IMPACT OF WORKING CAPITAL ON FIRMS’ PERFORMANCE IN NIGERIA

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Abstract
The ability of management to focus mainly on profit making and neglecting the working capital leads to firms’ failure. The objective of this study is to examine the impact of working capital on firms’ performance in Nigeria. The data were extracted from audited financial statements of agricultural firms and banks respectively for the period of thirteen (13) years (2002-2014). Data were analyses with the use panel method. The findings indicate that there is no significant relationship between working capital and firms’ performance in Nigeria. There is a significant relationship between working capital and firms’ performance measured by current ratio. The study recommends that firms should focus on ability to meet is short term obligation in order to ensure the survival of the business in the long run.

Keywords: working capital, current ratio, Firm Performance

1. INTRODUCTION

Working capital management is vital especially for firms, where a major part of assets is composed of current assets (Horne and Wachowitz, 2000). Working capital have direct impact on profitability and liquidity of firms (Raheman and Nasr, 2007). The profitability and liquidity trade-off is important because if working capital is not well managed or given due considerations then the firms are likely to fail and face bankruptcy (Kargar and Bluementhal, 1994). Working capital is known as life giving force for any economic unit and its management is considered among the most important function of corporate management. According to Mukhopadhyav (2004), working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of business. The greater the relative proportion of liquid assets, the lesser the risk of running out of cash, all other things being equal. Shin and Soenen (1998) argued that efficient working capital management is very important to create value for the shareholders while Smith et al. (1997) emphasized that profitability and liquidity are the salient goals of working capital management.

Considering the importance of working capital management the researchers focused on evaluating the working capital management and profitability relationship such as Uyar, 2009; Samiloglu and Demirgunes, 2008; Vishnani and Shah, 2007; Teruel and Pedro, 2007; Lazaridis & Tryfonidis, 2006; Padachi, 2006; Shin and Soenen, 1998; Smith...

2. LITERATURE REVIEW

There has been different definition of working capital by different authors. Working capital Working capital of a company is one of the most important measures in any financial statement which is also easy to calculate (Olivia, 2011). It is a reflection of the current financial condition of a company that enables investors to know about the health (financial) of a company. According to Okeji (1990) working capital are current assets which are or can be converted into cash with in an accounting year. Working capital also consist the portion of business assets that is represented at any one time of the operation cycle, such assets are Trade Receivables, inventories of raw materials, work-in-progress, finished goods, cash and marketable securities (Smith 1980).

A company can be endowed with assets and profitability but short of liquidity if it's assets cannot readily be converted into cash (Dong 2010). Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short term debt and upcoming operational expenses (Azam and Haider, 2011). According to Shin and Soenen (1998) and Smith et al., (1997), working capital decisions provide a classic example of the risk-return nature of financial decision making. Increasing a firm’s net working capital, current assets less current liabilities, reduces the risk of a firm not being able to pay its bills on time. This at the same time reduces the overall profitability of the firm. Working capital management involves the risk-return trade-off: not taking additional risk unless compensated with additional returns (Lingesiya and Nalini 2011).

The management of working capital is important in every organization. Working capital is the difference between an organization’s current assets and its current liabilities (Samson et al., 2012). It is of more importance that it is to support the day-to-day financial operations of an organization, including the purchase of stock, the payment of salaries, wages and other business expenses and the financing of credit sales (ibid).

2.1 Conceptual Issues of Working Capital

The major concept of working capital can be categorized into two namely; gross working capital and net working capital concept. Gross working capital concept is the firm’s total investment in current assets which focuses attention on optimum investment in current assets and it’s financing. Net working capital concept is the sum when short-
term liabilities are extracted from the current assets which also show the liquidity position of the firm and suggest the working capital need may be financed by prominent sources of fund (Sen and Oruc, 2009).

2.1.1 Model of Working capital

The model of the working capital cycle (shown in the figure below) articulates the basic components of working capital management interrelationship and their dynamics. Working capital policy must be taken into consideration to ensure proper management of liquidation for the purpose of smooth flow of the day-to-day operations in the business (Arnold, 2008).

![Diagram of Working Capital Cycle]

The working capital cycle starts from purchasing of raw materials to work in progress and ending with finished products. The finished goods are kept as inventories, ready to be sold for customers for cash or credit transactions. If the finished goods (i.e. inventory) are sold on credit to customers then the cash would be tightening in the form...
of account receivables. These amounts would be collected in accordance with the trade credit policy being given to customers (Arnold, 2008; Maness, 1994).

2.1.2 Components of Working Capital

According to Pandey (2002), working capital of a firm is a combination of its short term assets and liabilities. Current assets of a firm are made up of accounts receivables, trade credit and consumer credit; inventory, raw materials, work-in progress and finished goods; cash and all receipts falling due within a year (Barine 2012 and Investopedia 2012). Current liabilities consists of accounts payable for purchases, overdrafts, loan repayments falling due within a year, and other payments to government falling due within a year (Adeniji 2008). The components of working capital a firm invests in and its level of investments is a function of firm’s operating factors. Investment in accounts receivable is determined by the firm’s credit policy. The longer the credit period given to a customer, the higher will be its investments in accounts receivables (Brealey et al., 2004).

Investment in inventory is a function of the cost of holding such inventory, storage, obsolescence, opportunity cost of investments in inventory, rate of return on other equivalent-risk investment opportunities (Barine 2012). The higher the cost of holding inventory, the lower will be the level of inventory a firm will hold (Brealey et al., 2004). Discounts on bulk purchases also determine the amount of inventory held in a firm. Benefits of holding inventory are reduction in stock-outs for production and sales with its attendant costs.

2.1.3 Determinants of Working Capital

There are no specific rules or formulae to determine the working capital requirements of firms. A large number of factors, each having a different importance influences working capital needs of firms. The following is the description of factors which generally influence the working capital requirements of firms (Samson et al., 2012 and Adeniji, 2008).

2.1.3.1 Nature of Business: Working capital requirements of a firm are basically influenced by the nature of the business. In practice, trading and financial firms have a very small investment in fixed assets but require a large sum of money to be invested in working capital (Barine 2012). In contrast, public utilities have a very limited need for working capital and have to invest abundantly in fixed assets.

2.1.3.2 Sales and Demand Conditions: According to Samson (2012), there is a relationship between volume of sales and the working capital needs of an organization. However, it is difficult to precisely determine the relationship between volume of sales and working capital needs. In practice, current assets will have to be employed before growth takes place. It is therefore, necessary to make advance planning of working capital for a growing firm on a continuous basis.

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2.1.3.3 **Technology and manufacturing police:** The production process has a lot of impact on the working capital requirement. The manufacturing cycle comprises of the purchase and the use of raw materials and the production of finished goods (Barine 2012). The longer the manufacturing cycle, the larger will be the firm’s working capital requirements.

2.1.3.4 **Credit policy of the firm:** The credit policy of the firm affects the working capital by influencing the level of debtors. The credit terms to be granted to the customers may depend upon the norm of the industry to which the firm belongs (Adeniji 2008). But a firm has the flexibility of shaping its credit policy within the constant of industry norms and practices.

2.1.3.5 **Operating efficiency:** This relates to the optimum utilization of resources at minimum costs. The firm will be effectively contributing in keeping the working capital investment at a lower level if it is efficient in controlling operating costs and utilizing current assets (Sharipo 2010 and Hillier et al., 2010).

2.1.3.6 **Price level changes:** Poudel (2001) states that price is relevant to purchase of material, packaging of finished goods and eventual sales. The increasing shifts in price level make functions of financial managers difficult. Management should anticipate the effects of price level changes on working capital requirements of the firm. Generally, rising price level will require a firm to maintain higher amount of working capital. Same levels of current assets will need increased investment when prices are increasing.

2.1.3.7 **Credit granted by suppliers:** The working capital requirements of a firm are also affected by credit terms granted by its creditors. A firm will need less working capital if liberal credit terms are available to it. Similarly, the availability of credit from banks also influences the working capital needs of the firm (Poudel 2011). A firm which can get bank credit easily on favourable conditions will operate with less working capital than a firm without such facility.

2.1.4 **Need for Investment in Working Capital**

According to Pandey (2003), working capital is required to finance the day-to-day activities of a firm and provide for growth. The need for working capital in a business organization cannot be overemphasized. There are hardly any business organizations that do not require any amount of working capital. However, firms differ in their requirement of working capital. When a company grows and its output increases, the volume of its working capital or net current assets will also increase. The volume of net current assets will also depend on the policies adopted by a company for managing individual current assets. A company with no stock, no debtors and no creditors will have little or no investment in working capital which will result in little or no profit.

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Where a firm is experiencing growth or significant seasonal fluctuations, working capital must be available to finance the necessary inventory and bills payable. A high level of current assets, especially cash strengthens the firms’ liquidity position and reduces risk. The liquidity will facilitate the following:

- Purchase of raw materials
- Payment of expenses incurred
- Paying creditors
- Payment of dividend to existing shareholders
- Payment of tax to the government for the provision of social amenities
- Payment for fixed assets, etc.

With adequate working capital, there can be no occurrence of expansion without the firm being able to meet its commitments. This will result in overtrading which is a case of holding too little working capital and overstretching investments beyond the firm’s capacity. Moreover, there could be production disruption; due to there being inadequate raw materials or stock of work-in-progress, low sales resulting from insufficient cash to advertise and goodwill may be impaired. For example, in the absence of stock of finished goods to meet customers demand. All these could happen when there is inadequate working capital and it will have an adverse effect on the company’s profitability. We can therefore now see how important working capital is to any business organization and why it is necessary to manage it efficiently.

2.1.5 Dangers of Insufficient Working Capital

Firms with insufficient working capital suffer a great disadvantage. Some researchers stressed that such firms are in financial ‘straight jacket’ as their operations are hindered and their growth is stunted by lack of funds to finance extra stock and creditors. The weakness of such firms is also demonstrated by their dependence on short-term sources of funds to finance their operation. Sometimes, this great dependence extends into the funds of the providers, who then begin to dictate the policy of business and in extreme cases may bring profitable operation to a halt by calling a creditors meeting and appropriating a liquidator. Hence, a business must have adequate funds to finance the continuity of its operations. The following will be the effects on the company operating with insufficient working capital:

2.1.5.1 Stagnant growth: It becomes difficult for the company to take advantage of new opportunities or develop new products or adapt to alteration of production techniques needed when new opportunities arise

2.1.5.2 Loss of credit opportunity: The inadequacy of working capital funds make firms unable to secure attractive credit opportunities. A company with working capital need not seek for credit opportunities because the firm will be able to finance large stock and can therefore place large orders
2.1.5.3 Loss of cash discount: Companies try to persuade their debtors to pay early by offering them a cash discount off the actual price. A company with inadequate working capital funds will not be able to enjoy this benefit.

2.1.5.4 Loss of good will: A company with good reputation can expect cooperation from the trade creditors at the time of financial difficulties. A firm will lose its reputation when it is not in position to honour its short-term obligations. As a result, the firm faces tight credit terms.

2.1.5.5 Organizational control by creditors: If the working capital of a business is grossly inadequate, it will be forced to finance its operations merely by short-term borrowing. Eventually, a point will be reached beyond which lenders are not willing to extend additional credit and this may jeopardize the existence of business as it depends on the actions of the creditors. It can also call for the liquidation of the company, even though the business is profitable.

2.1.6 Firm Financial Performance

The performance of any sector can be improved by effectively managing WC requirements of the respective firms’. The firms need to be able to meet their short term obligations as and when they fall due. Zhang (2010) defined the firm performance as the results or outcomes of firm during a certain operating period. He conclude that financial performance is measured by financial ratios. Ratios also extend the traditional way of measuring financial performance by relying on financial statements (Saliha, 2011). Financial Performance of an entity refers to the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

2.1.7 Relationship between Working Capital and Firms’ Financial Performance

Working capital management refers to the administration of all the components of working capital such as cash, marketable securities, debtors and stock receivable etc (Pandey 2007). It directly affects the liquidity, profitability and performance of any company. Tentatively the level of investment in current assets has a bearing on the profitability of the firm. Excess of investment in working capital casts a negative impact on the profitability of a firm and positive impact on the liquidity. Working Capital Management is among the most important decisions taken by the financial manager. It directly affects the profitability and is considered one of the most important parts of financial decision making (Haq et al 2011).

Firms’ managers should ensure they accurately control the trade-off between profit maximization and liquidity in order to reach optimal WCM. The optimal WCM is expected to contribute positively to the creation of firm’s value (Abudho, et al, 2013). Smith and Sell (2008) contends that the goal of working capital management is to ensure
that the firm is able to continue its operation and that it has sufficient cash flows to satisfy both maturing short-term debt and upcoming operational expenses. This will obviously have significant effect on the firm’s financial performance (Smith and Sell, 2008).

2.2 Empirical Evidences

Bardia (2004) in his study on steel giant SAIL for the period from 1991-92 to 2001-02 concluded that there is a positive relationship between liquidity and profitability. Ghosh and Maji (2004) concluded a study on working capital management efficiency from the view point of Indian cement industries and indicated that there is a relationship between effective utilization of current assets and profitability of the companies under study, although there seemed to be a wide range in the degrees of such relationship between company to company. Amit, Sur and Rakshit (2005) studied the relationship between working capital and profitability in the context of Indian pharmaceutical industries and concluded that no definite relationship can be established between liquidity and profitability. Furthermore, Narware (2004) conducted a study of working capital management and profitability by using Fertilizer Company, which disclosed both negative and positive association.

Padachi (2006) analyzed working capital management and performance and trend of the working capital management in different sectors in small manufacturing firms by using key variables of inventory days, account receivable days, account payable days and cash conversion cycle. He concluded that different industries’ operational efficiency shows significant changes and the paper and printing industry has been able to achieve high scores on the various components of working capital and this has positively influenced its profitability. Vishmani at el., (2007) explained that the company’s inventory management policy, debtors’ management policy and creditors’ management policy play an important role in its profitability performance.

3. METHODOLOGY

This study focuses on quoted firms from agricultural and banking sectors of Nigeria. A total of 13 firms (see table 1 for the break down) will be used for a period of 13 years (2002-2014). The firms are selected base on quoted firm Nigeria stock exchange, availability of data and have been in existence since 2002 to 2014.

Table 1: Sector-Wise Distribution of Sample Firms

<table>
<thead>
<tr>
<th>Name of Sector</th>
<th>No. of firms</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>4</td>
<td>30.769%</td>
</tr>
<tr>
<td>Banks</td>
<td>9</td>
<td>69.231%</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Authors’ calculation from selected firms quoted in Nigeria Stock Exchange (NSE)

In view of the fact, the main objective of this research is to examine the effects of working capital, current ratio of firms’ financial performance of agricultural firms and
banks listed on Nigerian Stock Exchange. The model designed to address the impact of working capital on firms’ performance in Nigeria is stated below;

$$ROA = f(WC, CR, SIZE, POC)$$

Under this study, the variables are classified into dependent variable, independent variables and control variables

**Table 2: Showing Summary of Variables and Calculation**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEASUREMENT</th>
<th>ABBREVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on Assets</td>
<td>(Income/Total Assets)*100</td>
<td>ROA</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Capital</td>
<td>Current Assets - Current Liabilities</td>
<td>WC</td>
</tr>
<tr>
<td>Current Ratio</td>
<td>Current Assets / Current liabilities</td>
<td>CR</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firms' Size</td>
<td>Log of Total Assets</td>
<td>SIZE</td>
</tr>
<tr>
<td>Change in Policy</td>
<td>Measures change in policy in each sectors. Old policy represent 1 and 3 while new policy represent 2 and 4 for banks and agricultural sector respectively</td>
<td>POC</td>
</tr>
</tbody>
</table>

In econometric model,

$$ROA_{it} = \alpha_{it} + \beta_1 WC_{it} + \beta_2 CR_{it} + \beta_3 Size_{it} + \beta_4 POC_{it} + \mu_{it}$$

where 'i' denotes the nth firms, and the subscript t denotes the tth year, \( \mu \) is the error term. The model estimation make use of panel data method. To determine which of the model under the panel method (fixed effect model or random effect model) to choose from, Hausman test will use. EVIEWS will be used to analysis the above model.

4. RESULTS AND FINDINGS

The descriptive statistics was computed, so that it gives detail understanding to the trend of working capital impact on performance among the sample firms and it is used as stand to give recommendations after identifying the association between the variables from correlation and regression analyses. Descriptive analysis shows the average, and standard deviation of the different variables of interest in the study. It also presents the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable can achieve. The dependent, independent and control variables were grouped into components; namely, dependent variables which indicate performance namely, return on Asset (ROA), independent variables which consist of working capital (WC) and current ratio (CR) and control variables which consist of firm size (SIZE) and policy change (POC). Accordingly, the descriptive statistics for all variables are presented below.

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4.1 Pre-Test

4.1.1 Correlation Analysis

A positive relationship indicates that as one variable increases the other variable tend to increase while a negative relationship means that upward movement in one variable brings about downward movement in the other variable. The values are interpreted between 0 (no relationship) and 1 (perfect relationship). Also, the relationship is considered small when $r = \pm 0.1$ to $\pm 0.29$, while the relationship is considered medium when $r = \pm 0.30$ to $\pm 0.49$, and when $r$ is $\pm 0.50$ and above, the relationship can be considered strong (Hailab, 2014).

Below in table 2, the correlation matrix which shows the relationship of return on asset (ROA), working capital (WC), current ratio (CR), size of the company (SIZE) and policy change (POC).

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>WC</th>
<th>CR</th>
<th>SIZE</th>
<th>POC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WC</td>
<td>-0.227081</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>-0.349634</td>
<td>0.894819</td>
<td>1.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.209489</td>
<td>-0.550011</td>
<td>-0.455277</td>
<td>1.000000</td>
<td></td>
</tr>
<tr>
<td>POC</td>
<td>0.304577</td>
<td>0.125991</td>
<td>-0.174037</td>
<td>-0.058949</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

*Source:* Authors calculation based on each quoted Agricultural firms and Bank’s financial statement data (2002-2014)

The correlation statistic shows the relationship between variables. It is used to determine if one variable is correlated to another variable. It also helps to indicate whether a positive correlation is to be expected or a negative correlation is expected. From table 2, negative correlation is expected between WC and CR while positive correlation is expected between SIZE and POC.

4.1.2 Descriptive Statistic

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>WC</th>
<th>CR</th>
<th>SIZE</th>
<th>POC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN</td>
<td>4.571203</td>
<td>7.271271</td>
<td>2.050726</td>
<td>8.098593</td>
<td>1.008621</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>2.995497</td>
<td>7.520662</td>
<td>1.260945</td>
<td>8.340725</td>
<td>1.000000</td>
</tr>
<tr>
<td>MAX</td>
<td>43.20420</td>
<td>9.280353</td>
<td>22.96015</td>
<td>9.534511</td>
<td>2.000000</td>
</tr>
<tr>
<td>MIN</td>
<td>-5.994743</td>
<td>4.584501</td>
<td>1.008247</td>
<td>5.179497</td>
<td>0.000000</td>
</tr>
<tr>
<td>STD.DEV</td>
<td>6.036188</td>
<td>1.103978</td>
<td>2.892128</td>
<td>1.004912</td>
<td>0.665885</td>
</tr>
<tr>
<td>SKEWNESS</td>
<td>3.179318</td>
<td>-0.783559</td>
<td>4.860069</td>
<td>-0.710278</td>
<td>-0.009430</td>
</tr>
<tr>
<td>KURTOSIS</td>
<td>18.05347</td>
<td>2.765234</td>
<td>29.81133</td>
<td>2.576920</td>
<td>2.274755</td>
</tr>
<tr>
<td>JARQ.BERA</td>
<td>1290.690</td>
<td>12.13638</td>
<td>3931.088</td>
<td>10.61871</td>
<td>2.543957</td>
</tr>
<tr>
<td>PROB.</td>
<td>0.000000</td>
<td>0.002315</td>
<td>0.000000</td>
<td>0.004945</td>
<td>0.280276</td>
</tr>
</tbody>
</table>

*Source:* Authors calculation based on each quoted Agricultural firms and Bank’s financial statement data (2002-2014)

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The above table 3 shows the results of summary statistics of all the taken variables in the analysis. The yearly returns on Asset (ROA), working capital (WC), current ratio (CR), size of the company (SIZE), and policy change (POC) are 4.571, 7.271, 2.051, 8.099 and 1.009 respectively. The mean shows an average of the value for each of the variables. This is the sum of the data for each period divided by the numbers of observation. The standard deviation measures how concentrated the data are around mean. Low standard deviation represents that the data are close to the mean while a high standard deviation indicates that data spreads over a large range of values. ROA have high standard deviation while WC, CR, SIZE and POC have low standard deviation.

The measure of asymmetric of the probability distribution of a real valued random variable about its mean is known as skewness. CR, ROA and POC have positive skewness while WC and SIZE has negative skewness. Kurtosis measure the peakedness of the variables. For a normal distribution if the kurtosis coefficient is above three it means there is a high peak while if it is less than three it means there is a low peak. In this study it is discovered that ROA, WC, CR, SIZE and POC have a kurtosis coefficients of 18.053, 2.765, 29.811, 2.577, and 2.275 respectively.

Jarque-bera test is a goodness-of-fit test of whether sample data have the skewness and kurtosis matching a normal distribution. The null hypothesis will be rejected for ROA, WC, CR and SIZE while POC, the null will be accepted using the probability level of significance.
4.2 Regression Analysis

The analysis of the sample data are of four parts: Pool regression, Fixed effect and Random effect and then the Hausman test.

**Table: 4: Summary of Panel Data Regression**

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>DEPENDENT VARIABLES (ROA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POOL</td>
</tr>
<tr>
<td>WC: Coefficient</td>
<td>1.381488</td>
</tr>
<tr>
<td>T-statistics</td>
<td>0.95887</td>
</tr>
<tr>
<td>P-value</td>
<td>0.3397</td>
</tr>
<tr>
<td>CR: Coefficient</td>
<td>0.414050</td>
</tr>
<tr>
<td>T-statistics</td>
<td>1.756949</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0817</td>
</tr>
<tr>
<td>SIZE: Coefficient</td>
<td>-2.858366</td>
</tr>
<tr>
<td>T-statistics</td>
<td>-1.887382</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0617</td>
</tr>
<tr>
<td>POC: Coefficient</td>
<td>1.300836</td>
</tr>
<tr>
<td>T-statistics</td>
<td>1.397157</td>
</tr>
<tr>
<td>P-value</td>
<td>0.1652</td>
</tr>
<tr>
<td>C: Coefficient</td>
<td>15.51361</td>
</tr>
<tr>
<td>T-statistics</td>
<td>2.860087</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0051</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.199488</td>
</tr>
<tr>
<td>Adjusted r²</td>
<td>0.170641</td>
</tr>
<tr>
<td>F-statistics</td>
<td>6.915330</td>
</tr>
<tr>
<td>Prob (F-statistics)</td>
<td>0.000052</td>
</tr>
<tr>
<td>Durbin-Watson Statistics</td>
<td>1.082592</td>
</tr>
<tr>
<td>T-Tab</td>
<td>1.980</td>
</tr>
<tr>
<td>F-tab</td>
<td>2.34</td>
</tr>
<tr>
<td>Total Observation</td>
<td>116</td>
</tr>
</tbody>
</table>

**Source:** Authors calculation based on each quoted Agricultural firms and Bank’s financial statement data (2002-2014)

4.2.1 Pool Regression

\[ \text{ROA} = 15.514 + 1.381 \text{WC} + 0.414 \text{CR} - 2.858 \text{SIZE} + 1.301 \text{POC} \]

Standard error = \((5.424174) \ (1.440740) \ (0.235664) \ (1.514461) \ (0.931054)\)

The result of the equation indicates that not all variables confirm to apriority expectation. This indicates that not all variables are positive. From the equation above, the SIZE variable is negatively correlated to ROA, while other variables such as WC, CR Corresponding Author: +2348037381446
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and POC are positively correlated to ROA. From the coefficient, the intercept or constant, in the model for the value of $\beta$ is 15.514, which implies that holding the entire variables (WC, CR, SIZE, and POC) constant, ROA equals 15.514. ROA will vary positively up to the tune of 15.514 when all variables are held constant. Under the slope coefficient ($\beta_1$ – $\beta_4$), for WC ($\beta_1$) indicates that a unit change in WC when other variables are held constant will lead to a positive variation of 1.381 on ROA. As for $\beta_2$ (CR) a positive variation is reported. This indicates that holding all other variables constant when there is a unit change in current ratio; ROA tends to increase at a rate of 0.414. For $\beta_3$ (SIZE) a negative variation is reported. This indicates that holding all other variables constant, a unit change in size of the company, tends to reduce ROA at a rate of -2.858. As for $\beta_4$ (POC) a positive variation is recorded which means that for every increase in POC, ROA tends to increase at a rate of 1.300.

### 4.2.2 Fixed Effect

$$\text{ROA} = 29.890 + 1.718\text{WC} + 0.487\text{CR} - 4.989\text{SIZE} + 1.582\text{POC}$$

Standard error= (8.775) (1.457) (0.217) (1.600) (1.448)

The result of the equation indicates that not all variables confirm to apriority expectation. This indicates that not all variables are positive. From table 4, SIZE is negatively correlated to ROA while other variables (WC, CR and POC) are positively correlated to ROA. From the coefficient, the intercept or constant, in the model for the value of $\beta$ is 29.890, which implies that holding the entire variables (WC, CR, SIZE, and POC) constant, ROA equals 29.890. ROA will vary positively up to the tune of 29.890 when all variables are held constant. Under the slope coefficient ($\beta_1$ – $\beta_4$), for WC ($\beta_1$) indicates that a unit change in WC when other variables are held constant will lead to a positive variation of 1.718 on ROA. As for $\beta_2$ (CR) a positive variation is reported. This indicates that holding all other variables constant when there is a unit change in current ratio; ROA tends to increase at a rate of 0.487. For $\beta_3$ (SIZE) a negative variation is reported. This indicates that holding all other variables constant, a unit change in size of the company, tends to reduce ROA at a rate of -4.989. As for $\beta_4$ (POC) a positive variation is recorded which means that for every increase in POC, ROA tends to increase at a rate of 1.582.

From the table 4 above, the fixed effect shows that working capital (WC) has a T-statistic of 1.179 which is less than our T-tab of 1.980 (see table 4) while our probability of 0.2413 is greater than our level of significance of 0.05 ($T_{prob\ cal} > level\ of\ significance$) which implies that we should accept null hypothesis and reject alternative hypothesis. Also current ratio (CR), with a T-statistic of 2.239 which is greater than our T-tab of 1.980 ($T_{cal} > T_{tab}$) while our probability calculated of 0.0274 is less than our level of significance of 0.05 ($T_{prob\ cal} < level\ of\ significance$) which implies that we should reject null hypothesis and accept the alternative hypothesis. For size of the company (SIZE), it has a T-statistic of -3.118 which is less than our T-tab of 1.980 ($T_{cal} < T_{tab}$) while our probability calculated of 0.0024 is less than our level of significance of 0.05 ($T_{prob\ cal} < level\ of\ significance$) which implies that there we reject null hypothesis. Since, the p-
value supersedes the t-statistics we therefore reject our null hypothesis and accept alternative hypotheses. Change in policy (POC) shows a T-statistic of 1.092 which is less than our T-tab of 1.980 (T_{cal} < T_{tab}) while its probability of 0.2775 is greater than our level of significance of 0.05 (T_{prob \, cal} > level of significance) which implies that we accept null hypothesis and reject alternative hypothesis. Leaving all variables constant, it is shown in table 4.3.2 that our T-statistic of 3.406 is greater than our T-tab of 1.980 (T_{cal} > T_{tab}) while our probability of 0.0010 is less than our level of significance of 0.05 (T_{prob \, cal} < level of significance) which implies that we reject null hypothesis and accept alternative hypothesis.

For our F-statistics, in order to test for joint hypothesis that WC, CR, SIZE and POC are jointly affecting the dependent variable ROA at a level of significance of 5%. From the table 4.3.2 above, it is shown that our F-statistic of 6.6914 is greater than our F-tab of 2.34 (F_{cal} > F_{tab}) while the probability of F-statistic is 0.000 which is less than our level of significance of 0.05 (F_{prob \, cal} < level of significance) which implies that we reject the null hypothesis and accept alternative hypothesis. The F-Statistic and Probability shows that all the variables (independent and control variables) jointly has significant effect on performance.

The R-squared gives statistical information about the goodness of fit of information. An R-squared of 1 indicates that regression is perfect. In our result from the table 4.3.2 above, r-squared is 0.5195 which indicates that about 51.95% of the variation in the dependent variable is explained by the explanatory variable. This indicates a good fit since 48.05% (100-51.95) % of the variation of dependent variable are not accounted for in the independent variables which are attributable to error term. Adjusted R-squared is simply the modification of r-squared. It adjusts the explanatory variable in term of the model. Adjusted r-squared tend to increase if only variables improve the model more than expected by chance. Our adjusted r-squared for table 4 was 0.4419 (44.19%). This further justifies the effect of the r-squared. The Durbin Watson (DW) test is used to test the presence of autocorrelation. It tests for both the upper and lower value of the observation. In the result from table 4, the DW is 1.6529. The DW table shows an upper and lower value of 1.924 and 1.550 respectively. This means that there is auto-correlation, since the DW calculated fall within the DW tabulated.

### 4.2.3 Random Effect

\[
\text{ROA} = 21.673 + 1.604\text{WC} + 0.462\text{CR} - 3.783\text{SIZE} + 0.900\text{POC}
\]

Standard error= (5.281) (1.335) (0.210) (1.393) (0.896)

The result of the equation indicates that not all variables confirm to apriority expectation. This indicates that not all variables are positive. From the equation above, the SIZE variable is negatively correlated to ROA, while other variables such as WC, CR and POC are positively correlated to ROA.
From the coefficient, the intercept or constant, in the model for the value of β is 21.673, which implies that holding the entire variables (WC, CR, SIZE, and POC) constant, ROA equals 21.673. ROA will vary positively up to the tune of 21.673 when all variables are held constant. Under the slope coefficient (β1 – β4), for WC (β1) indicates that a unit change in WC when other variables are held constant will lead to a positive variation of 1.604 on ROA. As for β2 (CR) a positive variation is reported. This indicates that holding all other variables constant when there is a unit change in current ratio; ROA tends to increase at a rate of 0.462. For β3 (SIZE) a negative variation is reported. This indicates that holding all other variables constant, a unit change in size of the company, tends to reduce ROA at a rate of -3.783. As for β4 (POC) a positive variation is recorded which means that for every increase in POC, ROA tends to increase at a rate of 0.900.

From the table 4 above, the fixed effect shows that working capital (WC) has a T-statistic of 1.202 which is less than our T-tab of 1.980 (Tcal < Ttab) while our probability of 0.2321 is greater than our level of significance of 0.05 (Tprob cal > level of significance) which implies that we should accept null hypothesis and reject alternative hypothesis. Also current ratio (CR), with a T-statistic of 2.202 which is greater than our T-tab of 1.980 (Tcal > Ttab) while our probability calculated of 0.0298 is less than our level of significance of 0.05 (Tprob cal < level of significance) which implies that we should reject null hypothesis and accept the alternative hypothesis. For size of the company (SIZE), it has a T-statistic of -2.716 which is less than our T-tab of 1.980 (Tcal < Ttab) while our probability calculated of 0.0077 is less than our level of significance of 0.05 (Tprob cal < level of significance) which implies that there we reject null hypothesis. Since, the p-value supersedes the t-statistics we therefore reject our null hypothesis and accept alternative hypotheses. Change in policy (POC) shows a T-statistic of 1.005 which is less than our T-tab of 1.980 (Tcal < Ttab) while its probability of 0.3172 is greater than our level of significance of 0.05 (Tprob cal > level of significance) which implies that we accept null hypothesis and reject alternative hypothesis. Leaving all variables constant, it is shown in table 4.3.2 that our T-statistic of 4.103 is greater than our T-tab of 1.980 (Tcal > Ttab) while our probability of 0.0001 is less than our level of significance of 0.05 (Tprob cal < level of significance) which implies that we reject null hypothesis and accept alternative hypothesis.

For our F-statistics, in order to test for joint hypothesis that WC, CR, SIZE and POC are jointly affecting the dependent variable ROA at a level of significance of 5%. From the table 4.3.2 above, it is shown that our F-statistic of 8.048 is greater than our F-tab of 2.34 (Fcal > Ftab) while the probability of F-statistic is 0.000010 which is less than our level of significance of 0.05 (Fprob cal < level of significance) which implies that we reject the null hypothesis and accept alternative hypothesis. The F-Statistic and Probability shows that all the variables (independent and control variables) jointly has significant effect on performance.

The R-squared gives statistical information about the goodness of fit of information. An R-squared of 1 indicates that regression is perfect. In our result from the table 4.3.2 above, r-squared is 0.2248 which indicates that about 22.48% of the variation
in the dependent variable is explained by the explanatory variable. This indicates a low fit since 77.52% (100-22.48%) of the variation of dependent variable are not accounted for in the independent variables which are attributable to error term.

Adjusted R-squared is simply the modification of r-squared. It adjusts the explanatory variable in term of the model. Adjusted r-squared tend to increase if only variables improve the model more than expected by chance. Our adjusted r-squared for table 4 was 0.1969 (19.69%). This further justifies the effect of the r-squared. The Durbin Watson (DW) test is used to test the presence of autocorrelation. It tests for both the upper and lower value of the observation. In the result from table 4, the DW is 1.4239. The DW table shows an upper and lower value of 1.924 and 1.550 respectively. This means that there is auto-correlation, since the DW calculated fall within the DW tabulated.

4.3.3 Hausman Test

The decision rule of rejecting the random effect result is when the p-value(under Hausman test) is less than 1% level of significance, if the p-value is greater than 1% level of significance we accept the random effect result of the regression.

<table>
<thead>
<tr>
<th>Table 5: Hausman test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlated Random Effects - Hausman Test</td>
</tr>
<tr>
<td>Equation: Untitled</td>
</tr>
<tr>
<td>Test cross-section random effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>13.947080</td>
<td>4</td>
<td>0.0075</td>
</tr>
</tbody>
</table>

** Estimated cross-section random effects variance is zero.

Source: Agricultural firms and Banks financial statement, authors’ calculation.

From the table 5, showing the hausman test, the fixed effect result is accepted using 1% level of significance.

5. CONCLUSION AND RECOMMENDATIONS

The study has investigated the impact of working capital on the performance of quoted agricultural firms and banks in Nigeria Stock Exchange (NSE). Data have been analyzed by applying both descriptive and inferential statistics for the time period of 2002 to 2014. It is found that significant statistical evidence exists to support the hypotheses that working capital is positively associated to performance. There is a significant relationship between the size of firms’ and firms’ performance. Also, change in policy of firms has effect on firms’ performance in Nigeria.

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It is required that working capital should be given special attention due to its relative importance. Working capital should not be left for financial management alone, but should be taken as a matter requiring the attention and ongoing monitoring by the overall management. It should be remembered that insufficient working capital could result in failure or bankruptcy for agricultural firms and banks. The responsibility of working capital should be assigned to professionals if not carefully handled and it must be adequately compared to each other from one period to another. Effective policies must be formulated for components of working capital and firms’ should strive towards increasing the size of the firm as it would significantly increase the performance of such firm.

REFERENCES


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