

EFFECT OF CASH AND LIQUID SUBSTITUTES ON PROFITABILITY OF SELECTED QUOTED MANUFACTURING FIRMS IN NIGERIA

Onyeka Virginia Nnenna

Department of Accountancy

Enugu State University of Science
and Technology, Enugu, **NIGERIA**
Onyekannenna5@gmail.com

Nnado Ifeanyi Celestine

(Correspondence author)

Department of Accountancy
Enugu State University of Science
and Technology, Enugu, **NIGERIA**
ifeanyi_eck@yahoo.com

Iroegbu Ferdinand N.

Department of Accountancy

Enugu State University of Science
and Technology, Enugu, **NIGERIA**
iroegbuferdinand2@gmail.com

ABSTRACT

The study examined the relationship between cash (including liquid substitutes) and profitability of listed firms in the manufacturing sector of the Nigerian Stock Exchange. Ex-post-facto research approach via quantitative panel methodology was employed to evaluate the effect of the cash and cash equivalents on the dependent variable. Data were collated from the audited annual reports of thirty-six (36) manufacturing firms listed on the Nigerian Stock Exchange for the fifteen year period: 2003-2017. Diagnostic tests were carried out on the collated data using Levin-Lin-Chu panel unit-root test which confirmed their stationarity and Westerlund Panel Cointegration Tests that depicted the variables were not cointegrated in the long run. Further, Hausman test confirmed the consistency and suitability of the Fixed Effects (FE) multiple regression model. Hypothetical statements tested portrayed the existence of a significant positive influence of cash and cash equivalents on return on assets of the sampled firms. These results imply that optimizing firms' profits necessitate striking the best liquidity-profitability trade-offs, otherwise firms keeping insufficient liquid assets may be forced to borrow from external sources at exorbitant costs or become illiquid. The study concurred that Nigerian manufacturing firms' profitability is significantly influenced by the adequacy of cash holdings.

Keywords: Cash, Liquid Substitutes, Profitability, Firms.

1. INTRODUCTION

1.1 Background of the Study

The study of cash management is necessitated by the recurring recessive periods as experienced by companies in the 1930s as the Great Depression, in the 1970s and 1980s as the Great Inflation and in 2008 as the Economic and Financial Crises that evolved in the US. It turned global when the economies of developing countries that rely heavily on the survival of advanced economies are similarly hit (Agbada and Osuji, 2013). This made financial institutions to logically reduce line of credits and credit limits. Further, recessive periods usually render long term planning practically impossible; hence, focus is diverted towards short term planning in a bid to minimize foreseeable costs thereby optimizing profits. Hence, the need for improved short term planning. Effective short term planning is facilitated using cash and cash equivalents in alignment with other components of working capital. Optimizing a firm's cash position entails ensuring that current assets covers adequately current liabilities particularly in these periods of liquidity squeeze.

Further, lots of hard evidence exists in the assertions of Manyo and Ogakwu (2013) and Akinbuli (2009) that many businesses in Nigeria closed during the global financial crises (GFC) of 2008. Liquidity management practices of firms in Nigeria are far from being adequate due to the waning state of most manufacturing firms (Egbide, Uwuigbe and Uwalomwa, 2013).

1.2 Statement of the Problem

In 2009, the Manufacturers Association of Nigeria (MAN) asserted that at least 820 manufacturing firms have become illiquid between 2000 and 2008 (African Vanguard, 2009; Kwode, 2015). The high rate of demise were attributed to tough operating environment, unstable electricity, high interest rate and exchange rate, smuggling, high cost of diesel and premium motor spirit to power firms' generators, high taxation, increased levies and so on (MAN, 2010; Onuoha, 2012). Further, the Lagos Chamber of Commerce and Industry (LCCI) lamented among others the power supply constraints, high influx of imported goods, declining sales demand, persistently high operating costs and nefarious activities of regulatory agencies. Declining revenue amidst increasing operating costs leads to illiquidity. For instance, relying on a firm's current ratio and quick ratio being at par with the industry average could be disastrous as the average has persistently been squeezed low due to global financial crisis. Rather than speed up collections involving sound knowledge of cash management, a firm may opt to stretch creditors' period which affects its reputation negatively. Also, there is loss of huge cash discounts. The nonchalance results in such firm's inability to expand; being undervalued in shares and otherwise; inability to customize borrowed technical improvements; recurring financial losses and resultant illiquidity (Nwankwo and Osho, 2010).

The objective of the study is to evaluate the relationship between cash and cash equivalents and profitability of the sampled manufacturing firms.

2. LITERATURE REVIEW

2.1 Conceptual Review

Cash is used in starting a business as well as in liquidating the same for its breakup value (Pandey, 2004). It is made up of cash on hand and demand deposit while cash equivalents are short term highly liquid investment that are readily convertible to known amount of cash although subject to insignificant risks of changes in value (IFRS 7). Meanwhile, financial management is concerned with three roles: management of non-current assets, management of long-term liabilities including capital and management of current assets and current liabilities. Cash management, however, involves planning and control of components of current assets: accounts receivables (trade and other debtors), cash, prepayments, cash equivalents / short term investments; and current liabilities: accounts payables (trade and other creditors), accruals, bills payables and short term financing (Brealey, Myers and Marcus, 2007).

Cash management has been vastly described by experts. Their opinions fortunately are convergent. According to the Chartered Institute of Bankers of Nigeria (CIBN, 2000), Cash management is employed in planning, monitoring and controlling cash inflows, cash outflows and the firm's cash position aimed at optimizing its liquidity. Uwuigbe, Uwalomwa and Egbide (2012) described cash management as a tool for discerning the firm's expected cash receipts and disbursements, choosing an optimal source of alternative financing and maximizing expected returns from investing idle cash. Larsson and Hammarlund (2005) opined that such items as receivables system, payables system, currency management and risks, liquid funds management, trade and other debtors, trade and other creditors and short term financing should form part of the cash management.

Effective cash management practices are imperative if firms in the manufacturing sector desire to satisfy the diverse interests of stakeholders. Firms that manage their cash and cash equivalents effectively optimize use of current assets and current liabilities during each

financial / accounting year, speed up collections, delay disbursements / payments reasonably, manage risks of keeping idle and or little cash and make appropriate use of feedback (Allman-Ward and Sagner, 2003). Regrettably, the practice is quite distinct in Nigeria. These firms employ such cash management method as fixed percentage of sales, purchases, cost of sales, etc. The management of these firms relies on rote memory, hunches and past experience to manage working capital components notwithstanding these practices are forgone alternatives of firms in advanced economics including multinational / transnational companies (Okafor, 2012).

The number of listed manufacturing firms on the Nigerian Stock Exchange dwindled. As a result, the Nigeria capital markets (Abuja Stock Exchange and Nigerian Stock Exchange) experienced near collapse. It had a profound negative effect on shareholders, debenture holders, and other investors including oversea investors. In particular, foreign investors withdrew most of their interest through capital flight from the country, otherwise divestment from the industry including banks. The GFC seems to have perpetuated via the current liquidity squeeze / freeze. Hence, the efficiency of liquidity and cash flow management systems need to be optimized.

Thus, the components of cash management mechanisms are most likely to include cash flow management, synchronization of cash inflows and outflows, shorter cash conversion cycle through speeding up collections and controlling disbursements, using cash concentration to make funds available where and when needed, short term investment of cash surpluses, cheaper short term financing of cash deficits using cash flow forecasting, liquidity risk management and bank relationship / account reconciliation.

Profitability is the ability of a firm to generate revenue in excess of associated expenses incurred in the process. In general, it refers to the relationship between the profits generated by the company and the investments that gave rise to these profits (Alshatti, 2015). It is the ability of the firm to generate profits from all business activities. It is used in measuring the efficiency of operations executed by management and productivity of capital employed (Tulsian, 2015).

2.2 Empirical Reviews

Attention has been diverted towards short term capital management (made up of accounts receivable management, inventory management, accounts payable management and management of cash) after the collapse of Lehman Brothers, capital markets within the US and the resultant global financial crises (GFC). Firms develop a system of cash management to minimize the firms' needs for liquid resources. Several experts argued that cash management improves firm's profitability if the drivers /components are optimally mixed and managed. Bhunia, Khan and Mukhuti (2011) empirically studied the relationships between liquidity, solvency of firms and profitability. The study employed data culled from the audited annual reports of the selected private sector steel firms listed on Indian Stock Exchange. The sample was drawn using purposive sampling technique and covered a ten (10) year period (1997 – 2006). The four companies selected are Tata steel Ltd, Lloyds steel industries Ltd, Kalyane Steels Ltd and JSW steel Ltd. The independent variables : current ratio, liquid ratio, absolute liquid ratio, short term debt – equity ratio, age of inventory, age of debtors and age of creditors are regressed against profitability of the sampled firms proxied by return on investment. All the variables passed the normality (approaching normal distribution i.e. bell – shaped) tests carried out using the Shapiro – Wilks' test and Lillifors

test. The study indicated that liquidity and profitability are strongly positively related with a multiple correlation coefficient of 0.934.

Uremadu and Efobi (2009) investigated empirically the relationships between capital structure, liquidity and the dependent variable: corporate profitability in Nigeria. The study adopted pooled ordinary least square regression technique on a sample of 10 firms for the five year period (2002 – 2006). The technique made use of log – linear least squares for analysis of collated data. The study showed negative but statistically significant relationships between ratios of long term debt to total liability, short – term debt to total liability, equity capital to total liability and profitability. It also showed a positive and statistically significant relationship between the domestic liquidity rate and profitability, ratio of long – term debt to equity capital, total value of short term debt and profitability.

Nyabwanga, Otieno, & Nyakundi (2013) in their study of the relationship between liquidity, solvency and financial health of small and medium – sized enterprises (SMEs) in Kisii Municipality, Kenya identified unsound financial management, inadequate working capital, slow conversion of receivables and inventory into cash and cash equivalents, increasing trade debts and low turnover as causes of low or average performance of these firms. The study adopted ratio analyses method in analyzing secondary data collated from the audited annual accounts and the accompanying schedules of three SMEs. The study spanned for three years (2009 – 2011). Further analyses included measures of central tendencies and dispersion such as the arithmetic means, standard deviation, co-efficient of variation, and the Altman's Z – score model. Independent variables used are made up of current ratio, quick ratio and debts to total assets ratio while the dependent variables are return on asset (ROA), gross operating profit (GOP) and net operating profit (NOP). The study concurred that the current and quick ratios of the sampled firms are below industrial average of 2:1 and 1:1 respectively. Therefore, the SMEs are not capable of honoring debt obligations as they fall due. These SMEs employ aggressive financial policy and risks of insolvent are quite high for two out of the three firms.

Bolek and Wolski (2012) carried out a study on the impact of liquidity and profitability on the market value of firms using companies listed on the Warsaw Stock Exchange. The study investigated the relationships between cash, account receivables, inventories, account payables and profitability using ratios. The study claimed that dynamic management in firms entails ascertaining profitability using economic value added (EVA) and liquidity proxied by CCC. The study covered a ten year period (2000 – 2009) and purposefully selected a sample of 69 firms resulting in 690 observations. Collated data are analyzed using Pearson Product Moment Correlation and evaluation done using students t – test. It is observed that profitability is much more vital to Polish firms than liquidity in firm valuation. Further, investors prefer firms that maintain high level of cash in the Polish market in that the lower the CCC, the greater the market value of the firm and EVA.

Kroes and Manikas (2014) examined the relationships between quarterly and annual changes in cash flow positions and financial performance of publicly traded manufacturing firms in the COMPUSTAT database. The study covered a three year period consisting of 8 quarterly observations only. The study used Generalized Estimating Equation procedures in estimating the models analyzed using SPSS 19. Data on 1,233 manufacturing firms are analyzed longitudinally. It was discovered that there is no significant relationship between CCC and firm performance. However, changes in operating cash cycle (OCC), which is CCC minus account payable period, exhibited strong relationship with firm performance proxied by

Tobin's q . In other words, reasonable reductions in inventory and accounts receivable periods have strong influence on firm performance. Moreover, univariate analysis suggests that reductions on accounts receivable period enhance profitability of firms.

Almeida, Campello, Cunha and Weisbach (2013) studied frame works of corporate liquidity management. They postulated that problems of managing liquidity in firms can be solved if a convergent framework from series of frameworks since Keynes (1936) evolves. In other words, precautionary demand for money / liquidity is the trigger for the variations in the level of liquidity of firms. Their model centered on the impact of liquidity on real policies of companies. They noted that the relevance of liquid derivatives has been accentuated by the global financial crises (GFC) of 2008 – 2009. Cash, being the real liquid resource, is most sought by firms in that it is the surest way of meeting up future investment needs.

Abioro (2013) studied the relationship between cash management and the performance of manufacturing firms in Nigeria. The study employed descriptive survey techniques in investigating only Cadbury Nigeria Plc. Both secondary and primary sources are used in collecting data. The study population consists of the entire staff of the case study. The study used judgmental sampling method to select 100 personnel. 45 structured questionnaires proved to be the only ones effective for collation and analyses. The study covered a 10 year period (2002 – 2011). It depicted that effective cash management depends on the firm's choice for short – term finances and investment choice of collection and disbursement techniques, cash forecasting strategy and investment culture as regards idle cash. Moreover, the study averred that a statistically significant relationship exists between the key variables: cash management and firm performances when subjected to Pearson's correlations.

Manyo and Ogakwu (2013) researched the influence of liquidity on return on assets (ROA) of 46 quoted firms listed on the Nigerian Stock Exchange for the period 2000 to 2009. Employing ex post facto approach, they regressed liquidity, the independent variable against ROA and proved the existence of a significant positive relationship between these two key variables. Marginally, liquidity increases ROA by 2.8%. Moreover, there exist a significant positive / direct relationship between one of the control variables growth and ROA. Size of firm has no significant effect on the dependent variable.

Owolabi and Obida (2012) examined the relationship between liquidity management and profitability of 12 manufacturing firms listed on NSE for a five year period 2005 to 2009. Relevant information is extracted from the annual reports of the sampled firms. Using descriptive statistics including measures of dispersion and central tendencies and accounting ratios, the study depicted strong relationships between the independent variables: Credit policies, cash flow management and cash conversion cycle and the dependent variable: corporate profitability. Specifically, they found that nine out of the twelve firms depicted a significant positive level of liquidity management and by extension, a direct relationship between the liquidity management and profitability. The study used credit policies, cash flow management and CCC as proxies for liquidity.

Egbide, Uwuigbe and Uwalomwa (2013) studied the impact of liquidity management on profitability of manufacturing companies using a sample of 30 firms listed on the Nigerian Stock Exchange (NSE). The study employed the purposive sampling technique in collating data / information from the annual financial reports of the sampled firms for the 5 year period: 2006 to 2010. Methodology used relied heavily on the approach adopted in previous studies including Eljelly (2007). Results from partial correlation and regression analyses

which are aligned revealed that liquidity management has no statistically significant relationship with profitability of manufacturing firms in Nigeria.

The latest local studies explored were done in 2013. Five years is long enough for some significant change in the behavior of these variables. Hence, this study!

2.3 Theoretical Framework

The financial hierarchy theory established by Donaldson (1961) was rationalized by Myers and Majluf (1984) in respect of financial approach to theory. Regarding this theory, scholars are interested in the relationship between liquid assets and the value of the firm. Also, how these liquid assets optimize capital structure of the firm in the long run (Kytönen, 2002). Financial theory reflects the liquidity management problem on the basis of optimizing the capital structure of a firm. Kytönen suggested that cash management can be linked to financial theory by considering its relevance in an imperfect / under developed market. In other words, adding cash balances to such financial theoretic models as capital asset pricing model (CAPM) or Modigliani-Miller (M&M) model links cash management to the financial theory. The effects of the inclusion of cash balances in these theoretical models show the significance of liquid assets for the value of the firm.

The financial hierarchy theory is also called the Pecking Order Theory of Liquidity (behavioral theory of corporates), otherwise, Pecking Order theory of cash management adopting financial approach to theory. It evolved as a result of imperfections (emphasizes is on information asymmetry problem) in the capital market. In reality, management of firms does possess insider information which the investors, financial analysts, and general public do not have. The theory was postulated by Myers and Majluf (1984) claiming that managers would in most instances finance capital deficit via the public offer of new securities. According to the theory, in the event where retained earnings and other internal source of financing will be low to invest, then, manager will issue debt and only issue new equity as a last recourse. To achieve manufacturing firms' profit optimization objective, optimal / adequate cash and cash equivalents (financial slack) must be maintained to prevent transaction and other costs inherent in sourcing financing from outside. The theory insinuates the non-existence of an optimal level of cash holdings given that an optimal level of debt does not exist.

Further, Brealey and Myers (1996) on their findings about the theory postulated that (i) firms would firstly prefer internal source of financing preferably profits and reserves. These reserves in reality are represented / embedded in cash and cash equivalents. If firms must source funding outside, they would prefer external debt finance as (ii) a change in dividend payout ratio may not boost expenses of capital nature as the market react negatively to non-payment of dividends. (iii) if external financing is a necessity, the pecking order starts with debt (not junk debt) and (iv) the firm's debt equity ratio reflects the total external financing need. The firm, accordingly, pays dividends only after financing investments (Opler, Pinkowitz & Stulz, 1999). It has dominated the interest of most researchers. This is evidenced in the works of Frank and Goyal (2003), Salehi and Bigler (2009) and Sebastian (2010). Sebastian (2010) investigated the liquidity and solvency of Dutch companies and their effect on financial decision. The study depicted that corporate liquidity and solvency relate through information, hedging, and leverage channels. These channels increase the value of the firm and ensured regular payment of dividends.

3. METHODOLOGY

The study is an ex-post facto research. Ex-post facto literally means from what is done afterwards (Asika, 2006; Saunders, Lewis and Thornhill, 2009). Panel data is employed in most researches as it can diminish the influence of a single variable. This eliminates the problem of heterogeneity that may be latent in the data. It depicts more information and provides less collinear variables (Niskanen and Niskanen, 2006; Garcia – Teruel and Martinez – Solano, 2007). Data on profitability of manufacturing firms, modern and traditional liquidity measuring metrics and control variables were extracted from the audited annual report and accounts of the sampled firms for the fifteen year period (2003 to 2017).

To ascertain and analyze the influence of cash and cash equivalents on the profitability of firms in the manufacturing sector of the economy from 2003 to 2017, the model used is based on the following function(s).

$$\text{Profitability (P)} = f(\text{Cash and Cash Equivalents, Economic Condition}) \quad (1)$$

$$P_{it} = \beta_0 + \sum \beta_i CCE_{it} + GDPGR_{it} + c_{it} + \varepsilon_{it} \quad (2)$$

Where P_{it} = Profitability of firm i at time t , $i = 1, 2, \dots, 36$. $t = 1, 2, \dots, 15$.

β_0 = Intercept β_i = Coefficients of CCE_{it}

CCE_{it} = independent variables for Cash and Cash Equivalents of firm i at time t .

$GDPGR$ = Gross Domestic Product Growth Rate proxy for Economic Conditions

c_{it} is the non-observable individual effect while ε_{it} is the disturbance or error term for firm i in the year t .

ε_{it} = Error term or stochastic term depicting influence of other factors on cash / liquidity and profitability although not included in the model due to unavoidable constraints. Specifically, the model becomes

$$ROA_{it} = F(\text{CASH, LEV, SG, LnTA, GDPGR})_{it} \quad (3)$$

$$EVA_{it} = F(\text{CASH, LnTA, LEV, SG, GDPGR})_{it} \quad (4) \text{ for robustness check.}$$

ROA = Return on Assets

EVA = Economic Value Added. It will be used interchangeably in the model with ROA.

$CASH_{it}$ = Total Cash including Short Term Investments

LEV_{it} measures the leverage = Total Debt to Equity for firm i in the year t

$LnTA_{it}$ = Natural Logarithm of Total Assets used as proxy for size

SG_{it} = Sales Growth

$GDPGR$ = Gross Domestic Product Growth Rate

To ensure linearity of processed data, EVA and CASH are deflated by Total Assets for measurement purposes. Equation (3) when expressed in econometric form gives:

$$ROA_{it} = \beta_0 + \beta_1 CASH_{it} + \beta_2 LEV_{it} + \beta_3 SG_{it} + \beta_4 LnTA_{it} + \beta_5 GDPGR_{it} + \varepsilon_{it} \quad (5)$$

Where β_0 is the constant term for firm i in the year t .

$\beta_1, \beta_2, \beta_3, \beta_4$, and β_5 are linear regression coefficients to be estimated.

ε_{it} is the disturbance term for firm i in the year t .

Some common variables adopted in extant literature were included as control variables. These control variables include $LnTA_{it}$, LEV_{it} , SG_{it} , and $GDPGR_{it}$.

Diagnostic tests include Levin-Lin-Chu unit root tests depicting absence of a unit root and Westerlund error correction model (ECM) Panel Cointegration tests showed that the p-values of G^* for all the entered variables exceed 0.05. Hence, there is no need to run an ECM otherwise called random effects model (REM). Hausman test, further, collaborated the choice of fixed effects model (FEM) as the H_0 is rejected implying that differences in coefficients are systematic.

4. RESULTS

Table 1: Descriptive Statistics

Var	Obs	Mean	Std. Dev.	Min	Max	Pr(Skew)	Pr(Kurt)
eva	499	.0794225	.2727974	-2.7949	1.6018	0.0000	0.0000
roa	499	.1511149	.332965	-.39766	6.9244	0.0000	0.0000
cash	499	.5723745	.4563336	-2.3785	2.503	0.0000	0.0000
lev	499	.4731166	2.863955	-6.7285	55.9322	0.0000	0.0000
Inta	499	15.53451	2.156035	.1863	20.0857	0.0000	0.0000
sg	499	.1604537	.5307778	-7.0825	4.9817	0.0000	0.0000
gdpgr	499	.2600381	.3084967	-.18543	1.16161	0.0000	0.0000

Table 2: Pairwise Correlations

	eva	roa	cash	lev	Inta	sg	gdpgr
eva	1.0000						
roa	0.0193	1.0000					
	0.6673						
cash	0.1485*	0.1279*	1.0000				
	0.0009	0.0042					
lev	-0.0179	-0.0200	0.0033	1.0000			
	0.6893	0.6564	0.9412				
Inta	-0.0714	0.0586	0.2234*	-0.1543*	1.0000		
	0.1112	0.1911	0.0000	0.0005			
sg	0.0441	0.0114	0.0343	0.0458	-0.1333*	1.0000	
	0.3254	0.7992	0.4445	0.3075	0.0028		
gdpgr	-0.0185	0.0142	-0.0181	-0.0013	0.0194	0.1207*	1.0000
	0.6796	0.7522	0.6866	0.9768	0.6657	0.0070	

* Correlation is significant at the 0.01 level and 0.05 level (2-tailed).

Table 3: Fixed Effect Panel Regression (eva is the Regressand)

eva	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cash	.1034426	.0282702	3.66	0.000	.0478897	.1589955
lev	-.0037695	.0043843	-0.86	0.390	-.012385	.004846
Inta	-.0146929	.0062442	-2.35	0.019	-.0269631	-.0024227
sg	.0167545	.0239656	0.70	0.485	-.0303396	.0638486
gdpgr	.03163	.0606934	0.52	0.603	-.0876366	.1508966
_cons	.2436908	.0913342	2.67	0.008	.064213	.4231687
rho_ar	.06350509	sigma_u	.04594298	sigma_e	.27312458	
rho_fov	.02751685	(fraction of variance because of u_i)				
FE (within) regression with AR(1) disturbances				Number of obs	=	485
Group variable: firm				Number of groups	=	14
R-sq: within = 0.0198				Obs per group: min	=	33
between = 0.0055				avg	=	34.6
overall = 0.0194				max	=	35
F(5,466) = 1.88				Prob > F = 0.0965		
corr(u_i, Xb) = -0.0110						

Table 4: Fixed Effect Panel Regression (roa is the Regressand)

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cash	.0944546	.0346093	2.73	0.007	.026445	.1624641
lev	-.0017405	.0053946	-0.32	0.747	-.0123412	.0088602
Inta	.0041976	.0076073	0.55	0.581	-.0107513	.0191466
sg	.0141697	.0295761	0.48	0.632	-.0439493	.0722887
gdpgr	.0148773	.0742764	0.20	0.841	-.1310809	.1608355
_cons	.0242443	.1166542	0.21	0.835	-.2049891	.2534778
rho_ar	.01451123	sigma_u	.05757986	sigma_e	.33528911	
rho_fov	.02864702	(fraction of variance because of u_i)				
FE (within) regression with AR(1) disturbances				Number of obs	=	485
Group variable: firm				Number of groups	=	14

R-sq: within = 0.0198	Obs per group: min = 33
between = 0.0055	avg = 34.6
overall = 0.0194	max = 35

F(5,466) = 1.88	Prob > F = 0.0965
corr(u_i, Xb) = -0.0110	

Source: Authors' STATA 12 Output of Collated Secondary Data

5. DISCUSSION

Table 1 depicts the statistical description of the variables. The large standard deviations (see LEV and LnTA) are attributed to the sampled firms emerging from the diverse 95 sub-sectors of the Nigerian Stock Exchange (NSE). The probabilities of both skewness and kurtosis are all less than 5% i.e. $p = 0.0000$ confirming the sample distribution is normally distributed. Table 2 showed a strong (near perfect) positive association between return on assets, economic value added and one of the predictors: cash and cash equivalents at 1% level of significance.

For the regression analysis, the result of tables 3 and 4 strengthened the correlation result. For model 1 using EVA, the systematic variation is explained by 2% coefficient of determination (R^2) at P -value = 0.0965. That is, only 2% of the variation in profitability is explained by changes in cash and cash equivalent and the control variables. Under test of hypothesis, the decision rules posit accepting the alternate hypothesis (H_1) if the sign of the coefficient for CCE is positive / negative, the modulus of the t -Statistic > 2.0 and the P -value of the t -Statistic < 0.05 . The individual hypothetical test depicts very strong influence of CCE on both EVA ($t = 3.66$, P -value = 0.000) and ROA ($t = 2.73$, P -value = 0.007). Further, the relationship between profitability (proxied by EVA and ROA) and the control variables are insignificant.

Keeping cash and other liquid assets up to the optimal level as propagated by operational cash management theories is reinforced by the results depicting positive relationship between cash and cash equivalents and profitability. The cash holding decision is a vital aspect of capital structure especially in the short run (Sohani, 2009). Firms must keep adequate cash to meet expected expenditures. It is hypothesized that size of firm (LnTA) correlates strongly with cash and cash equivalents accentuating the need for local firms to hold cash as those with high leverage have their profits significantly reduced. However, Powell and Baker (2010) show cased through their survey by employing structured questionnaires that growing young firms should hold most cash to facilitate expansion activities while ageing (cash cow) firms with unlimited access to the capital and money markets should hold less cash.

6. CONCLUSIONS

The relationship between cash and cash equivalents and profitability of manufacturing firms in Nigeria was investigated for the relevant period (2003 – 2017). The study employed panel least squares estimation and fathomed that manufacturing firms with adequate liquid resources (sound cash flow management) and high liquidity ratios perform better than others in this era of persistent liquidity squeeze and stricter loan covenants / conditions. Results indicate that cash management systems of firms studied are aligned to Trade-off theory, Liquidity Slack theory and financial hierarchy (Pecking Order) theory of cash management. In other words, the size of cash balance is relevant (essential provision of an optimal tradeoff between being liquid and being profitable) to these firms. The firms' management should be

familiar with the liquidity-profitability trade-off to facilitate maintenance of optimal cash balances.

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