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# Relationship between Liquidity and Profitability in Commercial Banks in Africa

**Ibbih Joseph M.**
*Department of Economics, Faculty of Social Sciences, Nasarawa State University, Keffi-Nigeria*

**Abstract**

This study investigated the relationship between liquidity and profitability in commercial banks (taking Diamond Bank as case study) in Nigeria. Two objectives in relation to 2 research question with hypotheses were raised in the study. Secondary method of data collection was used for this study and data was sourced from the comprehensive income statements and financial position of the selected commercial banks. Panel data methodology was adopted for this study. The method of analysis is that of multiple regressions and the method of estimation is ordinary least square (OLS).This study revealed that liquidity has a significant relationship with the profitability of Deposit Money Banks in Nigeria. Also, the regression results show a positive relationship between Profit after Tax (PAT), and Cash Balance (CB), while there's an insignificant relationship between (PAT) and Treasury bill. The study concluded that, in every society good monetary and financial polices both play major direct and indirect role in the economy. In this connection, it is recommended that banks should endeavour to comply with government (CBN) monetary policy guidelines particularly with regard to cash reserve and liquidity ratio requirements in order to prevent distress and most importantly improve the public confidence in their services thereby increasing their profit. Also, there is need for commercial banks to increase their operating cash flow, through reduction of their credit/loan repayment period in order to positively influence their financial performance which is profit.

**Keywords:**
Liquidity, Profitability, Liquid assets, Commercial Bank.

*Corresponding Author:*
Ibbih Joseph M.

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**Background to the Study**

Banking system is the heart beat of every economic system, and many factors affect and determine its performance. Liquidity as one of the determinants performs a crucial function in the successful operation of a business firm and it is mostly important to make it known that a bank is liquid when it has the ability to settle obligations instantly.

Consequently, a bank is illiquid, if it is unable to settle obligations as it arises. Profitability and liquidity are two important variables which give information about the performance of any business entity. For long-term survival and healthy growth both profitability and liquidity should go parallel to each other .Profitability is one of the major goals of any business. Without being profitable it is not possible for a business to survive and the business growth is difficult. To generate profit a business need short-term funds to fulfill its day to day needs in operations and other requirements. Business will be more profitable when this short- term need of funds is generated by business operation not through external debts. So the liquidity tells about the business capability to meet short-terms need of funds by the business and profitability tells about the profit generated from the operations of business (Rafiq. 2016).

Profitability of a bank is described as its ability to generate income which surpasses its liability. Potential investors are interested in di4vidend and the appreciation in market price of stock, so they pay more attention on the profitability ratios. Low profit margin would eventually discourage the investors to invest as such managers are also interested in measuring the operating performance in terms of profitability so that effective management could be in place to build confidence on the potential investors in order to ensure success and the survival of the banking business .equity investors too, are more concern with the bank's ability to generate, maintain and increase income. As the stakeholders expects the banks to increase lending in order to give them maximum return in money invested while the depositors expects the banks to keep much idle cash in order to meet their demand. Profitability objective is clashing with that of liquidity and also the interest of the shareholders conflicting with that of the depositors, therefore there is a need to reconcile and harmonize these positions through effective liquidity management so as to ensure the survival and growth of the commercial bank (Olagunj, 2011).

Considering the public loss of confidence as a result of bank distress which has bedeviled the financial sector in the last decade; and the intensity of competition in the banking sector due to the emergence of large number of new banks, every commercial bank now working to ensure that it operates on profit and at the same time meets the financial demands of its depositors by maintaining adequate liquidity (Adebayo, 2011).

Commercial banks are faced with problem how to select or identify the optimum point or the level at which a commercial bank can maintain its assets in order to optimize these two objectives since each of the liquidity has a different effect on the level of profitability. This problem becomes more pronounced as good numbers of commercial banks are engrossed

with profit maximization and as such they tend to neglect the importance of liquidity management. However, the profit maximization becomes a myth as the resulted liquidity can lead to both technical and legal insolvency with the consequence of low patronage, deposit flight, erosion of asset base.

In every system, there are major components that feature paramount for the survival of the system. This is also applicable to the financial system. The banking institution had contributed significantly to the effectiveness of the entire financial system as they offer an efficient institutional mechanism through which resources can be mobilized and directed from less essential uses to more productive investments (Wilner, 2000).

In the performance of this financial inter-mediation role, the financial institutions have proved to be an effective channel between savers and borrowers. Among the financial institutions that make themselves available for this all-important role are merchant banks, savings banks, the Central bank, development banks and commercial banks. Commercial banks have overtime become very important institutions in the financial system as they function as retail banking units facilitating the transfer of financial assets that are well desired from some part of the public (Fund Lenders) into other financial assets which are more widely preferred by greater part of the public (fund seekers) (Olagumju ,2011).

Practically, profitability and liquidity are effective indicators of the corporate health and performance of not only the commercial banks, but all profit-oriented ventures (Eljelly, 2004). An adequate financial intermediation requires the purposeful attention of the bank management to profitability and liquidity which are two conflicting goals of the commercial banks. These goals are parallel in the sense that an attempt for a bank to achieve higher profitability will certainly erode its liquidity and solvency positions and vice versa.

Liquidity management is an important aspect of monetary policy implementation, while the other integral component of monetary policy, i.e. economic management, involves promoting sustainable economic growth over the long term by keeping monetary and credit expansion in step with an economy's noninflationary output potential, liquidity or reserve management as a shorter time horizon. In order to maintain relative macro-economic stability, reliance is placed on liquidity management to even out the swings in liquidity growth in the banking system (Olagumju, 2011).

In the quest to attain a Stable Macroeconomic Environment to enhance liquidity management and ensure macroeconomic stability, there is the compelling need to insulate monetary policy from the pressure of financing the government fiscal deficit. Also, the monetary authorities should have freedom in the management of interest rate in order to sufficiently influence transactions in the intervention securities and enhance the effectiveness of instruments for liquidity management. Uncontrolled financing of the deficit by the CBN, either throughways and means advances or the absorption of unsubscribed

government debt issues, increase bank liquidity thereby constraining the effectiveness of instruments for liquidity management (Amarachukwu, 2003).

As the stakeholders expects the banks to increase lending in order to give them maximum return in money invested while the depositors expects the banks to keep much idle cash in order to meet their demand. Profitability objective is clashing with that of liquidity and also the interest of the shareholders conflicting with that of the depositors, therefore there is a need to reconcile and harmonize these positions through effective liquidity management so as to ensure the survival and growth of the commercial banks.

**Statement of Problem**

A significant proportion of the problem facing in commercial banks are attributable to their inability to manage the liquidity/profitability conflicts. In fact, there is a short trade-off between liquidity and profitability by banks which is currently giving some concern to the regulatory authorities like the CBN and the NDIC. Given that poor banking habits has been the bane of the Nigerian society, how could the liquidity and hence profitability position of Nigerian banks maintain acceptable level or standard in developing banking culture. Also corroborate this idea, confirming tradeoff between high amounts of net working capital and maximizing profitability.

**Objectives of the Study**

The aim of this study is to analyze the relationship between liquidity and profitability in commercial banks (taking Diamond Bank as case study) in Nigeria;

1. To determine the nature of relationship between cash balance and bank profitability
2. To examine the influence of treasury bills on bank performance.

**Research Questions**

1. What is the relationship between cash balance and profit after tax in Diamond bank PLC?
2. What is the relationship between treasury bills and profit after tax on bank's performance?

**Research Hypotheses**

$H_{01}$: There is no significant relationship between the cash balance and profit after tax of Diamond bank PLC.

$H_{02}$: Banks treasury bills have no significant relationship with Diamond bank profit after tax.

**The Concept of Bank liquidity**

Bank Liquidity simply means the ability of the bank to maintain sufficient funds to pay for its maturing obligations. Also, it can be termed as a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at a reasonable cost and without incurring unacceptable losses. It is the bank's ability to immediately meet cash,

cheques, other withdrawals obligations and legitimate new loan demand while abiding by existing reserve requirements (GARP 2013).Olagunju, and Olabode, (2011), identified the following as liquidity components:

i. Vault cash
ii. Balances held with CBN
iii. Balances held with other banks in Nigeria
iv. Treasury bills
v. Treasury certificates
vi. Investment in stabilization securities
vii. Bills discounted payable in Nigeria
viii. Negotiable certificates of deposits
ix. Bankers acceptance and commercial paper
x. Investments in FGN development stock
xi. Industrial (other) investments

**The Need for Liquidity**

According to Anyanwu (1993) liquidity simply means the ability to convert an asset to cash with minimum delay and minimum loss/cost. In the portfolio of commercial banks, liquidity assets play Avery crucial role because banks operate largely with the funds borrowed from depositors in form of demand and time deposits. These liquidity assets are the essential balance sheet items which have the capacity to maintain the confidence of depositors which is the most valuable intangible asset of the commercial banking business (Spindt, 1980).

According to Nwankwo (1991), adequate liquidity enables a bank to meet three risks. First is the funding risk – the ability to replace net outflows either through withdrawals of retail deposits or nonrenewal of wholesale funds. Secondly, adequate liquidity is needed to enable the bank to compensate for the non-receipt of inflow of funds if the borrower or borrowers fail to meet their commitments. The third risk arises from calls to honor maturity obligations or from request for funds from important customers.

Adequate enables the bank to find new funds to honour the maturity obligations such as a sudden upsurge in borrowing under atomic or agreed lines of credit or to be able to undertake new lending when desirable. For instance a request from a highly valued customer. Adequate liquidity is also needed to avoid forced sale of asset at unfavourable market conditions and at heavy loss. Adequate liquidity serves as vehicle for profitable operations especially to sustain confidence of depositors in meeting short run obligations. Finally, adequate liquidity guides against involuntary or non-voluntary borrowing from the regulatory authorities where there is a serious liquidity crisis, the bank is placed at the mercy of the Central Bank, and hence the control of its destiny may be handed over.

Having adequate or sufficient liquidity to meet all commitments at all times at normal market rates of interest is indispensable for both large and small banks (Nwankwo, 1991). Liquidity is the life blood of banking setup.

**Difference between a Bank's Liquidity and its Liquid Assets**

A company's liquid assets can easily be converted into cash to meet financial obligations on short notice. Liquidity is the ability of a business to pay its debts using its liquid assets. The most common types of liquid assets for all businesses, from banks to electronics manufacturers, are funds in checking and savings accounts and marketable securities, such as stocks and bonds. Highly liquid securities can be bought and sold quickly and easily without affecting their price. Liquidating a stock investment is as simple as placing an order, which almost instantly triggers the sale of shares at the current market price.

A bank's liquidity is determined by its ability to meet all its anticipated expenses, such as funding loans or making payments on debt, using only liquid assets. Ideally, a bank should maintain a level of liquidity that also allows it to meet any unexpected expenses without having to liquidate other assets. The bigger the cushion of liquid assets relative to anticipated liabilities, the greater the bank's liquidity.

To understand the importance of liquidity to a bank's continued solvency, it helps to understand the difference between liquid and illiquid, or fixed, assets. Illiquid assets cannot swiftly be turned into cash, including real estate and equipment that provide long-term value to the business. Using illiquid assets to meet financial obligations is not ideal. Selling off real estate to meet financial obligations, for example, is inefficient and potentially expensive. If funds are needed in a hurry, the company may have to sell the property at a discount to expedite the liquidation.

In addition, liquidating these types of assets to pay debts can have a detrimental impact on a business's ability to function and generate profit down the road. A clothing manufacturer that has to sell its equipment to pay off loans will have difficulty maintaining consistent production levels and will likely need to take on new debt to purchase replacements. Liquidating fixed assets is a last-resort solution to a short-term problem that can have devastating long-term consequences.

During the financial crisis of 2008, it became clear that banks were not maintaining the stores of liquid assets necessary to meet their obligations. Many banks suffered the sudden withdrawal of depositor funds or were left holding billions of dollars in unpaid loans due to the subprime mortgage crisis. Without a sufficient cushion of liquid assets to carry them through troubled times, many banks rapidly became insolvent. In the end, the banking industry was in such a poor state that the government had to step in to prevent a total economic collapse.

The liquidity coverage ratio rule was developed as a means of ensuring that banks maintain a level of liquidity sufficient to avoid a repeat performance of 2008. Under the new rule, all banks must maintain liquid asset stores that equal or exceed 100% of their total anticipated expenses for a 30-day period. In the event of a sudden dip in income or an unexpected liability, banks can meet all their financial obligations without having to take on new debt or liquidate fixed assets, giving them time to resolve the issue before it turns into another financial disaster.

**Liquid Assets**
Liquid assets are those that can be converted to cash quickly if needed to meet financial obligations; examples of liquid assets generally include cash, central bank reserves and government debt. To remain viable, a financial institution must have enough liquid assets to meet its short term obligations, such as withdrawals by depositors.

**Relevance of Liquidity in Money Deposit Banks**
According to a study, liquidity in banking measures the availability of cash and the rate at which current assets are converted into cash to meet ordinary and extra – ordinary request. Several scholars have viewed liquidity as a measure of bank's bargaining power and strength. Adequate liquidity enables a bank to meet three risks namely: Time risk (which is the ability to compensate for non-repayment of funds. That is, if the borrower defaults their commitment at a specific time), funding risk (which signifies the ability to replace net out flows of funds, either via usual withdrawals of retail deposits or non-renewal of wholesale funds), lending risk (which denotes ability to meet occasional withdrawals of funds from cogent customers) (Nwaezeaku 2006),. One of the views is that, the more effective a deposit money bank is in managing its liquidity, the stronger its ability to provide loan able funds.

A lot of studies have been done on bank liquidity and performance in developed financial market. A study shows the response of bank loans to monetary policy stance and bank performance and noted that bank loans respond asymmetrically to monetary policy stance and capital strength is the source of the asymmetric reaction of banks (Altunbas, 2002).

In a similar study on financial systems and the role of banks in monetary policy transmission in the Euro area, it was noted that banks respond differentially to monetary policy; and liquidity positions is one of the major factors that account for the differences (Ehrmann et al. 2001).

Adequate liquidity is needed to avoid forced sale of asset at unfavorable market conditions and at heavy loss. Adequate liquidity serves as vehicle for profitable operations especially to sustain confidence of depositors in meeting short run obligations. Finally, adequate liquidity guides against involuntary or non-voluntary borrowing from the regulatory authorities where there is a serious liquidity crisis, the bank is placed at the mercy of the Central Bank, and hence the control of its destiny may be handed over. Having adequate or sufficient liquidity to meet all commitments at all times at normal market rates of interest is indispensable for both large and small banks (Nwankwo, 1991). Liquidity is the heart beat of a banking setup.

**Measurement of Liquidity**
Liquidity can be measured as a stock or as a flow. The determination of liquidity adequacy from the stock framework requires a comparison of holding of liquid assets with expected liquidity needs, whereas from the "flow" point of view, one considers liquidity not only as the ability to convert liquid assets into cash but also the ability of the economic units to borrow and generate cash from operators. This approach recognizes the difficulty involved in

determining liquidity standards since future demand are not known. It also recommends accurate forecast of cash needs and expected level of liquidity assets and cash receipts over a given period of time for there to be a realistic appraisal of a bank's liquidity position. Between the two concepts, the stock concept is the widely used and involving the application of financial ratios in the measurement of liquidity positions of commercial banks- one of the popular financial ratios which measure the ability of the bank to meet its current obligations (Ruossakis, 1999).

Under this measure, Nwankwo (1991)pointed out that all bank loans are lumped together on the basis that they are the most liquid of all bank assets, these are then compared with the total deposit as a proxy for the liquidities that banks could be called upon honor. He concluded that an increase in the ratio indicates a less liquid position and vice versa.

**Concept of Profitability in Banks**

According to Aburime (2008:1) profit means the difference between the revenue generated from the sale of output and the full opportunity cost of factor used in the production of that output. Included within costs are the premium charged for risk taking and the costs of using the owners capital. Profit could either be normal or supernormal. Normal profit is that minimum amount of profit which a firm must acquire in order to induce the firm to remain in operation. Corporate profit planning remains one of the most difficult and time consuming aspects of financial management because of the many variables involved in the decision which are often outside the control of the company. It is even more difficult if the company is operating in a highly competitive economic environment.

Profitability can be defined as the final measure of economic success achieved by accompany in relation to the capital invested in it. This economic success is determined by the magnitude of the net profit accounting (Pimentel, 2005).Profitability helps in taking decisions and constructing policies (Osiegbu and Nwakanma, 2008).

A business unit can only grow focusing on its inner strengths to exploit the opportunities in the market. Consequently, the best definition as opined by Tsomocos (2003) should be adopted from a survival growth perspective as business unit should think of surviving before making profit. Again, optimizing profit involves two variables; revenue and cost. The issue of profitability is a continuous issue that a company has to consistently make. Essentially profitability is concerned with the level of turnover that must be achieved in order to cover the level of turnover that must be achieved in order to cover costs and make surplus.

Corporate profitability may be improved through ratio analysis, breakeven analysis, marginal analysis, cost control or through financial control. It is therefore necessary to mention at this juncture that whether a bank is planning for profit or taking steps to improve its profitability, it must ensure that it has adequate liquidity to transact business and finance operations. If the plan is to improve or increase profitability by increasing the income level, the bank must be able to determine the financing needs for the new income level.

Like all businesses, banks profit by earning more money than what they pay in expenses. The major portion of a bank's profit comes from the fees that it charges for its services and the interest that it earns on its assets. Its major expense is the interest paid on its liabilities. The major assets of a bank are its loans to individuals, businesses, and other organizations and the securities that it holds, while its major liabilities are its deposits and the money that it borrows, either from other banks or by selling commercial paper in the money market.

Banks increase profits by using leverage — sometimes too much leverage, which helped precipitate the credit crisis that occurred in 2007 to 2009. Profits can be measured as a return on assets and as a return on equity. Because of leverage, banks earn a much larger return on equity than they do on assets. For instance, in the 1st quarter of 2016, all financial institutions insured by the FDIC, which includes most banks, earned an average return on assets equal to 0.97%, whereas the return on equity was 8.62%.

**Management of Liquidity and Profitability in Nigerian Commercial Banks**

The survival of commercial banks depends greatly on how liquid they are since illiquidity being a sign of imminent distress can easily erode the confidence of the public in the banking sector and results to deposit.

Equally important is the need for adequate income through interest on loan to ensure continued provision of productive resources and survival. It therefore becomes uneconomic and financially unreasonable for banks to allow excess idle cash in the vault or excess liquidity. Hence, a need for effective liquidity management to maximize revenues while holding risks of insolvency to desired level (Agbada and Osuji, 2001). Liquidity management assists commercial banks in trading off between risk and return; and liquidity and profitability. Liquidity management also serves as a tool through which commercial banks avoid overliquidityand under-liquidity and their consequences.

Olagunju, A. and Olabode (2011) examined the liquidity management and commercial banks" profitability in Nigeria by using quantitative methods of research. Their findings were made through the analysis of both the structured and unstructured questionnaire on the management of banks and the financial reports of the sampled banks They formulated a hypothesis which was statistically tested through Pearson correlation data analysis and their findings indicated that there is significantly relationship between liquidity and vice versa. They concluded that for the success of operations and survival, commercial banks should not compromise efficient and effective liquidity management and that both illiquidity and excess liquidity are "financial diseases" that can easily erode the profit base of a bank as they affect bank's attempt to attain high profitability level. A firm should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions. A study of liquidity is of major importance to both the internal and the external analysts because of its close relationship with day-to-day operations of a business (Bhunia, 2012).

Liquidity management therefore involves the strategic supply or withdrawal from the market or circulation the amount of liquidity consistent with a desired level of short-term reserve

money without distorting the profit making ability and operations of the bank. It relies on the daily assessment of the liquidity conditions in the banking system, so as to determine its liquidity needs and thus the volume of liquidity to allot or withdraw from the market. The liquidity needs of the banking system are usually defined by the sum of reserve requirements imposed on banks by a monetary authority (CBN 2012).

**Empirical Review**

In the study of Raheman and Nasir, (2007), they studied the effect of working capital management on liquidity as well as on profitability of the firm in Pakistan. The results showed that there was a negative relationship between variables of working capital management and profitability of the firm. Further study also found that there was a negative relationship between liquidity and profitability and a positive relationship between size of the firm and its profitability and negative relationship between debts used by the firm and its profitability.

Bhunia (2011) investigated the liquidity management efficiency and liquidity-profitability relationship. The data utilized was extracted from the income statements, balance sheets and cash flow statements of sampled firms from the India Stock Exchange and CME data base. The purposive sample design method was applied in their analysis. Preferred sample of private sector steel companies from 1997-2006 were utilized in the analysis. Results of the study found that correlation and regression results are significantly positive and associated to the firm's profitability. Thus, firm manager should concern on inventory and receivables in purpose of creating shareholders' wealth.

Studying on liquidity, risk and profitability analysis, Sharma (2011) discovers that marunti Suzuki India ltd is satisfactorily giving out profits and maintaining liquidity position but at increased risk factor. The liquidity position of the company is fluctuating but this is acceptable. He concluded that the company is earning good profit with moderate liquidity.

Maaka (2013) carried out a research and sought to establish the relationship between liquidity risk and financial performance of commercial banks in Kenya. The study adopted correlation research design where data was retrieved from the balance sheets, income statements and notes of thirty- three (33) Kenyan banks during 2008-2012. Multiple regressions was employed to assess the impact of liquidity risk on banks' profitability and the findings revealed that profitability of the commercial bank in Kenya is negatively affected due to increase in the liquidity gap and leverage. With a significant liquidity gap, the banks may have to borrow from the market even at a higher rate thereby pushing up the cost of banks. The level of customer deposit was also found to positively affect the bank's profitability and it will therefore be encouraged for banks to open more branches in the country.

In the study of the determinants of liquidity and their impact on financial performance in Nepalese commercial banks by Sushil and Bivab (2013), the results of regression analysis showed that capital adequacy, bank size, share of non-performing loans in the total volume of loans and liquidity premium paid by borrowers had negative and statistically significant impact on banks' liquidity. Growth rate of gross domestic product on the basis price level,

short term interest rate and inflation rate had negative and statistically insignificant impact on banks' liquidity. And, loan growth rate had positive and statistically insignificant impact on banks liquidity. Among the statistically significant factors affecting banks liquidity capital adequacy, bank size and growth rate of gross domestic product on the basis price level had negative impact on financial performance whereas, liquidity premium paid by borrowers had positive impact on financial performance. Therefore, the impact of bank liquidity on financial performance was non-linear. Results suggest that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, ceteris paribus.

**Theatrical Frame Work**

This study anchored on Clark's theory of profitability:

**Clark's theory of Profitabilityby (Soddiq, 1971)**

Clark began his theory with an analysis that there is a relationship between liquidity and profitability, taking into account foreign deposits and local deposits with banks. Also he made an analysis of a profit less economy and taking into account its key features. The profit less economy is being compared with a profit generating economy and significant differences were identified to indicate the causes of profit. This method was adopted by Schumpeter and Knight. The profit less economy is referred to as a static state in which all factors are constant and not subjected to change, the market is assumed to be perfect hence the absence of monopoly and entrepreneurial efforts are rewarded according to management wage levels. There is a perfect mobility and flow of all economic units in a frictionless environment in short all impediments to prevent competition are dissolved.

The society acts and lives, but does so in a changeless manner (Soddiq 1971). Any change in these factors will produce a tremor in the system but the economy will adjust and settle at new equilibrium. So changes in the population and capital will result in corresponding fluctuations in wages and interest rates, the economy will absorb these changes and then settle back to a static state. Similarly, change in techniques of production will affect output and prices; adoption of the same techniques by other producers will cause a shift in equilibrium, but once this becomes ubiquitous the equilibrium will resume. The ability of the company to endure such changes is due to the competitive equilibrium dynamics of the free market and competition remarks. There is the tendency to eliminate profit of loss and bring the value of economic goods to equality with their cost (knight, 1921).

Real economies as noted by Clark will however not buffer such changes instantaneously as there will necessarily be a time lag. It is into this fictional delay that entrepreneur seeks to enter and make his profit before equilibrium returns and consumes his profit. Profit is hence a transitional phenomenon. 'untransformed increment of wages and interest' (Siddiqi, 1971) its temporal nature demands from the entrepreneur a dynamic endeavor to seek or generate opportunities on which he can capitalize this process is summed up in Clarks statement that 'dynamic forces then account today for the existence of an income that static forces will begin to dispose of tomorrow". Economies are however in constant change, the five variables mentioned by Clark are never static; population and capital are in constant growth,

innovation in production and management of resources are continually researched and consumer demand are subject to ever changing fashions and trends. The entrepreneur thus finds performance for as long as he can keep ahead of the changes, reacts before competitors and organize his efforts with sound knowledge of the market. Clark analysis determines that the essential cause of profit is change. These changes yield a surplus in the market prior to equilibrium and they are sought after profits of the entrepreneur.

## Methodology

### Research Design

The research design for this study was based on the ex-post facto research design. Ex-post facto research design involves the ascertaining of the impact of past factors on the present happening or event.Ex-post facto research design is concerned with the existence of two variables: independent and dependent variables. The independent variable occurs prior to the dependent variable, in space and time. This research design is adopted for this study because of its strengths as the most appropriate design to use when it is impossible to select, control and manipulate all or any of the independent variables or when laboratory control will be impracticable, costly or ethically questionable (Akpa and Angahar, 1999).

### Population and Sampling Technique

This study consists of a population size of twenty five commercial banks licensed by the central bank of Nigeria and a sample size of two commercial banks namely Diamond Bank and Unity Bank for Africa (UBA) were purposively selected from the population to examine the relationship that exist between liquidity and profitability in these two commercial banks.

### Method of Data Collection

Secondary method of data collection was used for this study and data was sourced from the comprehensive income statements and financial position of the selected commercial banks. In addition to this, scholarly articles form academic journals and relevant textbooks were also used.

### Techniques of Data Analysis and Model Specification

Panel data methodology was adopted for this study. The method of analysis is that of multiple regressions and the method of estimation is ordinary least square (OLS).

The model for this study is given below;

$Y = b0 + b1x1 + b2x2 + e$ where:

Y = profitability representing the dependent variables=B0, b1, b2, are regression coefficient or parameters

x1, and x2 are the independent variables

x1= cash balances

x2= treasury bills

### Data Presentation and Analysis

In analyzing the data, in other to establish the cause and effect relationship between the

dependent variable (Profit after Tax) and the independent variable (Cash balance, Bank balance and Treasury bill certificate), the data generated are presented year by year in a tabular form so as to enhance accuracy of result

**Table 1: Liquid Assets and Profit of Diamond Bank for Period of 2006-2016**

| YEARS | PAT(N) | BB (N) | TBC (N) |
|---|---|---|---|
| 2006 | 965 | 9,641 | 8,763 |
| 2007 | 1,013 | 10,123 | 9,201 |
| 2008 | 1,064 | 10,629 | 9,661 |
| 2009 | 1,117 | 11,718 | 10,651 |
| 2010 | 1,451 | 11,881 | 10,651 |
| 2011 | 1,451 | 11,881 | 11,232 |
| 2012 | 1,474 | 12,144 | 12,123 |
| 2013 | 228 | 7,209 | 3,686 |
| 2014 | 230 | 1,133 | 3,910 |
| 2015 | 297 | 1,048 | 4,153 |
| 2016 | 220 | 214 | 4,164 |

**Sources:** Diamond Bank Annual Report (2016)

**Figure 1: Bar chart of liquid assets and profit of Diamond Bank**

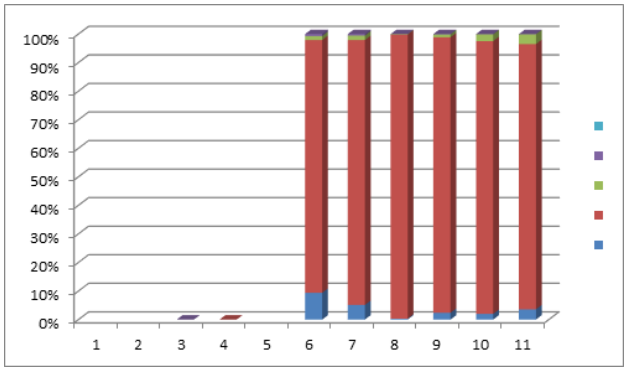
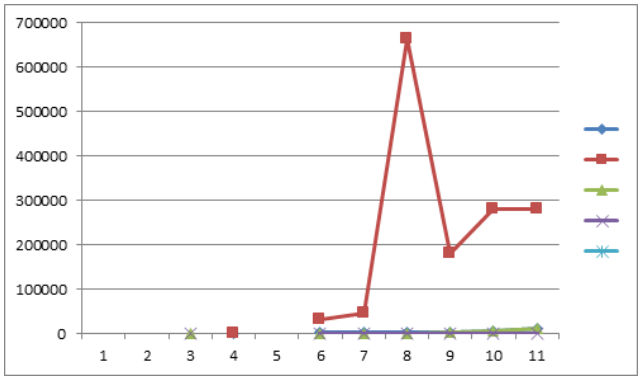



**Figure 2: liquid assets and profit of Diamond Bank**



The above figure 1 and 2 indicates movement of liquid assets and profit of diamond Bank resulting to the predictor of the relationship between liquid assets and profit maximization on market operation.

**ANOVA[a]**

| Model | | SumofSquares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4836442.869 | 3 | 1612147.623 | 158.537 | .000[b] |
| | Residual | 162702.881 | 16 | 10168.930 | | |
| | Total | 4999145.750 | 19 | | | |

a. Dependent Variable: PAT

b. Predictors: (Constant), TBC, CA

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -70.314 | 40.010 | | -1.757 | .098 |
| | CA | .391 | .127 | .316 | 3.071 | .007 |
| | TBC | .042 | .015 | .345 | 2.859 | .011 |

Dependent Variable: PAT

The regression results show a positive relationship between Profit after tax (PAT), Cash Balance (CA), and Treasury Bills (TBC). This is in conformity with the A'priori expectation. The degree of responsiveness of profit after tax (PAT) to changes in the explanatory variables was more proportionate for Cash balance than Treasury bill.

From the t-table, the theoretical t-value at 5% level of significance with sixteen degree of freedom is 1.746. Since the theoretical t-value is less than calculated t-values for Cash balance, we shall therefore reject the null hypothesis one (H01). Also in the case of Treasury bill the theoretical t-value is less than calculated t-values (2.589), we shall therefore reject the null hypothesis two (H02). This implies that the parameter estimates are statistically different from zero i.e. they are relevant variables in the determination of the Profit after tax of the bank under review.

The coefficient of determination gives 0.967 or 98.0% meaning that the regression model is 98% significant i.e. the variations in the dependent variable attributable to the changes in the independent variable that is Cash balance and Treasury bill. This result is also supported by the value of the adjusted R-Square, which is to the tune of 96%.

**Test of Hypotheses**

**H01:** There is no significant relationship between the cash balance and Banks profitability.

**H02:** Banks treasury bills have no significant relationship with bank profitability.

**Hypothesis 1**

From the t-table, the theoretical t-value at 5% level of significance with seventeen degree of freedom is 1.746. Since the theoretical t-value (3.206) is less than calculated t-values for Cash Balance (CB), we shall therefore reject the null hypothesis one (H01).

**Hypothesis 2**

The theoretical F-value at 5% level of significance is 2.589. Since the P-value (0.011) is more than 0.05 level of significance, we shall accept the null hypothesis three (H0). This signifies that the overall regression or relationship between the Profit after tax (PAT), and Cash Balance (CB), is significant. While Treasury bill has no significant relationship to Profit after Tax (PAT).

**Discussion of Findings**

This study found that Liquidity has a significant relationship with the profitability of Deposit Money Banks in Nigeria. Also, the regression results show a positive relationship between Profit after Tax (PAT), and Cash Balance (CB), while there's an insignificant relationship between (PAT) and Treasury bill. This is in conformity with the A'priori expectation. The degree of responsiveness of Profit after Tax (PAT) to changes in the explanatory variables was more proportionate forCash Balance than Treasury bill. This agreed with Raheman and Nasir, (2007), they studied the effect of working capital management on liquidity as well as on profitability of the firm in Pakistan. The results showed that there was a negative relationship between variables of working capital management and profitability of the firm. Further study also found that there was a negative relationship between liquidity and profitability and a positive relationship between size of the firm and its profitability and negative relationship between debts used by the firm and its profitability.

From the t-table, the theoretical t-value at 5% level of significance with sixteen degree of freedom is 1.746. Since the theoretical t-value is less than calculated t-values for Cash balance (CB), we shall therefore reject the null hypothesis one (H01). This implies that the parameter estimates are statistically different from zero i.e. they are relevant variables in the determination of Profit after tax (PAT) of the bank under review. This agreed with Maaka (2013) carried out a research and sought to establish the relationship between liquidity risk and financial performance of commercial banks in Kenya. The findings revealed that profitability of the commercial bank in Kenya is negatively affected due to increase in the liquidity gap and leverage. With a significant liquidity gap, the banks may have to borrow from the market even at a higher rate thereby pushing up the cost of banks. The level of customer deposit was also found to positively affect the bank's profitability and it will therefore be encouraged for banks to open more branches in the country.The general findings of this study indicate that as the number of units of both CB and TB increased for the bank considered, their profitability measure (PAT) increased accordingly.

## Conclusion

In every society good monetary and financial polices both play major direct and indirect role in the economy. In this connection, it is recommended that banks should endeavour to comply with government (CBN) monetary policy guidelines particularly with regard to cash reserve and liquidity ratio requirements in order to prevent distress and most importantly improve the public confidence in their services thereby increasing their profit.

## Recommendations

On evaluation of the above findings, the following recommendations are proposed;

1. Since the survival of commercial banks depends on liquidity and profitability, the banks should not only concentrate on profit maximisation alone but should also adopt efficient measures that will ensure effective liquidity management to improve their profitability.
2. It is further recommended that there is need for commercial banks to increase their operating cash flow, through reduction of their credit/loan repayment period in order to positively influence their financial performance which is profit.

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