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Working Capital Management and the Performance of Selected Deposit Money Banks in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author EJU designed the study, wrote the literature and the first draft of the manuscript. Author AOU carried out the analysis and reviewed the draft manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

The impact of working capital management on the liquidity and profitability of select deposit money banks in Nigeria was the main focus of this work. Ex-post facto research design was adopted for the study. Taro Yamane's statistical formula was used to determine the sample size of ten out of twenty two deposit money banks in Nigeria. Purposive sampling technique was used to select the samples. Two hypotheses were formulated to guide the study and were analyzed using descriptive statistics, Pearson's correlation coefficients and Regression analysis. The findings showed that there is significant positive relationship between banks' performance and bank size; there is a significant negative relationship between profitability and cash conversion cycle and leverage; there is a significant negative relationship between liquidity and creditors' payment period and leverage; and there is a significant positive relationship between liquidity and debtors' collection period, cash conversion cycle and credit risk. It is recommended that the Central Bank of Nigeria should review the minimum capital requirement to ₦50 billion and banks in 'trouble' should be advised to merge or to be acquired by other mega bank(s).

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1. INTRODUCTION

There is need for efficient working capital management of banks in Nigeria. Padachi [1] in his empirical study of the Mauritian Firms, between 1998–2003, established that many businesses suffer due to under-capitalization and liquidity challenges. Dekan [2] defines working capital management as a managerial accounting strategy that focuses on maintaining efficient levels of both components of working capitals – current assets and current liabilities, in respect to each other, to ensure that a company has sufficient cash flows in order to meet its short-term debt obligations and operating expenses. It is the management of various components of working capital in such a way that an adequate amount of working capital is maintained for the smooth running of a firm and the fulfillment of the twin objectives of liquidity and profitability (Ghash and Maji [3]).

However, it has been indicated in many studies that financial managers spend considerable time on problems that involve working capital decisions. Thus, financial managers are always in a dilemma of achieving desired trade-off between liquidity and profitability (Raheman and Nasr [4]; Elijelly [5]. This is because there is an inverse relationship between liquidity and profitability, and a business entity is required to maintain a balance between them. Pandey [6] states that the large holding of current assets, especially, cash, strengthens the firm's liquidity position and reduces riskiness but lessens the firm's overall profitability. Critten [7] adds that the majority of businesses become insolvent and distressed because of liquidity challenges, not necessarily due to lack of profitability. Raheman and Nasr [4], summarizes the situation this way:

> *If a firm does not care about profit, it cannot survive for a long period. On the other hand, if it does not care about liquidity and risk, it may face insolvency or liquidation.*

In 2009, 10 out of the 24 megabanks popularly called 'deposit money banks' (the commercial banks in Nigeria) were declared by the Central Bank of Nigeria (CBN) as 'troubled and uncertain' or 'banks in grave condition' – for having liquidity challenges, capital inadequacy and lack of sound risk management processes among others.

In spite of the stringent reforms and regulation in the Nigerian banking industry, the deposit money banks are not performing well. Most banks are facing liquidity and profitability challenges (Central Bank Nigeria Report, The Nation – Money Link, [8]). Liquidity in banking is the ability to convert current assets to cash to meet customers' demand deposits and other short term maturing obligations. The inability to meet maturing obligations or at extra cost is called liquidity risk. The term 'profitability' means the ability to earn profits by an enterprise on its static invested capital. It expresses the relationship between profits and capital, of which a firm is said to be successful if its profitability exceeds the weighted average cost of capital to the firm. The profitability acts as a yardstick to measure the operating efficiency of an enterprise. The term 'Bank Performance' relates to the level of success/failure of the banks in terms of liquidity profitability and risk management.

Three of the deposit money banks failed liquidity tests, that is, the banks recorded a decline of 30.0 percent being an liquidity ratio, while their capital adequacy ratios (CARs) declined from 18.33 percent to 2.39 percent of the 10 percent an ideal ratio with many banks recorded poor/slow growth profits [8]. In September 2014, it became headlines for newspapers that other mega banks are yearning to buy Enterprise Bank, Mainstreet Bank and KeyStone Bank (the nationalized banks in Nigeria).

Nobance [9] postulates that the way in which working capitals are managed can have significant impact on liquidity and corporate profitability of a firm, reversing the liquidity-profitability inverse relationship to direct one. Studies in United Kingdom (UK) and United States of America (USA) have shown that weak corporate financial managements – particularly, inefficient working capital management and inadequate long-term finance – are primary causes of banks' liquidity problems (Critten [4] and Dekan [2]). But in Nigeria, of the several factors affecting banks' performance, inefficient working capital management has not been considered as one. This situation has necessitated this study to examine the impact of working capital management on the liquidity and profitability of select deposit money banks in Nigeria. First Bank of Nigeria (FBN), Zenith Bank, United Bank for Africa (UBA), Stanbic IBTC,

Guaranty Trust Bank (GTB) – (International banks); Wema Bank, Fidelity Bank, First City Monument Bank (FCMB), Diamond Bank and Access Bank (Regional Banks) have been selected for the study.

To achieve the aim of this study, this question was raised: Does the management of working capital significantly affect select money deposit banks' performance in Nigeria?

Thus, the following null hypotheses (H_o) were formulated to guide the study as follows:

- **H_{O1}:** There is no significant relationship between working capital management and the select deposit money banks' profitability.
- **H_{O2}:** There is no significant relationship between working capital management and the select banks' liquidity.

The rest of this paper is organised as follows. Section two reviews the relevant literature on working capital management and banks performance. The conceptual framework is also discussed. Section three discusses the research methodology while section four presents the analysis of data and research findings. Section five concludes the research and provides necessary recommendations.

2. REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework

Aborode [10] defines working capital management as the balancing of the liquidity and profitability objectives of the firm as well as taking cognizance of risk. Akpan [11] describes working capital management as the management of short-term financial resources of a company in a way that guarantees minimum cost of funds for profitability and the maintenance of a sizeable level of liquidity consistent with short-term obligation demands. Pandey [6] defines working capital management as the administration of all current assets cash, marketable securities, accounts payable, bills payable, overdraft, etc) with the focus of maintaining liquidity position of the firm. Working capital management (WCM) refers to all management decisions and actions that ordinarily influence the size and effectiveness of the working capital. WCM is an essential part of financial management and contributes significantly to a firm's wealth creation as it directly influences organizational profitability and liquidity (Raheman and Nasr [4]). In summary, working capital management is concerned with the problem that arises in attempting to manage the current assets, current liabilities and the inter-relationship that exist between them. WCM means the deployment of current assets and current liabilities efficiently and effectively so as to maximize short-term liquidity and profitability.

2.2 Empirical Evidence

Evidence-based studies that examine the association between working capital management and banks' performance (liquidity and profitability) in developing nations are scarce, especially in Nigeria. This may be due to the greater attention given to manufacturing firms by developed nations which developing nations follow. Raheman, Afaza, Qayyum and Bodla [12] analyse the impact of working capital management on firm's performance in Pakistan for 1998–2007. In the study, balanced panel data is used in analysing 204 manufacturing firms listed on Karachi stock Exchange. The results indicate that cash conversion cycle, net trade cycle and inventory turnover in days are significantly affecting the performance of the firms. They conclude that working capital management plays a significance role in better performance of the manufacturing firms. Mandal, Mahavidyalayu and Burdwan [13] examine the efficiency of WCM and its impact on liquidity, profitability and non-insurable risks for Oil and National Gas Commission (ONGC) between 1998–2006. The study etablishes that WCM impact liquidity, profitability and non-insurance risk of ONGC.

Akoto, Awunyo-Vitor and Angmor [14] examine the relationship between working capital management practices and profitability of 13 manufacturing firms in Ghana, 2005–2009, using panel data method. The researchers observe that a significantly negative relationship exists between profitability and accounts receivable days, while the firms' cash conversion cycle, current assets ratio, size, current assets, turnover have significant positive influence on profitability. The study concludes that working capital management plays a vital role in the success of businesses because of its effect on profitability and liquidity. Agyei and Yeboah [15] examine the relationship between working management practices and profitability of 28 banks in Ghana using panel data methodology, 1999–2008 (cross-sectional observations). In the study, cash

operating cycle and accounts receivable period have significant positive relationship with the banks' profitability while accounts payable period exhibits significantly inverse relationship with profitability. Rahman and Nasr [4] investigate the relationship between WCM and corporate profitability for 94 firms listed on Karachi Stock Exchange using static measure of liquidity and ongoing operating measure of working capital management, 1999 –2004.

Lazaridis and Tryfonidis [16] examine the relationship between profitability and working capital management of 131 firms listed on the Athens Stock Exchange using panel data methodology, 2001-2004. The study establishes that working capital management has statistically significant inverse relationship with profitability, measured as gross operating profit, cash conversion cycle, accounts receivables days and inventory days. Findings show a significant positive association between profitability and accounts payable days. Recommendations were made to firms to enhance profitability and liquidity by prudently keeping their working capital management components (accounts receivables, accounts payables, etc,). Elijelly [5] examines the relationship between profitability and working capital management on a sample of 929 Saudi Firms spread across three industries using panel data methodology. In the study, that there is a significantly negative relationship between the firms' profitability and liquidity level, as measured by current ratio and cash conversion cycle. Also, that short cash conversion cycle among the industries and large firm size is associated with increase profitability.

Afza and Nazir [17] also examine the relationship between WCM and a firm's profitability for 204 non-financial firms listed on the Karachi Stock Exchange (KSE) using panel data methodology, from 1998 – 2005. The study shows significantly negatively relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. Quayyum [18] studies the effects of working capital management on liquidity of four corporations in cement industry of Bangladesh from 2005–2009 using the same methodology of Lazaridis and Tryfonidis [16]. The result of this study clearly shows significant level of relationship between the liquidity indices and various profitability indices as well as working capital components. Ahmad, Azim and Rehman [19] investigate the effect of working capital management on operational liquidity position of 148 manufacturing firms listed on Karachi Stock exchange in Pakistan. The study shows that tight credit policy, efficiency of inventory management, delayed payment policy and overall efficiency of working capital management have significant positive effect on firm's operational liquidity position while conservative strategy of investment in current assets and aggressive strategy of short-terms financing have negative effect on operation liquidity position of firms.

In summary, the studies reviewed above shows that working capital management plays a significant role in the success of any business organization due to its effect on profitability and liquidity.

3. METHODOLOGY

Ex-post facto research design was adopted. This design was deployed as it permitted the examination of independent variables in retrospect for their possible relationship with dependent variables. The population for this study consists of the 22 deposit money banks in Nigeria (commercial banks that survived consolidation reforms as at 2012).

Taro Yamane's Statistical Formula was used to select a sample size of ten out of the 22 money deposit banks in Nigeria at error term (e) of 0.24. Purposive sampling technique was adopted. This technique was adopted based on the ease with which the data can be collected from banks' websites as at November 2014. The study employed data on 10 banks listed on the Nigerian Stock Exchange covering the period from 2012 to 2013, the period after deposit money banks in Nigeria adopted the International Financial Reporting Standards (IFRSs). Data was obtained from the on-line published annual reports of the select banks, specifically, statement of financial position, statement of comprehensive income and notes to the account. Variables were computed using financial ratios and evaluated with descriptive statistics. Pearson's Correlation was used to examine the relationship between liquidity, profitability and working capital variables while multiple regression was used to investigate the impact of working capital management on the profitability and liquidity of the select deposit money banks in Nigeria.

The following two models were used for the study.

$$PROit = PROi,t = \alpha_0 + \beta_1 CCCYi,t + \beta_2 CPPRi,t + \beta_3 DCPRi,t. + \beta_4 LEVi,t + \beta_4 SIZEi,t. + \beta_{4c} CRi,t + \varepsilon it \quad .....(1)$$

$$LIQit = PROi,t = \alpha_0 + \beta_1 CCCYi,t + \beta_2 CPPRi,t + \beta_3 DCPRi,t. + \beta_4 LEVi,t + \beta_4 SIZEi,t. + \beta_{4c} CRi,t + \varepsilon it \quad .....(2)$$

Where;

i,t is for bank *i* in year *t*,
α is the intercept
β is the coefficient of the independent variables
ε is the error term

The definitions of the dependent and independent variables and their expected signs are as given on Table 1.

4. DATA ANALYSIS AND FINDINGS

4.1 Descriptive Statistics

Table 2 shows the descriptive statistics of the variables. It depicts the number of observations, minimum, maximum, mean and standard deviation of the variables used. The table shows that average return on equity (ROE) is -1.7% with a range from a maximum of 35% to a minimum of -387% with a standard deviation of 91%. This suggests a wide variation on the return on equity of the listed banks over the period of observation. Specifically 9 out of the 10 banks had fairly good results with positive ROE above 5% in the years 2012 and 2013, but one bank has an ROE of -387% in 2012. The liquidity ratio the ratio of current assets to current liabilities reveals a mean of 87.20%, a minimum of 47%, a maximum of 189% and standard deviation of 34.54%. This shows that the banks are generally liquid. A minimum of 30 percent is a required liquidity ratio (LR) for money deposit banks in Nigeria (BOFIA [20]). The cash conversion cycle reveals that it takes an average of -6196 days, which is about 17 years on a 365-day cycle. The range is from -1239days to -13272 days with a standard deviation of 3610 days. This shows that Nigerian banks are highly leveraged. The analysis of bank leverage shows that the ratio of total debt to net assets is very high with a mean of 16% and a range between 4.56% and 191.56%. The creditors payment period and the debtors collection period did not reveal any better result. The creditors' payment period shows a mean of 8929.70 days, minimum of 2904.33 days, maximum of 15253.46 days and standard deviation of 333.14 days. The debtors' collection period shows an average of 2734.12 days, minimum of 1255 days and maximum of 5715.25 days and standard deviation of 1223.91 days. The creditors' payment period takes a more longer period than the debtors' collection period. The log of total assets reveals a size between 3.11 to 5.67 with a mean of 5.18 and standard deviation of 56% while the credit risk reveals a range between .78% and 11.94%, with an average of 3,43% and a standard deviation of 2.38. The credit risk indicates that the impaired loans are low.

4.2 Correlation Analysis

Correlation matrix is used to test the presence of multicollinearity among the variables. The result is as depicted on Table 3 below. It reveals that there is a high level of correlation (-0.94) between Cash Conversion Cycle and the Creditors' Collection Period , (0.99) between Leverage and Profitability (0.77) , between Debtors Collection Period and Profitability, between Size and three variables (Profitability, Leverage and Credit Risk and between Credit Risk and two variables (Leverage and Size). To overcome these challenges, stepwise regression method will be utilized for the analysis. This resulted into four models. Model 1 utilizes PRO as dependent variable and exclude CCCY and LEV from the dependent variables. Model 2 will utilizes PRO as dependent variable and exclude DCPR and CPPR and SIZE from the dependent variables. Model 3 utilises LIQ as dependent variable and exclude CCCY and LEV from the dependent variables. Model 4 utilises LIQ as dependent variable and exclude DCPR and CPPR and SIZE from the dependent variables.

4.3 Discussion of Regression Results

Tables 4 and 5 are used in presenting the regression results. Table 4 contains results of models 1 and 2, with profitability (return on equity) as the dependent variable. The results indicate a significant positive relationship between profitability and bank size (at 1%). This result confirms that profitability is dependent on bank size, which is in line with the researcher's expectation. This is also in line with previous empirical studies such as Agyei and Yeboah [15] of Ghana. The result also shows that there is a significant negative relationship between profitability and cash conversion cycle and leverage (all at 1%). This result is also in line with the expectation and agrees with previous empirical works (Wang [21]; Deloof [22]; Elijelly [5]) but deviates from the studies of Agyei and Yeboah [15]) and Sharma and Kumar [23]. The

result also shows that there is no relationship between profitability and credit risk, creditors' payment period and debtors' collection period. This deviates from the findings of some researchers such as Lazaridis and Tryfonidis [16]. This shows that Nigerian banks do not manage the working capital efficiently in order to maximize their profit.

Table 5 contains result of models 3 and 4, with liquidity as the dependent variable. The results indicate a significant positive relationship between liquidity and bank size (at 1%). This result shows that liquidity is dependent on bank size, which is in line with the researcher's expectation. The result also shows that there is a significant negative relationship between liquidity and creditors' payment period (at 1%) and leverage (at 10%). The result also shows that there is a significant positive relationship between liquidity and debtors collection period (at 1%), cash conversion cycle (at 1%) and credit risk (at 5%). This is in line with expectations except for cash conversion cycle that is positive. This result corroborates with studies of Citten [7], Nobance [9], Quayyum [18], Ahmad, Azim and Reham [19] who all postulated that efficient working capital management is a solution to liquidity challenges of any firm.

Table 1. Dependent and Independent variables

Variables	Type	Definition	Expected sign for independent variables
Profitability (PRO)	Dependent	Return on Equity which is ratio of profit before taxation to equity	
Liquidity (LIQ)	Dependent	Liquidity ratio which is ratio of current assets (within 12 months) to current liabilities (within 12 months)	
Cash Conversion Cycle (CCCY)	Independent	The difference between debtors collection period and creditors payment period.	Negative
Creditors' Payment Period (CPPR)	Independent	The ratio of bank short-term debt to interest expense x 365 days. Short-term debt includes deposit from customers (current), deposit from banks (current), current income tax, provisions and other liabilities (current).	Negative
Debtors' Collection period (DCPR)	Independent	The ratio of bank current asset to interest income x 365 days, current assets include cash and cash equivalents, loan to other banks (current), loan to customers (current), investments securities (current), and financial assets (current)	Positive
Leverage (LEV)	Independent	The ratio of total debt to total net assets	Negative
Bank Size (SIZE)	Independent	The log of total assets	Positive
Credit Risk (CR)	Independent	Total annual impairment to gross loans	Positive

Source: Compiled by researchers (2014)

Table 2. Descriptive statistics of the dependent and independent variables

	N	Minimum	Maximum	Mean	Std. Deviation
Return on Equity	20	-3.87	.35	-.017	.91
Cash Conversion Cycle	20	-13271.82	-1238.70	-6195.58	3609.64
Creditors' Payment Period	20	2904.33	15253.46	8929.70	3333.14
Debtors' Collection Period	20	1255.11	5715.25	2734.12	1223.91
Leverage	20	4.56	191.56	15.57	41.44
Bank Size	20	3.11	5.67	5.18	.56
Credit Risk	20	.78	11.94	3.43	2.39
Liquidity	20	.47	1.89	.87	.35
Valid N (listwise)	20				

Source: Researchers computation' (2014)

Table 3. Correlation matrix

	PRO	LIQ	CCCY	CPPR	DCPR	LEV	SIZE	CR
PRO	1	0.24	-0.22	0.33	0.26	-0.99**	0.88**	-0.85
LIQ	0.24	1	0.58	-0.35	0.77*	-0.28	0.21	-0.35
CCCY	-0.22	0.58	1	-0.94*	0.39	0.15	-0.36	0.29
CPPR	0.33	-0.35	-0.94*	1	-0.52	-0.27	0.52*	-0.42
DCPR	0.26	0.77*	0.39	-0.52	1	-0.29	0.34	-0.30
LEV	-0.99*	-0.30	0.15	-0.27	-0.29	1	-0.88*	0.84*
SIZE	0.88*	0.21	-0.36	0.52	0.34	-0.88*	1	-0.87*
CR	-0.85	-0.35	0.29	-0.42	-0.30	0.84*	-0.87*	1

Correlation is significant at the 0.01 level (2tailed) Source: Researchers' computation (2014)

Table 4. Regression result (Model 1 and 2)

Variables	Model 1			Model 2		
	Coefficients[a]	t-values	Significance	Coefficients[a]	t-values	Significance
(Constant)	-5.404	-2.574	.021	.200	4.470	.000
Credit risk	-.110	-1.343	.199	.004	.353	.729
Bank size	1.245	3.231	.006			
Creditors' payment period	-5.310E-5	-1.502	.154			
Debtors' Collection period	-7.727E-5	-.883	.391		-4.595	.000
Cash conversion Cycle leverage				-1.765E-5 -.022	-36.89	.000
	R square	0.832		R square	0.997	
	Adj R square	0.787		Adj R square	0.996	
	F value	18.565		F value	1605.14	
	Sig	0.000		Sig	0.000	
	DW	2.152		DW	1.423	

Source: Researchers' computation (2014)

Table 5. Regression result (Model 3 and 4)

Variables	Model 1			Model 2		
	Coefficients[a]	t-values	Significance	Coefficients[a]	t-values	Significance
(Constant)	-2.064	-2.439	.028	1.119	5.406	.000
Credit risk	.095	2.887	.011	.053	1.090	.292
Bank size	.483	3.108	.007			
Creditors' Payment period	-4.588E-5	-3.220	.006			
Debtors' collection period	.000	5.357	.000		3.116	.007
Cash conversion Cycle leverage				5.523E-5- .022	-2.064	.056
	R square	0.811		R square	0.511	
	Adj R square	0.760		Adj R square	0.419	
	F value	16.044		F value	5.568	
	Sig	0.000		Sig	0.008	
	DW	1.792		DW	1.029	

Source: Researchers' computation (2014)

R square, which explains percentage variance in the dependent variables show a result between 51% and 91% and the adjusted R Square reveals a result between 41% and 99%. The F-values which test the regression relationship between independent and dependent variables are all significant at 1%. The Durbin Watson checks the serial correlation and the result is between 1.029 and 2.152. These results show that the four regression models have a good fit.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Summary and Conclusion

The impact of working capital management on the profitability and liquidity of select money deposit banks in Nigeria was examined in this study. The study showed that, there is significant relationship between both banks' profitability, banks' liquidity and bank size; there is a significant negative relationship between profitability and cash conversion cycle and leverage; there is a significant negative relationship between liquidity and creditors' payment period and leverage; and there is a significant positive relationship between liquidity and debtors' collection period, cash conversion cycle and credit risk.

The study concludes that working capital management has impact on profitability and liquidity of deposit money banks in Nigeria as shown in the study. To curb liquidity challenges and distresses in money deposit banks in Nigeria, working capital that constituted almost 80% - 90% of the banks' total assets should be properly managed.

5.2 Recommendations

The following recommendations are made:

1. Bank management/managers should make working capital management an integral function of the finance/risk department where working capital components can be effectively and efficiently managed.
2. Central bank of Nigeria (CBN) and other regulatory institutions should conduct audit and stress test on money deposit to enhance liquidity
3. Banks in 'trouble' should be advised to merge or to be acquired by other mega bank(s).
4. A bank should always strike a balance between liquidity and profitability objectives as well a taking cognizance of risk (efficient working capital management). Note that excess liquidity is poor management of working capital as this lead to extra cost of capital.
5. The minimum capital requirement should be reviewed from time to time to meet the current financial challenges of the banking industry. The review of minimum capitalization requirement took place in 2004. It should be reviewed from N25 billion to N50 billion.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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