

## **LIQUIDITY MANAGEMENT AND THE PROFITABILITY OF MANUFACTURING FIRMS IN NIGERIA**

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### **ABSTRACT**

This study was carried out to investigate the impact of liquidity management on the profitability of manufacturing firms in Nigeria. Data were obtained from the financial statements of 30 firms purposively selected from among the manufacturing firms listed on the floor of the Nigerian Stock Exchange. Panel data design, combining time series and cross sectional data was adopted, while descriptive statistics, multiple correlation and regression techniques were the tools of analysis. The study covered a period of five years (from 2008 - 2012) making a total of 150 firm years data. The results show that OCR, ICP and DCP are positively but insignificantly related to ROCE while CR, CCC and CPP are inversely and insignificantly related to ROE. The combined effects of the predictor variables (operating cash flow ratio (OCR), current ratio (CR), cash conversion cycle (CCC), inventory conversion period (ICP), debtors collection period (DCP) and creditors payment period (CPP), on the independent or outcome variable (ROCE) was .227. The implication is that only 22.7% of the changes in the outcome variable (ROCE) is explained by the predictor variables. It was concluded that liquidity management, represented by operating cash flow ratio, current ratio and cash conversion cycle have no significant impact on the profitability of manufacturing firms in Nigeria.

Keywords: Liquidity, Profitability, Manufacturing firms.

### **INTRODUCTION**

Liquidity management is an important aspect of a firm's financial management. It is fundamental to the effective and efficient operation as well as the sustainability of its going concern status (Ben-Caleb, 2008).

It determines to a large extent the quantity of profit that results as well as the value of shareholders wealth. This is because a firm in order to survive must remain liquid, as failure to meet its obligations in due time results in bad credit rating by the short term creditors, reduction in the value of goodwill in the market and may ultimately lead to liquidation (Bhavet, 2011) Central to liquidity management is the issue of cash flow. Cash flow according to Libby, Libby and Short (1996) permits a firm to expand its operations, replace needed assets, take advantage of opportunities and pay dividends to its owners. A healthy cash flow is fundamental to the profitability and survival of a business (Glauder and Underdown, 2001). A firm with good return but poor cash flow may have its operations grounded.

Many companies declare healthy profits but still file for bankruptcy. The layman may see the situation as ironical. Troubled firms are forced into liquidity majorly because of cash flow problems (i.e. they can no longer meet their financial obligations as and when due). Peavler (2009) observed that 60% of failed businesses were of the opinion that all or most of their failures were due to cash flow problems. In Nigeria, many organizations that appear profitable on paper are forced into liquidation due to inability to meet short term debts when they fall due (Olubukunola, Uwuijbe and Ben-Caleb, 2012).

Cash flow management is an important aspect of working capital management with serious consequences on the profitability of any business. The aim of cash flow management is to achieve

desired trade-off between liquidity and profitability. Effective cash flow management has to do with the ability to estimate and evaluate the cash flow of the business; to well identify the long-run and short-run cash in flows and outflows; to timely sort out the cash shortage and excesses; and to formulate the financing and investing strategies respectively. It also helps in planning the payment 'to creditors on time, to avoid losing reputation and trust of customers and to avoid potential bankruptcy ((Rahem and Qaisar,2013).

As a company operates, cash flows into the business as income, and out as expenses. These activities, known as cash flows are at the heart of all businesses and determine the ability of the company to generate and continue operations. An important measure of the overall financial health of a company is the level of cash it generates through normal business operations known as operating cash flow. The operating cash flow ratio is considered a better representative of liquidity on the average day, and a more direct measure of liquidity. As Owolabi and Obida (2012) opined, analysis of liquidity needs the preparation of cash budgets and cash flow statement; but liquidity ratios, by establishing a relationship between cash and other current assets to current obligations, provide a quick measure of liquidity (Pandy, 2005). For the purpose of this, liquidity refers to the ease with which an asset can be converted to cash. The terms working capital liquidity and cash flow are used interchangeably.

Previous researchers have always used accrual based ratios like inventory Conversion Period (ICP), Debtors Collection Period (DCP), Creditors Payment Period (CPP), Cash Conversion Cycle (CCC), Current Ratio (CR), and Quick Ratio (QR), computed from income statement and balance sheet, to measure the impact of liquidity on profitability (Moss and Stine, 1993; Bodie and Merton, 2000; Keown, 2003; Appuhami, 2008; Egbide, 2009; Falope and Ejilore, 2009; Owolabi and Alu, 2012; Ben-Caleb, Olubukunola and Uwuigbe, 2013). As Kimmel, Paul, Jerry and Kieso (2008) observed, many analysts are critical of accrual-based numbers, because they feel that the adjustment process (in their preparation) allow too much management discretion. More so, current ratios are year-end balances of current assets and current liabilities which may not be representative of the firm's position during most of the year.

As a remedy to the above problem, analysts supplement accrual-based analysis with measures based on the cash flow statement. A ratio that addresses the above problem is the operating cash flow ratio, calculated as cash flow from operations divided by the average current liabilities. This is because operating cash flow involves the entire year. Hence, it is considered a better representative of liquidity on the average day and a more direct measure of liquidity (Adelagan, 2003).

So far, no empirical study, to the best our knowledge, has been carried out to measure the impact of operating cash flow ratio as a proxy of liquidity on the profitability of manufacturing firms in Nigeria, hence the need for this study. For the purpose of this study, profitability which is represented by return on capital employed (ROCE) is taken as the dependent variable while cash flow management, represented by operating cash flow ratio (OCR), current ratio (CR) and cash conversion cycle (CCC) are the independent or explanatory variables.

The main objective of this study is to investigate the impact of liquidity management on the profitability of manufacturing firms in Nigeria. The specific objectives include:

1. To determine the relationship between operating cash flow ratio and the profitability of manufacturing firms in Nigeria;
2. To determine the relationship between current ratio and the profitability of manufacturing firms in Nigeria; and
3. To determine the relationship between cash conversion cycle and the profitability of manufacturing firms in Nigeria.

To achieve the above objectives, the following hypotheses are stated:

H<sub>01</sub>: There is no significant relationship between operating cash flow ratio and the profitability of manufacturing firms in Nigeria;

H<sub>02</sub>: There is no significant relationship between current ratio and the profitability of manufacturing firms in Nigeria; and

H<sub>03</sub>: There is no significant relationship between cash conversion cycle and the profitability of manufacturing firms in Nigeria.

This study covers all manufacturing companies listed with the Nigerian Stock Exchange for the period of 2008 to 2012.

The remainder of this paper is organized as follows:

Section two deals with review of related literature; section three deals with the methodologies employed; section four deals with discussion of results while section five concludes with recommendations.

## **2.0: REVIEW OF RELATED LITERATURE**

This section deals with comprehensive review of literature - involving the theoretical framework of analysis and empirical review.

Liquidity management is an important aspect of working capital management with serious consequences on the profitability of any business. Liquidity management according to Ben-Caleb (2008), determines to a large extent the quality of profit that results as well as the value of shareholders wealth. This is because a firm, in order to survive must remain liquid as failure to meet its obligations in due time results in bad credit ratings by the short term creditors, reduction in the value of goodwill in the market and ultimately leads to liquidation (Bhavet, 2011). Hence a good and firm financial policy seeks to maintain adequate liquidity in order to meet its short term maturing obligations without impairing profitability.

### **2.1 Conceptual Framework**

#### **2.1.1 Measures of Liquidity Management**

The liquidity of a company is measured with the use of some financial ratios, referred to as liquidity ratios. This group of ratios measures the ability of the firm to meet its current obligations as and when due. Owolabi and Obida (2012) identified the following liquidity ratios:

**Operating Cash Flow Ratios (OCR):** In the process of a firm's operations, cash flows into it as income and flows out as expenses. The level of cash a firm generates through normal business activities (known as operating cash flow) indicates the overall health of the firm. Cash flows are at the heart of all businesses and determines the ability of the firm to generate profit and continue its operations. The formula for operating cash flow ratio is:  $\text{operating cash flow ratio} = \frac{\text{cash flow from operating activities}}{\text{current liabilities}}$ .

**Cash Conversion Cycle (CCC):** Measures the time lag between payment for purchases of inventories and collection of receivables from customers. It is calculated as:

$\text{Cash conversion cycle} = \text{inventory conversion period (ICP)} + \text{debtors collection period (DCP)},$   
minus creditors payment period (CPP).

The three variables on which cash conversion cycle depends are defined as follows:

$\text{Inventory conversion period (ICP)} = \frac{\text{inventories}}{\text{cost of sales}} \times 365 \text{ days}$

$\text{Debtors collection period (DCP)} = \frac{\text{debtors}}{\text{sales}} \times 365 \text{ days.}$

$\text{Creditors payment period (CPP)} = \frac{\text{creditors}}{\text{cost of sales}} \times 365 \text{ days.}$

Cash conversion period may be positive or negative. A positive result shows the number of days a firm must tie up capital while waiting for payment from customers. A negative result indicates the number of days of a firm holds cash received from sales before it pays its suppliers (Chitchisom, et al, 2007). The shorter the cash conversion cycle the more efficient the firm is managing its cash flow. Hence, the ultimate goal is having low or negative cash conversion cycle.

**Quick Ratio:** This ratio is similar to current ratio except that it is a more stringent test of short term liquidity and readily convertible into cash. It uses quick assets which excludes inventories. It is computed as:

Quick ratio = current assets less inventories/current liabilities.

### 2.1.2 Measures of Profitability

Test of profitability measures the adequacy of income by comparing earnings with one or more primary activities or factors in the financial statement. According to Igbem (2009). Profitability includes:

**Profit Margin (PM).** This measure relates gross income to sales. It represents the percentage profit in each naira sales. It is computed as:

Gross Earnings/Net sales.

**Earnings Per Share (EPS):** This measure relates profit to the number of shares outstanding and is computed as earnings before interest and taxes (EBIT)/Number of (common) shares outstanding.

**Return on Equity (ROE):** This measure relates profit to shareholders fund (equity). It is calculated as: Earnings before Interest and Taxes (EBIT)/Owners' Equity.

**Return on Capital Employed (ROCE):** This measure relates earnings to total capital employed in earning the profit. It is calculated as Earnings before interest and Taxes/Capital Employed (Total Assets).

Many analysts consider this ratio as the best measure of management's ability to effectively utilize assets independent of how they were financed. This is the measure that is used in this study as a proxy of profitability.

## 2.2. Theoretical Framework

This study is built upon the following theories:

**Trade-off Theory of Liquidity:** - The Trade-off theory of liquidity Myers (1977) suggests that firms target an optimal level liquidity to balance the benefits and cost of holding cash. The important benefit of holding cash according to Ogundipe and Ajao (2012) is that it constitutes a safety buffer which permits firms to avoid the cost of raising external funds or liquidating existing assets and which allow firms to finance their growth opportunities.

The cost of holding cash according to (Owolabi and Obida, 2012) include low rate of return of these assets because of liquidity premium and possibly tax disadvantage. The liquidity-profitability Trade-off Theory predicts a negative relationship between liquidity and profitability (Kim et al, 1998; Ozkan and Ozkan, 2002; Bates et al, 2009).

**Pecking Order Theory of Liquidity:-** Meyers (1984) opines that firms finance their investments firstly with retained earnings, then with safe debt and risky debts and finally with equity. When current operational cash flows are sufficient enough to finance new investments, firms repay debt and accumulate cash. When retained earnings are not enough to finance new current investments, firms use the accumulated cash holdings and if needed issue debt. This theory predicts a positive relationship between liquidity and profitability.

**Free Cash Flow Theory:-** As explained by Jensen (1986), managers have an incentive to hoard cash and increase the amount of assets under their control and to gain discretionary power over the firm's investment decisions. With the cash holding, they do not need to raise external funds and could undertake investments that have a negative impact on shareholders wealth. This theory also suggests a negative relationship between liquidity and profitability.

### 2.3. Empirical Review

Earlier researchers have used different measures of liquidity such as cash conversion cycle, current ratio etc., to investigate the relationship between liquidity and profitability and have come up with different results (Deloof, 2003; Nobanee,2005; Lazaridis and Trifonidis, 2006; Rahem and Nasr, 2007; Damirgunes and Samiloglu, 2008; Engvist et al, 2008; Stephanou et al, 2010; Rahem et al; Mathuva, 2010; Danuleliu, 2010; Alipour, 2011).

The idea of cash conversion cycle as tool for measuring liquidity management and performance of a company was introduced by Richard and Laughlin (1980). Gentry et al (1990), suggests that cash conversion cycle affect the market value of the firm. Lamberson (1991) opined that during expansion in economics, liquidity increases to some extent by working capital management but there is no noticeable change seen during economic slowdown. Schilling (1996) proved that the cash conversion cycle increases minimum liquidity requirement of the business organization. He further suggested that the optimal value of liquidity position is obtained at minimized level of liquidity. Therefore the deployment of available resources in working capital in a way to attain optimal level of liquidity is mandatory. The study further set up the association of cash conversion cycle with the required minimal level of liquidity in a way that if at times, cash conversion cycle increases the minimal level required for liquidity gets to upper levels; and if at times the cash conversion cycle decreases the minimal level required for liquidity moves down to lower levels.

A number of studies had supported the theory of liquidity-profitability trade-off. Shin and Soenen (1998) studied a sample of 58985 companies listed in American for 20 years period and found a strong inverse relationship between the net trade cycle (cash conversion cycle) and corporate performance. They concluded, based on this finding, that managers can increase the value of their shareholders by reducing the cash conversion to a reasonable minimum.

Deloof (2003) also investigated the relationship on a sample of 1009 large Belgian non financial firms and reached the same conclusion. Garcia-Teruel and Martinez-Salano (2004) investigated the effect of working capital management on profitability using a sample of 8872 small and medium-sized Spanish firms and found that shorter cash conversion cycle can improve the firms' profitability. Studying a sample of 131 firms listed in Athens, from 2001 to 2004, Lazaridis and Trifonidis (2005) established a strong negative relationship between profitability and cash conversion cycle and advised that management handle correctly the cash conversion cycle and keep each of its components at optimal level in order to enhance profitability.

Nobanee and Alhajar (2005) investigated the relationship between working capital management and profitability of a sample of 2123 Japanese non financial firms listed in the Tokyo stock exchange for a period of 15 years (1990-2004) and found out that managers can increase the profitability of their firms by shortening the cash conversion cycle, the receivables collection period and the inventory conversion period as well as lengthening the payables deferral period. However, they warned that lengthening the credit payment period could damage the firm's reputation which can significantly affect profitability on the long run. Alkeella (2006) and Rahem (2007) studied Indian and Pakistani firms respectively and arrived at similar results, which showed strong negative link between liquidity or working capital and

profitability.

Dash and Hanuman (2008) adopted a goal programming model to study the trade-off between liquidity and profitability and found that working capital and inventory in particular, should be streamlined to enhance profitability. Similarly, Uyar (2008) found a significant negative correlation between cash conversion cycle and firm size as well as with profitability among Turkey firms using ANOVA. Also after studying this relationship among 30 firms in Nairobi Mathuva (2009) came up with similar results. Rahem and Qaisar (2013) showed that cash conversion cycle is having significant effect on profitability.

Similar studies have been carried out in Nigeria. Ben-Caleb (2009) studied the relationship between the components of working capital and profitability as measured by return on assets. Using a sample of 25 non financial firms for the period of 2005 and 2006, he found out that only debtors collection period had a significant negative association with profitability. Falope and Ajilore (2009) also reported a strong inverse correlation between working capital and profitability among Nigerian firms.

Bhunia and Brahma (2011) studied the importance of liquidity management on profitability measures by return on capital employed, and all the independent variables studied (current ratio, liquidity ratio, *Debt/Equity* ratio, average operating inventory, Average operating debtor. Average operating creditors), had negative influences on profitability, except, current ratio, which indicated a positive influence on profitability.

On the other hand, findings from some studies contradict the liquidity-profitability trade-off theory - indicating that there exists a direct and positive relationship between a longer cash conversion period and profitability. Deloof (2003) stated that a longer cash conversion cycle might increase profitability because it leads to increased sales. This agrees with the finding of Lyrouddis and Lazaridis (2000). They investigated the relationship among the food industry in Greece and found a positive significant relationship between the cash conversion cycle and profitability, measured by Return on investment (ROI) and Net profit margin (NPM), which indicates that a longer cash conversion cycle can improve company's profits. Samiloglu and Demirgimes (2008) investigated this relationship among Istanbul firms and found that growth in sales affects firms' profitability positively. Gill, Bigger and Mathur (2010) found a positive relationship between cash conversion cycle and profitability among firms in the United States.

Also Bunia, Khan and Makhuti (2011) found that inadequate working capital in terms of liquidity is accountable for poor capacity, under-utilization and poor consumption and that there exist high positive relationship between liquidity and profitability.

However, in a study of liquidity management efficiency of Indian steel companies, Bunia and Khan (2011) examined 230 companies for a period of 9 years (2002 - 2010) and found a petite association between the indicators of liquidity and profitability (ROCE). Sur and Chankraborty (2011) found an insignificant relationship between the two variables (liquidity and profitability) in India. Finally Saleem, Q and Rahman, R. U (2011) found a less than significant effect of liquidity ratios (current ratios, quick ratios and liquid ratios) on return on equity in the oil and gas sector.

Owolabi and Alu (2012) carried out an ex-post facto research, involving a trend analysis of five year financial statements of five manufacturing companies purposively selected from among the manufacturing companies listed on the floor of the Nigerian Stock Exchange. The study sought to investigate the impact of effective working capital management on profitability of manufacturing firms in Nigeria.

The dependent variable of the study was profitability operationally defined as Return on Total Assets

while the independent variables were inventory conversion period, cash conversion period, debtors' collection period and creditors' payment periods. Two control variables size and age were introduced.

The results showed that ICP, DCP and age had negative but insignificant impact on profitability. Only size has a positive and significant impact on profitability. The implication was that increases and decreases in K'P, OCP, CPP, and CCC do not significantly affect profitability. It was concluded that working capital management has no significant effect on the profitability of manufacturing companies in Nigeria.

Olubukunola, Uwuigbe and Ben-Caleb (2012) empirically investigated the relationship between cash management and profitability in listed manufacturing companies in Nigeria. Cash conversion cycle was used as the measure of cash management. Current ratio, debt ratio and sales were used as control variables. The study utilized secondary data while Pearson's correlation and regression analysis were used in analyzing the data for a sample of 15 listed companies in Nigeria between 2005 and 2009. The results of the empirical findings show that there is a strong relationship between cash conversion cycle and PROFITABILITY of the firms. It was concluded that the higher the cash conversion cycle, the lower the profitability of firms. Therefore managers can create positive value for the shareholders by reducing the cash conversion cycle to a possible minimum.

Raheem and Quisar (2013) evaluated how cash conversion cycle affects the profitability of manufacturing firms listed on Karachi Stock Exchange of Pakistan. The study used return on equity and return on assets as measures of profitability to represent dependent variables. Firm size and debt ratio were taken as control variables while cash conversion was considered as independent or explanatory variable. The study considered five-year financial statements data from 2007 to 2011. Regression results showed that cash conversion cycle is having significantly inverse association with both returns on asset and equity - indicating that the lesser the cash conversion cycle, the greater would be the profitability. Hence the receivables collection period and inventory conversion period must be reduced along with extension of creditors' payment period to increase profitability of manufacturing sector organizations.

Ben-Caleb, Olubukunola and Uwuigbe (2013) studied the relationship between liquidity and profitability. Based on a sample of thirty manufacturing companies listed on the Nigerian Stock Exchange purposively selected, data were obtained from the annual financial statements for the period 2006 to 2010, making a total of 150 firm-year observations. Both descriptive statistics and multiple regression analysis were applied for data analysis. The researchers used return on capital employed (ROCE) as a proxy of profitability which was the dependent variable, while cash conversion cycle (CCC), current ratio (CR) and Quick ratio (QR) served as proxies of liquidity and independent variable. The natural logarithm of sales (LnS) and natural logarithm of total assets (LnTA) were used as control variables.

The result showed that all the predictor variables namely, current ratio, quick ratio and cash conversion cycle, natural logarithm of sales and natural logarithm of total assets were positively but insignificantly related with profitability, measured by return on capital employed.

Specifically, the results indicated that current ratio (CR) and quick ratio (QR) had a positive and significant relationship with return on capital employed (ROCE) while the relationship between CCC and ROCE is also positive but insignificant. The implication is that ROCE and CCC were directly related - meaning that the longer the CCC, the better will be the ROCE and vice versa. It was concluded that prolonged CCC might increase sales which in turn will lead to increased profit especially where the cost of tied up capital is lower than the benefits of holding more inventories and granting more trade credits to customers. Also the relationship between the control variables (LnS and LnT A) and RaCE was positive and significant. This was expected since higher sales is expected to

engender higher profits and assets are the pivot on which profits is generated.

From the fore-going, it will be seen that though numerous studies have been carried out on the relationship between liquidity/working capital and profitability, none has addressed the impact of operating cash flow ratio on the profitability of firms in Nigeria, which this study is set out to accomplish.

### 3.0: Methodology

This section deals with discussions on the strategies adopted in accomplishing the stated objectives of this study.

The population of the study consists of all the quoted manufacturing firms in Nigeria. 30 manufacturing firms were purposively selected as sample for the study, based on the availability of data. The samples cut across various sectors of the economy.

Secondary data were obtained from the annual financial statements of the sampled firms as was recorded in the Nigerian Stock Exchange fact book. The data covered a period of five (5) years (from 2008 to 2012) for each of the 30 sampled firms, making a total of 150 firm year observation.

Panel data design was adopted because it combined period and cross sectional data. Data were analyzed using descriptive statistics, Pearson's Product Moment Correlation Coefficient and multiple regression analysis.

### Model Specification

Return on capital employed (ROCE) was used as a proxy of profitability which is the dependent variable. Operating cash flow ratio (OCR), Current ratio (CR) and Cash conversion cycle (CCC), made up of inventory conversion period (ICP), Debtors collection period (DCP) and Creditors payment period (CPP) were used as proxies of liquidity and independent variables. The regression model is of the form:

$$ROCE_{it} = B_0 + B_1OCR_{it} + B_2CR_{it} + B_3CCC_{it} + B_4ICP_{it} + B_5DCP_{it} + B_6CPP_{it} + \epsilon_{it}$$

Where:

ROCE = Return on capital employed, defined as earnings before interest and tax divided by total assets or capital employed;

OCR = Operating cash flow ratio, defined as the ratio of cash flow from operating activities to current liabilities;

CR = Current ratio, defined as current assets over current liabilities;

CCC = cash conversion cycle, defined as ICP + DCP - CPP;

ICP = Inventory conversion period, defined as closing stock over cost of sales x 365 days;

DCP = Debtors Collection Period, defined as debtors over sales x 365 days;

CPP = Creditors payment period, defined as trade creditors over cost of sales x 365 days;

B<sub>0</sub> = Constant term;

B<sub>1</sub>..... B<sub>6</sub> = Coefficient of independent variables;

i = No. of firms ranging from 1 to 30; and

t = time period ranging from 2008 to 2012.

### 4.0: DATA ANALYSIS AND DISCUSSION OF RESULTS

The descriptive statistics (Appendix) provides a general overview of the data. It shows that the average return on capital employed of manufacturing firms in Nigeria is 17%, with a standard deviation of 13%; average operating cash flow ratio is 0.56, with 0.52 as standard deviation; current ratio average is 1.7 and standard deviation is 1.1; cash conversion cycle average is 56 days while standard deviation is 127 days. Inventory conversion period's mean and standard deviation are (123days, 95days), Debtors collection period (64days, 44days) and Creditors payment period (125days, 98days) respectively.



The correlation and regression results shown in ARP 3 and 4 explain the relationships between the dependent variable and the independent variables and to what extent the variations in the dependent variable was determined by each of the independent variables. The standardized Beta coefficients of the predictor variables are: .275, -.028, -1.774, 1.062, .452 and -1.178 for OCR, CR, CCC, ICP, DCP and CPP respectively. Their p. values of .283, .905, .393, .493 .. 560 and .407 are not significant at 1 % and 5% levels. The results indicate that OCR, ICP and DCP are positively but insignificantly related to ROCE while CR, CCC and CPP are inversely and insignificantly related to ROCE. The combined effect of the predictable variables on the independent variable ROCE R<sup>2</sup> in table 4 is .227. The implication is that only 22.7% of the changes in the outcome variable (ROCE) is explained by the predictor variables.

All the applicable theories try to establish the relationship between liquidity and profitability which serves as guide for managers on how to improve the profitability of their organizations through proper management of liquidity. However, the theories provide weak explanations of the relationships between the two variables as this study indicates.

The result of the study indicate a positive relationship between improved liquidity, represented by positive operating cash flow ratio and a negative cash conversion cycle and profitability, represented by return on capital employed. This means that profitability increases as liquidity improves. This agrees with the pecking order theory of liquidity which predicts a positive relationship between liquidity and profitability (Almeida et al, 2004).

The results also show an inverse relationship between current ratio and profitability. This is in tandem with the trade-off model which predicts negative relationship between liquidity and profitability (Kim et al, 1998; Ozkan and Ozkan, 2002 and Bates, 2009).

Hence, the results of this study support both the trade-off and pecking order theories of liquidity.

The review of literature related to this study reveal that earlier researchers had used accrual- based measures of liquidity such as cash conversion cycle (CCC), inventory conversion period (ICP), Debtors' collection period (DCP), Creditors Payment Period (CPP), Current Ratio etc. to measure the impact of liquidity on profitability (Moss and Stine, 1993; Bodie and Merdon, 2000; Keon, 2003; Appuhami, 2008; Ben-Caleb, 2009; Falope and Ajilore, 2009; Owolabi and Alu, 2012; Ben .. Caleb, Olubukunola and Uwuigbe, 2003).

This study marks a departure from existing tradition by using a cash flow ratio (operating cash flow ratio) to measure the relationship between liquidity and profitability. The result of this study, which indicate that liquidity has no significant impact on profitability of manufacturing firms in Nigeria is in tandem with the studies done by Owolabi and Alu (2012) and Ben-Caleb, Olubukunola and Uwuigbe (2013). The result however varies with those of Olubukunola, Uwuigbe and Ben-Caleb (2012) and Raheem and Qaisar (2013), who reported a significant impact of liquidity on profitability.

## 5.0: CONCLUSION AND RECOMMENDATION

In conclusion, the results of this study indicate that the predictor variables of liquidity examined have no significant impact on the profitability of manufacturing firms in Nigeria as the combined effects of all the predictor variables account for only 24% of the variations in profitability measured by ROCE. This implies that about 75% of changes in profitability are explained by factors other than the predictor variables of liquidity studied.

It is therefore, recommended that further studies should be carried out by other researchers to identify the other factors that account for, and can be manipulated to enhance the profitability of manufacturing firms in Nigeria.

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#### **Appendix I: Descriptive Statistics**

	<b>Mean</b>	<b>Std. Deviation</b>	<b>N</b>
ROCE	17.0600	13.70066	30
OCR	.5610	.52012	30
CR	1.6553	1.10618	30
CCC	55.9667	126.62311	30
ICP	122.5000	95.32910	30
DCP	60.1667	43.65704	30
CPP	124.5333	97.79914	30

## Appendix II: Correlations

		<b>ROCE</b>	<b>OCR</b>	<b>CR</b>	<b>CCC</b>	<b>ICP</b>	<b>DCP</b>	<b>CPP</b>
ROCE	Pearson Correlation	1	.272	-.084	-.313	-.291	-.305	-.035
	Sig. (2-tailed)		.146	.659	.092	.119	.102	.853
	N	30	30	30	30	30	30	30
OCR	Pearson Correlation	.272	1	.409	.146	-.004	-.554	-.442
	Sig. (2-tailed)	.146		.025	.442	.985	.002	.014
	N	30	30	30	30	30	30	30
CR	Pearson Correlation	-.084	.409	1	.504	.413	-.058	-.265
	Sig. (2-tailed)	.659	.025		.005	.023	.759	.156
	N	30	30	30	30	30	30	30
CCC	Pearson Correlation	-.313	.146	.504	1	.717	.185	-.501
	Sig. (2-tailed)	.092	.442	.005		.000	.327	.005
	N	30	30	30	30	30	30	30
ICP	Pearson Correlation	-.291	-.004	.413	.717	1	.247	.152
	Sig. (2-tailed)	.119	.985	.023	.000		.188	.422
	N	30	30	30	30	30	30	30
DCP	Pearson Correlation	-.305	-.554	-.058	.185	.247	1	.458
	Sig. (2-tailed)	.102	.002	.759	.327	.188		.011
	N	30	30	30	30	30	30	30
CPP	Pearson Correlation	-.035	-.442	-.265	-.501	.152	.458	1
	Sig. (2-tailed)	.853	.014	.156	.005	.422	.011	
	N	30	30	30	30	30	30	30

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

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

## Appendix III: Coefficients<sup>a</sup>

		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>t</b>	<b>Sig.</b>
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
1	(Constant)	17.650	8.129		2.171	.040
	OCR	7.243	6.586	.275	1.100	.283
	CR	-.350	2.912	-.028	-.120	.905
	CCC	-.192	.220	-1.774	-.871	.393
	ICP	.153	.219	1.062	.696	.493
	DCP	.142	.240	.452	.591	.560
	CPP	-.165	.223	-1.178	-.740	.467

a. Dependent Variable: ROCE

**Appendix IV: Model Summary<sup>b</sup>**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	<b>Durbin-Watson</b>
1	.477 <sup>a</sup>	.227	.026	13.52335	2.300

a. Predictors: (Constant), CPP, ICP, OCR, CR, DCP, CCC

b. Dependent Variable: ROCE