunity in the development of individual industries, trade and business organization by investing savings and collected deposits. By investing the saving and collected deposits in the productive sectors, they help in the formation of capital. Besides, they also render numerous services to customers with a view to providing facilities to their economic and social life in the community. A bank must always have cash balances in hand in order to pay its depositors upon demand or when the amounts credited to them becomes due. It must also keep a proportion of its assets in forms that can readily be converted into cash. Only in this way the confidence in the banking system can be maintained. Working capital is the lifeblood of the organization. To sustain the confidence of the public, especially the customers, the organization should always get ready to meet its obligations.

Working capital management is an important aspect of financial management. It is the lifeblood and controlling nerve centre for any types of business organization because without the proper control of it, no business can run smoothly (Joshi, 2013). The management of current assets and current liabilities is necessary for daily operations of any organizations. Thus, it plays the vital role in the success and failure of the organizations as it deal with the part of assets, which are transformed from one form to another during the course of manufacturing cycle. Therefore, the role of working capital management is more significant for every business organization irrespective of their nature.

Working capital management has to do with the administration of all aspects of current assets, namely cash, marketable securities, stock and current liabilities. It is the functional area of finance that covers all the current accounts of the firm. It is concerned with the adequacy of current assets as well as the level of risk posed by current liabilities. Working capital management is an aspect of financial managements that seeks proper policies for managing current assets, liabilities and practically for maximizing the benefits from managing working capital.

Profitability is the ability to earn profit from all the activities of an enterprise. It indicates how well management of an enterprise generates earnings by using the resources at its disposal. It is composed of two words profit and ability. The word profit represents the absolute figure of profit but an absolute figure alone does not give an exact ideas of the adequacy or otherwise of increase or change in performance as shown in the financial statement of the enterprise. The word ‘ability’ reflects the power of an enterprise to earn profits, it is called earning performance. Earnings are essential requirements to continue the business. So we can say that a healthy enterprise is that which has good profitability. Profitability may be defined according to Weston and Brigham (1977) as the net surplus of a large number of policies and decisions. This study therefore examines the impact of working capital management on the profitability of Deposit Money Banks in Nigeria. It was therefore

hypothesised that working capital management has no significant effect on the profitability of Deposit Money Banks in Nigeria.

2.1 Literature Review and Theoretical Framework

Many researchers investigated the impact of working capital management on profitability. Most of these past researches demonstrated that efficient working capital management leads to greater profitability while other researchers are on the contrary opinion. Smith (1980) conducted a study on Profitability and Liquidity and suggested that working capital management directly influence risk and profitability of a firm. Hence it can be inferred that effective working capital management can increase the financial strength of a business. Soenen (1993) also performed an analysis of working capital management and its relationship with financial performance. His study was based on US firms and after the study he suggested that if the length of net trade cycle increases then it affects the return on investment negatively.

The Working Capital management is regarded as an essential part of financial management of a firm (Joshi, 1995). Lyroudi and Lazaridis (2000) investigated the relationship of liquidity and cash conversion cycle for the food industry of Greece. They concluded that a considerable positive relationship exists among Cash Conversion Cycle and current ratio, average age of inventory and average collection period. Also they located an inverse relationship between CCC and average payment period. They concluded that there was no statistically significant relationship between variables used for liquidity measurement and that used for profitability measurement. Also they suggested that cash conversion cycle had no significant relationship with debt ratio.

Working capital management and profitability relationship has been explored by many other researchers as well. Mallik, Sur, and Rakshit (2005) evaluated Indian pharmaceutical industry. They discovered that profitability and liquidity do not have any significant relationship for these firms. Two researchers namely Meszek and Polewski (2006) analyzed the construction sector. Their work targeted mainly the strategies which should be used for the working capital management in construction sector. They have not worked to evaluate the overall working capital management effectiveness and financial performance of construction sector.

The study of Amir Shah and Sana (2006) was based on a period of five years i.e. 2001-2005. They used working capital ratios to determine the effect of working capital management on financial performance. These working capital ratios include inventory turnover, current ratio, quick ratio, average collection period and average payment period. They used correlation analysis and OLS method to reach the results. Finally they revealed that Gross profit is negatively associated with all working capital ratios except number of days payable.

In a study on small manufacturing firms, Padachi (2006) analyzed working capital management and its relation with profitability by examining a sample of manufacturing firm of Mauritius. Period of the study was six years i.e. 1998-2003. He used days of receivables, inventory turnover, cash conversion cycle and days of payables as explanatory variables, and return on total assets (ROA) as dependent variable. They used regression analysis to find out the results. They found that paper and printing industry showed greater scores for different working capital components amongst the overall manufacturing industry. These greater scores affect the profitability of this industry positively. Finally they concluded that if a firm will invest heavily in its inventory and accounts receivables then the profitability of that firm would be lower.

In Nigeria,

Vishnani and Shah (2007) from their study on Indian consumer electronic industry discovered that profitability for the overall industry had no recognized relationship with liquidity, but majority of the companies belonging to this industry showed a positive association for profitability and liquidity. Ganesan (2007) conducted a study on Telecommunication & equipment industry by taking 349 firms of this sector. The time period of this study was 7 years i.e. 2001-2007. He declared that in this industry effective working capital management and financial performance do not have any significant inverse relationship with each other. He also indicated that there exists a strong and inverse association between financial performance and liquidity.

Raheman and Nasr (2007) performed an analysis on 94 firms listed at KSE, based on a time span of 6 years from 1999 to 2004. They have taken different working capital ratios such as Net Operating Profitability, Debt ratio, current assets to total assets ratio, cash conversion cycle, average collection period, inventory turnover, average payment period, current ratio and natural logarithm of sales. They suggested that profitability and working capital management are negatively related to each other. Afza and Nazir (2008) reviewed their previous study to estimate the impact of different types of working capital management policies on financial performance of firms in different sectors. For this they used a sample of 263 non-financial firms belonging to 17 different sectors listed at KSE from1998 to 2003. The secondary data was collected from the financial reports of selected companies and also from the publications of State Bank of Pakistan. There are two types of working capital management policies namely aggressive working capital management policy and conservative working capital management policy. In aggressive working capital management policy a firm places less amount of capital in current assets to earn more profit from fixed assets, whereas in conservative working capital management policy firms use more capital as current assets. For the measurement of the degree of

aggressiveness they used current liabilities to total assets ratio (CLTAR) and current assets to total assets ratios (CATAR). To locate the impact of these policies on the performance of firms they used Return on Equity (ROE) and Return on Assets (ROA). Results were found by using regression analysis. They found an inverse relationship between degree of aggressiveness of these policies and profitability.

The study of Binti Mohamad and Mohd Saad (2010) was based on secondary data of 172 firms of Malaysia. They evaluated the impact of various components of working capital on profitability and market value of the firms. The study covered a time span of five years from 2003 to 2007. For this purpose they used different working capital components namely cash conversion cycles (CCC), debt ratio (DR), current assets to total assets ratio (CATAR), current liabilities to total assets ratio (CLTAR)and current ratio (CR),. To see the effect of these working capital components on financial performance they used Tobin's Q (TQ), return on invested capital (ROIC) and return on assets (ROA) as a measurement of financial performance of the selected firms. To deduce the results they used correlations and multiple regression analysis. The results showed that there exists an inverse relationship between different working capital components and performance of firms.

Raheman, Afza, Qayyum, and Bodla (2010) studied 204 manufacturing firms in Pakistan to explore the impact of working capital management on the performance of a firm. The study was based on 10 years i.e. 1998-2007. They took average age of inventory, average payment period, average collection period, current ratio (CR), current liabilities to total assets ratio (CLTAR), gross working capital turnover ratio (GWCTR), current assets to total assets ratio (CATAR), sales growth (SG), size of the firm as natural logarithm of sales (LOS) and debt ratio (DR)as independent variables. In contrast, Net Operating Profitability (NOP) was taken as a dependent variable. Results of their study demonstrated that performance of firms is significantly related to cash conversion cycle and average age of inventory. They also described that Pakistani firms normally follow conservative policy for management of working capital i.e. they prefer to place more capital in liquid assets to avoid the risks of less availability of funds for daily operations. Finally they suggested that these firms need effective management and proper financing as well.

Another researcher Danuletiu (2010) conducted an analysis on 20 companies of Alba country. He assessed the effect of working capital management efficiency on the financial performance of the companies for a period of five years i.e. 2004 to 2008. For his analysis he used net working capital (NWC) as a measure of long-term financial balance, working capital necessary (WCN) as a measure of short-term financial balance and net treasury (NT) a difference of both NWC and WCN. Return on Assets (ROA), Return on Sales (RS) and Return on equity (ROE) were used to measure the profitability. To find the results, Pearson correlation analysis was used. The study concluded that profitability has an inverse relationship with working capital management components.

Ikram ul Haq, Sohail, Zaman, and Alam (2011) also carried out a study using data of 14 companies from cement sector of Pakistan. The study was based on six years i.e. 2004-2009. They used Current Ratio (CR), Current assets to total assets ratio (CATAR), Liquid Ratio (LR), Inventory Turnover ratio (ITR), Age of Debtors (AOD), Current assets to total sales ratio (CTSR) and Age of Creditors (AOC) as predictors and Return on investment (ROI) as dependent variable for this purpose. To produce the results they used statistical techniques of regression and correlation analysis. They realized that a moderate relationship exists between financial performance and working capital management for this purpose. To produce the results they used statistical techniques of regression and correlation analysis. They realized that a moderate relationship exists between financial performance and working capital management.

Bilal, Naveed, and Taliv, (2011) investigated the impact of WCM on profitability of the companies listed at Karachi Stock Exchange. Results indicate a positive relationship between WCM and profitability. Azam and Haider (2011) investigated the impact of WCM on firms' performance for non-financial institutions listed in Karachi Stock Exchange. The findings reveals that WCM has an impact on firms' performance and indicate that managers of the firms can add value to their share holder through reducing inventory size, cash conversion cycle and net trading cycle. Further, if days of supplier's payment are increased then overall firm's performance also improves.

Further, Bieniasz and Gołas (2011) have conducted a research to examine the influence of WCM on the food industry enterprises profitability in Poland and selected countries in the Eurozone. The research concluded that the food industry with the shortest working capital cycles help to obtain the higher rates of profitability. Further results indicate that the cycles of inventory, accounts receivables and current liabilities were negatively correlated with the profitability.

2.2 Theoretical Framework

Several theories have been propounded by various scholars on working capital liquidity and performance/profitability of corporate bodies. Some few ones which are relevant to the study are highlighted below:

2.2.1 Trade –off Theory

Under perfect capital market assumptions holding cash neither creates nor destroys value. The firm can always raise funds from capital markets when funds are needed without transaction cost. The trade-off theory suggests that firms target an optimal level of liquidity to balance the benefit and cost of holding cash. The cost of holding cash includes low rate of return of these assets because of liquidity premium and possibly tax disadvantage. The benefits of holding cash are in twofold:

- The firms save transaction costs to raise funds and do not need to liquidate assets to make payments.
- The firm can use liquid assets to finance its activities and investment if other sources of funding are not available or are extremely expensive.

Jensen (1986) presents agency problem associated with free-cash flow. He suggests that , free cash flow problem can be somehow controlled by increasing the stake of managers in the business or by increasing debt in the capital structure, thereby reducing the amount of "free" cash available to managers. As theory, the use of trade- off model cannot be ignored, as it explains that, firms with high leverage attracts high cost of servicing the debt thereby affecting its profitability and it becomes difficult for them to raise funds through other sources. Holding cash on that point is not only maintained by the smaller firm but also larger firms. So firm size does not matter when the question of bankruptcy interrupt the capital structure decision. Therefore, for the purpose of this study, trade-off-theory is used to anchor and underpin the variables of the study.

3.1 Research Methodology and Model Specification

3.2 Research Design

The research design used for the study is the ex-post facto research design because of the cause and effect relationship to be derived from the regression. Regression is used to test the influence of working capital on profitability of listed deposit money banks in Nigeria. The research method adopted is the descriptive research method as it helps describes a particular phenomenon in the study. The population of this study consists of all the sixteen (16) deposit money banks that are listed on the Nigerian Stock Exchange (NSE) as recorded in the NSE Fact Book of 2013. The sampling technique used is purposive sampling. This was because the study considered those banks which were listed before a certain period of time**.** Thirteen out of the seventeen deposit money banks were sampled for this study because these banks had been listed before 2007 and their data are available for the period of study. The data for the study was extracted from secondary source through annual reports and accounts of the sampled banks.

3.2.1 Measurement of Variables

The study used one dependent and three independent variables. The dependent variable, profitability was represented by Return on Asset while the independent variables were current ratio, quick ratio, cash ratio.
The table below presents the summary of variables and their measurements as used in the study.

Table 3.1: Summary of Variables and Measurement

No	Variable	Measurement
1	Profitability	Profit after tax to total asset
2	Current ratio	Current asset to current liabilities
3	Quick ratio	Current asset less stock to current liabilities
4	Cash ratio	Total Cash to current liabilities.

Source: Compiled by the Researcher, 2014.

3.3 Model Specification

Model specification for this study was derived from the research efforts of previous contributors in this area of study. To study the Influence of Current ratio, Quick ratio, and Cash ratio on Profitability of listed Deposit money banks in Nigeria

$$ROA_{it} = \beta_0 + \beta_1(CUR)_{it} + \beta_2(QUR)_{it} + \beta_3(CAR)_{it} + B_4\,(FS) + \mu_{it}$$

Where;

ROA = Return on Asset
CUR = Current ratio
QUR = Quick ratio
CAR = Cash ratio
FS = Firm Size
β_0 = the intercept/constant;
$\beta_1, \beta_2, \beta_3$ = are the parameters;
μ = the residual/error term

3.3.1 Method of Data Analysis

Panel Fixed effect and Random effect model were conducted to test the model of the study. Longitudinal panel data used to account for individual heterogeneity of the sample firms. Simple regression was used in determining

the level of working capital management influence on profitability of listed Deposit money banks in Nigeria. Fixed and Random effect Regression model were estimated using Stata 10 as a tool of analysis. Various tests were conducted, ranging from multicolinearity test, normality test, heteroscedasticity test, hausman specification test and langrangian multiplier test. The choice of this was based on the fact that both the technique and tool were more informative (i.e. more variability, less collinearity, more degrees of freedom), as estimates were more efficient under it. Also they allowed the study of individual dynamics (e.g. separating cohort effects). While this technique and tool gives information on the time-ordering of events, they also allowed for control of individual unobserved heterogeneity.

4.1 Results and Discussion

4.2 Descriptive Statistics

The sample descriptive was first presented in Table 4.1 where the minimum, maximum, mean, standard deviation, and skewness of the data for the variables used in the study were described.

Table 4.1: Descriptive Statistics of the Variables

Variables	Min	Max	Mean	Std. Dev.	Skewness	N
ROA	-43.54	24.68	3.428	12.186	-1.110	65
CUR	0.09	1.86	0.796	0.427	0.199	65
QUR	0.01	0.84	0.334	0.212	0.514	65
CAR	0.09	0.99	0.614	0.286	-0.317	65
FS	18.48	21.62	19.991	0.887	0.261	65

Source: Descriptive Statistic Results Using STATA 10

Table 4.1 shows the detail account of the descriptive statistics for the dependent and independent variables respectively (ROA = Return on asset, CUR = current ratio, QUR = quick ratio, CAR = cash ratio, FS = Firm Size).

On average, during the period of the study, the return on asset have a mean value of 3.428, current ratio recorded an average of 0.796, also the quick ratio recorded an average value of 0.334 while cash ratio mean stood at 0.614. This indicates that cash held by the banks during the period was far and above 50%, while the quick which considered every other item except stock indicates that without the stock, its ability to meet up with current liability is about 33% on average. This implies that about 46% percent of the current assets in the listed deposit money banks constitute stock. Amongst the Independent variables, the firm size had the highest standard deviation of 0.887 signifying its low contribution in enhancing profitability of listed deposit money banks in Nigeria. While quick ratio had the lowest standard deviation among the independent variables which indicated its highest contribution in enhancing profitability of listed Deposit Money banks in Nigeria.

Finally, the skewness statistics revealed that the data obtained for all the variables including dependent and independents were not abnormal. Then, the study is considered valid when it is based on valid data or information, and this information is considered valid if obtained from the data quality. Therefore, the result from the normality test signified the normality of the data and further substantiated the validity of the regression result.

4.3 Correlation Matrix

Table 4.3 displays the correlation values between dependent and the independent variables and also the relationship between the independent variables themselves. The values were gotten from the Pearson correlation of two-tailed significance. It shows the correlation matrix with the top values displaying the Pearson correlation coefficient between all pairs of variables and the asterisk beside the Pearson correlation coefficient showing the two-tail significance of these coefficients. Therefore, looking at the pattern of correlation between the regressor and the regressand, it is observed that three of the variables (current ratio, cash ratio, and Firm size) correlate perfectly with return on asset, while one of them (quick ratio) was not too correlated with return on asset. On the other hand, the relationships between most of the explanatory variable are less minimal and could be neglected.

Table 4.2: Correlation Matrix of the Dependent and Independent Variables

	ROA	CUR	QUR	CAR	FS
ROA	1				
CUR	.3193*	1			
QUR	.0218	-.4054*	1		
CAR	-.3383*	-.4142*	.5371*	1	
FS	.3537*	-.2203	.3585*	.1921	1

Source: Correlation Matrix Results Using STATA 10

*. Correlation is significant at 0.01 level (2-tailed)

**. Correlation is significant at 0.05 level (2-tailed)

Table 4.2 indicates that return on asset was 31% positively and significantly correlated with current ratio, while return on asset and cash ratio recorded significant and negative relationship between their self. Quick ratio was positively but weakly correlated with return on asset. Also firm size used as control variable in this study recorded positive, strong and significant relationship with return on asset to the tune of about 35%. The relationships between some of the independent variables were strong except for few of them that were weakly related, though this may not be enough to conclude that multicolinearity exist among the independent variables of the study until the variance inflation factor and tolerance values are far and above the limits expected. Therefore, the tolerance value and the variance inflation factor (VIF) are two advanced measures of assessing multicolinearity between the explanatory variables. The variance inflation factor and tolerance are computed using Stata and were found to be consistently smaller than ten and one respectively, indicating absence of multicolinearity (Neter, Kutner, Nachtsheim, & Wasserman, 1996; Cassey & Anderson, 1999; Tobachnick & Fidell, 1996). This shows the appropriateness of fitting the study model with four independent variables.

4.4 Analysis and Interpretation of Regression Result

This session presents the regression result of the dependent variable (ROA) and the independent variables of the study (current ratio, quick ratio, cash ratio and firm size). The presentation was followed with the analysis of the association between the dependent variable and each individual independent variable and also the cumulative analysis was also captured.

Table 4.3: Summary of Regression Result

Variables	Coefficient	t-Statistics	P-values
Constant	*-40.64716*	-1.24	0.221
CUR	*8.867916*	2.46	0.017
QUR	*17.8888*	2.21	0.031
CAR	*-17.31841*	-2.98	0.004
FS	*2.084423*	1.27	0.209
R^2			0.2611
Adjusted R^2			0.2118
F-Stat			5.30
F-Significance			0.0010

Source: Result output from STATA 10

The cumulative R^2 of (0.2611) which is the multiple coefficient of determination gave the proportion of the total variation in the dependent variable explained by the independent variable jointly. Hence, it signified that 26% of the total variation on return on asset of listed Deposit money banks in Nigeria was caused by their current ratio, quick ratio, cash ratio and firm size. The adjusted R^2 of 0.2118, indicates that even after adjusting for error, the independent variables of the study can still explain the dependent variable to the tune of 21%

The F-statistics of 5.30 which is significant at one percent indicates that the return on asset and working capital management model was fit. This indicates that the independent variables are properly selected, combined and used. It implies that for any change in working capital management of listed Deposit money banks in Nigeria; their return on asset will be directly affected. The value of F-statistic which was statistically significant at a level of 0.000 means that there is a 99.9 percent probability that the relationship among the variables was not due to mere chance.

i. Current ratio and return on asset

From the Table 4.3, it was observed that the t-value for current ratio (CUR) was 2.46 and a coefficient value of 8.867916 with significant value of 0.017. This signifies that current ratio is positively, strongly and significantly influencing the return on assets of listed Deposit money banks in Nigeria. This also implies that for every one percent increase (1%) in current ratio, the return on asset of listed Deposit money banks in Nigeria will increase by 8.87. This may be as a result of argument put forward that too high current ratio suggest suggest ability to meet up with current liabilities as at when due, therefore, (Pandey, 2005; Van Horne, and Wachwicz, 2005, Egbide and Enyi, 2008) suggest that firms should ensure that average level of funds are held in current assets; in order to have a higher profitability.

ii. Quick ratio and return on asset

The regression results revealed that quick ratio as depicted in Table 4.3 have a t-value of 2.21 and a coefficient value of 17.8888 which is significant at 5%. This indicates that quick ratio has positive, strong and significant impact on return on asset of listed Deposit money banks in Nigeria. Also, this implies that for every one percent (1%) proportionate increase in the quick ratio, the return on asset of the listed deposit money banks in Nigeria will increase by 17.89. This may be as a result of the fact that, the stock which can be regarded as the weak form of liquidity than cash and other items that form the asset has been removed from the calculation of quick ratio and as such its influence on performance was highly felt.

iii. Cash ratio and return on asset

The cash ratio shows a t-value of -2.98 and a beta value of -17.31841 with significant value of 1%. This means that cash ratio (CAR) is negatively, strongly and significantly influencing return on asset of listed Deposit money banks in Nigeria. It connotes that when there is an increase in cash ratio by one percent (1%), the return on asset of listed Deposit money banks will decrease by 17.32. This may be as a result of the fact that, the banks may not need to hold some much cash to meet up their daily activities especially when they have more than enough idle cash, it is better invested in order to generate more return than keeping the cash idle.

Finally, the control variable firm size is positively but statistically not significant. This can be observed from the regression result above with a beta coefficient of 2.08 and p- value of 0.209. This shows that even without controlling for firm size, the model of the study can stand.

4.4 Test of Validity and Reliability

In order to make better the validity of all statistical inferences to be drawn for the study, this section presents the result of robustness test conducted. The robustness test included multicolinearity test and serial correlation test.

i. Multicolinearity test: This was conducted to check whether there was a correlation between the independent variables which will mislead the result of the study. Table 4.2 above presents the matrix of the linear relationships among the independent variables of the study. From the observation, a variable with higher correlation above 0.50 was quick ratio and cash ratio at (0.5371). Despite this result, the threat is considered not too grievous because the correlations between the Independent variables were both positive and negative. Furthermore, the low magnitude of the correlations amongst the explanatory variables implies that multicolinearity was not a problem in the sample of the study. In a bid to prove and substantiate the absence of serious multicolinearity between the exogenous variables, colinearity diagnostics tests are observed as the tolerance values and the variance inflation factors (VIF) values portrays no multicolinearity in the data.

The tolerance value and the variance inflation factor (VIF) are two advanced measures of assessing multicolinearity between the explanatory variables. The variance inflation factor and tolerance are computed using STATA and were found to be consistently smaller than ten and one respectively, indicating absence of multicolinearity (Neter, Kutner, Nachtsheim, & Wasserman, 1996; Cassey & Anderson, 1999). This shows the appropriateness of fitting the study model with four independent variables. In addition, the absence of multicolinearity between the explanatory variables were further substantiated by the tolerance values which were consistently smaller than 1.00. (Tobachnick & Fidell, 1996).

ii. Heteroscedasticity Test: Breusch-Pagan / Cook-Weisberg is used to test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. The alternative hypothesis states that the error variances increase (or decrease) as the predicted values of Y increase, that is, the bigger the predicted value of Y, the bigger the error variance is. A large chi-square would indicate that heteroscedasticity was present. In the result obtained from the heteroscedasticity test conducted in this work, the chi-square value (1.33) was small and the p-value (0.2495) is large, indicating heteroscedasticity was absent and this shows non-violation of assumption number four of classical linear regression model which states that there must be constant variance, that is, the disturbances u_i appearing in the population regression function are homoscedastic. Therefore, despite the absence of heteroscedasticity, the researcher decided to conduct Fixed and Random effect model. This will enable whatever conclusions drawn or inferences made to be free of mislead.

iii. Cross-Sectional Dependence Test: This is called the contemporaneous correlation used to check whether the individual deposit money banks specific characteristics in the panel are dependent on each other or not. Also, whether the residuals are correlated across firms in the panel. Cross-sectional dependence can lead to biasness in the overall results of the study. Breusch-Pagan Lagrange multiplier (LM) test was used to ascertain the presence of cross section dependence. The result of the test revealed the absence of cross-sectional dependence in the panel of the study samples because the chi square probability was not significant (see Appendix A).

4.5 Hypothesis Testing and Discussion of Findings

This section presents the analysis carried out in order to test the hypotheses stated in chapter one. Also, robustness checks were conducted to examine the outputs under varying circumstances. The robustness test gave greater reliability and credibility to the overall findings of the study. The regression result used for the hypotheses test is presented in Table 4.4.

Table 4.4: Variable Coefficients

Variables	t-Values	P. Values	Tolerance/VIF
Current ratio	2.46	0.017	0.774960 / 1.29
Quick ratio	2.21	0.031	0.617584 / 1.62
Cash ratio	-2.98	0.004	0.664923 / 1.50
Firm size	1.27	0.209	0.864262 / 1.16

Source: Result output from STATA 10

Table 4.4 shows that the majority of the variables are positive, which are inclusive of both independent variable (current ration, quick ratio) and the control variables (Firm size) while one of the independent variables (cash ratio) was negative. All the independent variables except the control variable were significant at 1% and 5% level. This revealed that all the Working capital management variables used in the study explain the attitude of return on asset of listed Deposit money banks in Nigeria to a large extent except for firm size.

The results for each hypothesis are presented below:

Hypothesis 1

H_{01}: Current ratio has no significant impact on return on asset of listed Deposit money banks in Nigeria

Current asset was found to be significant and positively associated with the return on asset at 5% level of significant indicating that larger proportion of current ratio increases the return on asset of listed Deposit money banks in Nigeria. Therefore, current ratio has significantly affected the profitability.

In view of the above result reported in respect of current ratio showing that the variable is statistically significant in influencing the return on asset, there is therefore, sufficient evidence of rejecting null hypothesis one of the studies.

H_{02}: Quick ratio has no significant influence on return on asset of listed Deposit money banks in Nigeria

Quick ratio was found to be positively significant at 5% level, which means that it is associated with the return on asset of listed Deposit money banks in Nigeria. Therefore, quick ratio has significantly affected the profitability.

In line with the above result reported as regards quick ratio, it shows that the variable is statistically significant in influencing the return on asset, and this therefore, provides evidence of rejecting null hypothesis 2 of the study.

H_{03}: Cash ratio has no significant effect on return on asset of listed Deposit money banks in Nigeria

Cash ratio was found to be negative and statistically significant, which means that it is significantly associated with the profitability of listed Deposit money banks in Nigeria. Therefore, cash ratio has significantly affected the profitability.

Owing to the above outcome reported as regards cash ratio showing that the variable was statistically significant in influencing the profitability, thus providing an evidence of rejecting null hypothesis three of the study.

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

From the regression result of the study, it shows that liquidity has really and strongly impacted on the profitability of listed deposit money banks in Nigeria, it is therefore concluded that the liquidity in the banking sector within the period of the study has helped to improve their profitability.

Also, the study concluded that both current ratio and quick ratio has significantly, strongly and positively influenced the profitability of listed deposit money banks in Nigeria, while the cash ratio was concluded to have significant, strong and negative impact on the performance of the banks.

However, the firm size used as control variable in this study was concluded not to have any significant influence on the performance of listed deposit money banks in Nigeria. Therefore firm size is not a major determinant factor of bank's performance but their level of liquidity.

5.2 Recommendations

The recommendation of this study are made based on variety of people/organizations that are involved directly or indirectly with working capital management and performance processes in listed deposit money banks in Nigeria. Therefore, Management of the banks should ensure as much as possible that:

i. the management should put more attention on their liquidity in order to maintain an adequate liquidity in the sector because the regression result of the study has empirically prove that the higher the current ratio the more the profitability of deposit money banks will increase, so as a result of this, the listed deposit money banks should invest more in current asset because it will have a positive impact on the performance of listed deposit money banks in Nigeria.

ii. the management should increase the quick ratio as the result revealed that the higher the quick ratio, then the higher the profitability of listed deposit money banks in Nigeria, therefore the listed deposit money banks in Nigeria should try and maintain a higher quick ratio as it will have a positive impact on their profitability.

iii. The management should reduce the amount held in cash as current asset and concentrate more in investing them, so that it could yield higher return rather than tie down the idle cash. If this is done, it will go a long way in enhancing the profitability of listed deposit money banks in Nigeria.

5.4 Limitations of the Study

Like any other research, the result of the study is subjected to some limitation due to the following factor. The study is only limited to a particular sector, that is, the listed Deposit money banks in the Nigerian Stock Exchange. Therefore, the findings and recommendation is only applicable to Deposit money banks as the working capital management may vary in other sectors.

5.5 Suggestions for Further Research

This work investigates the impact of working capital management on profitability of listed Deposit money banks in Nigeria and is believed to have paved way for further research in the following areas.

i. The study only made use of three liquidity proxies (current ratio, quick ratio and cash ratio). Therefore, the study suggest to future researchers who might be interested in this area to include measurement of liquidity

ii. The study made use of return on asset to proxy profitability. The study therefore suggests that further studies in this area should make use of other profitability measurement such as return on equity, net profit margin.

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Appendix A

```
. su roa cur qur car fs, detail
```

roa

Percentiles		Smallest		
1%	-43.54	-43.54		
5%	-16.01	-31.06		
10%	-8.59	-23.9	Obs	65
25%	.01	-16.01	Sum of Wgt.	65
50%	4.51		Mean	3.427846
		Largest	Std. Dev.	12.1861
75%	9.4	22.01		
90%	20.36	22.05	Variance	148.501
95%	22.01	23.81	Skewness	-1.109656
99%	24.68	24.68	Kurtosis	5.959632

cur

Percentiles		Smallest		
1%	.09	.09		
5%	.19	.12		
10%	.23	.18	Obs	65
25%	.42	.19	Sum of Wgt.	65
50%	.85		Mean	.7961538
		Largest	Std. Dev.	.4269649
75%	1.11	1.43		
90%	1.29	1.48	Variance	.182299
95%	1.43	1.78	Skewness	.1985602
99%	1.86	1.86	Kurtosis	2.291569

qur

Percentiles		Smallest		
1%	0	0		
5%	.04	0		
10%	.05	.01	Obs	65
25%	.17	.04	Sum of Wgt.	65
50%	.3		Mean	.3344615
		Largest	Std. Dev.	.2122133
75%	.46	.73		
90%	.68	.73	Variance	.0450345
95%	.73	.79	Skewness	.5139268
99%	.84	.84	Kurtosis	2.536967

car

Percentiles		Smallest		
1%	.09	.09		
5%	.14	.12		
10%	.19	.14	Obs	65
25%	.36	.14	Sum of Wgt.	65
50%	.69		Mean	.6143077
		Largest	Std. Dev.	.2857335
75%	.88	.98		
90%	.97	.98	Variance	.0816437
95%	.98	.98	Skewness	-.3165493
99%	.99	.99	Kurtosis	1.707641

fs

Percentiles		Smallest		
1%	18.48	18.48		
5%	18.6	18.52		
10%	18.82	18.53	Obs	65
25%	19.22	18.6	Sum of Wgt.	65
50%	20.03		Mean	19.99138
		Largest	Std. Dev.	.8867265
75%	20.64	21.31		
90%	21.23	21.4	Variance	.7862839
95%	21.31	21.49	Skewness	.0261114
99%	21.62	21.62	Kurtosis	1.857159


```
. pwcorr roa cur qur car fs, star (0.05) sig
```

	roa	cur	qur	car	fs
roa	1.0000				
cur	0.3192*	1.0000			
	0.0095				
qur	0.0218	-0.4054*	1.0000		
	0.8629	0.0008			
car	-0.3383*	-0.4142*	0.5371*	1.0000	
	0.0058	0.0006	0.0000		
fs	0.1169	-0.2203	0.3585*	0.1921	1.0000
	0.3537	0.0778	0.0034	0.1253	

```
. reg roa cur qur car fs
```

Source	SS	df	MS
Model	2481.4178	4	620.354449
Residual	7022.6482	60	117.044137
Total	9504.066	64	148.501031

```
Number of obs =      65
F(  4,    60) =    5.30
Prob > F      =  0.0010
R-squared     =  0.2611
Adj R-squared =  0.2118
Root MSE      =  10.819
```

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cur	8.867917	3.597932	2.46	0.017	1.670983	16.06485
qur	17.8888	8.108946	2.21	0.031	1.668493	34.10911
car	-17.31841	5.804141	-2.98	0.004	-28.92842	-5.708402
fs	2.084423	1.640486	1.27	0.209	-1.197038	5.365884
_cons	-40.64716	32.83386	-1.24	0.221	-106.3247	25.03033

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of roa

         chi2(1)      =     1.33
         Prob > chi2  =   0.2495
. vif
```

Variable	VIF	1/VIF
qur	1.62	0.617584
car	1.50	0.664923
cur	1.29	0.774960
fs	1.16	0.864262
Mean VIF	1.39	


```
. xtreg roa cur qur car fs, fe

Fixed-effects (within) regression               Number of obs      =        65
Group variable: id                              Number of groups   =        13

R-sq:  within  = 0.1377                         Obs per group: min =         5
       between = 0.0558                                        avg =       5.0
       overall = 0.0015                                        max =         5

                                                F(4,48)            =      1.92
corr(u_i, Xb)  = -0.4351                        Prob > F           =    0.1230

------------------------------------------------------------------------------
         roa |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         cur |   -4.18997   6.585334    -0.64   0.528    -17.43067    9.050731
         qur |   23.31548    8.86534     2.63   0.011     5.490515    41.14044
         car |  -7.082633   8.111251    -0.87   0.387     -23.3914     9.22613
          fs |  -.2962038   2.186435    -0.14   0.893    -4.692327    4.099919
       _cons |   9.238017   44.76001     0.21   0.837    -80.75801    99.23404
-------------+----------------------------------------------------------------
     sigma_u |  10.588229
     sigma_e |  9.1706507
         rho |  .57137646   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(12, 48) =     2.96                 Prob > F = 0.0037

. est store fixed
. xtreg roa cur qur car fs, re

Random-effects GLS regression                   Number of obs      =        65
Group variable: id                              Number of groups   =        13

R-sq:  within  = 0.0794                         Obs per group: min =         5
       between = 0.4656                                        avg =       5.0
       overall = 0.2453                                        max =         5

Random effects u_i ~ Gaussian                   Wald chi2(4)       =     11.69
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0198

------------------------------------------------------------------------------
         roa |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         cur |   6.339737   4.165565     1.52   0.128    -1.82462    14.50409
         qur |   19.62381   8.016096     2.45   0.014     3.91255    35.33507
         car |  -15.51313   6.219383    -2.49   0.013    -27.70289   -3.323359
          fs |   .4374606   1.739569     0.25   0.801    -2.972032    3.846953
       _cons |  -7.39858    35.30544    -0.21   0.834    -76.59598    61.79882
-------------+----------------------------------------------------------------
     sigma_u |  5.2003111
     sigma_e |  9.1706507
         rho |  .24331695   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed        random       Difference          S.E.
-------------+----------------------------------------------------------------
         cur |   -4.18997     6.339737      -10.52971        5.10046
         qur |   23.31548     19.62381       3.691666       3.786352
         car |  -7.082633    -15.51313       8.430492       5.206887
          fs |  -.2962038     .4374606      -.7336644       1.324537
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       13.14
                Prob>chi2 =      0.0106
```



```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        roa[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+------------------------------
                 roa |     148.501        12.1861
                   e |     84.10083       9.170651
                   u |     27.04324       5.200311

        Test:   Var(u) = 0
                             chi2(1) =      3.34
                          Prob > chi2 =      0.0674
```

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