CASH FLOW, LIQUIDITY AND CAPITAL STRUCTURE ON PROFITABILITY OF QUOTED MANUFACTURING FIRMS IN NIGERIA

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Abstract

This study investigated the effect of cash flow, liquidity, and capital structure on the profitability of firms in Nigeria from 2010-2019. Secondary series were secured from the annual reports of twenty quoted firms; and is devoid of bias. The variables employed are return on equity (ROE), cash conversion ratio (CCO), current assets-current liabilities ratio (CURA) and debt-equity ratio (DER). The Panel Unit root, Kao and Pedroni Cointegration, and Generalized Method of Moments (GMM) techniques were utilized for the study at the 95% confidence interval. The panel unit root test indicates that all the variables were integrated at order. Kao and Pedroni cointegration test revealed the absence of long-run form. The GMM outcome shows that cash conversion cycle is positive and significant with ROE; meaning that cash is tied up for longer periods. Liquidity ratio is negative and insignificant with return on equity, thus demonstrating the inability of firms to meet up with short- term obligations when they fall due. However, the debt-equity ratio is positive and significant and in line with appriopriate expectation. This indicates that manufacturing firms consider an optimal policy in their capital structure decisions. The employment of debt capital is usually for expansionary purposes which is considered highly profitable. The study recommends that managers of manufacturing firms should employ proper credit management like giving discounts to their customers for early payment, or reducing their cost of holding inventory by selling off before restocking as well as delaying payments to be made to their creditors. In addition, they should also consider refinancing some of their short-tenured obligations to the long term or sell off all non-income generating assets so as to conserve liquidity.

Keywords: Panel GMM, Cash flow, Liquidity, Gearing, ROE.

1. Introduction

The Covid-19 pandemic and its variants have continued to impact how businesses are conducted around the world. Firms are experiencing disruptions in areas of cash flow, liquidity, and capital structure which have impacted on their profitability. They are caught in the web of how to raise cash to finance operations and meet up with their short-term liabilities as well as what mix of debt and equity, they can employ to cause balance in their capital structure. This dilemma is akin to the trade-off model of profitability versus liquidity, thus emphasizing the need for optimal cash flow and capital mix.

Cash flow is an important factor in determining a company's relative riskiness and profitability. A firm with adequate cash flows is perceived by investors as non-risky, and as such has the ability to embark on more expansionary projects that steer long-run profits. Orshi (2016) argues that cash flow sufficiency ensures immediate fulfillment of outstanding obligations without a

resort to avoiding debts. Idamoyibo, Abner, Akpan, Orugun, Emmanuel, and Udo (2021) see it as a firm's vascular system. This means that any decrease from the optimum level has a significant financial impact on the firm's performance. Thus, making it one of the standard parameters by investors (Nwanyanwu, 2015) and as a determinant of a firm's overall success (Ekwere, 1993).

A firm's liquidity shows how capable it is in meeting up with its short-tenured commitments; and this is vital to its performance (Olulu-Briggs, 2021). Liquidity refers to the ability to settle financial obligations with cash or short-term convertible assets without incurring losses. According to Kimondo, Irungu, and Obanda (2016) an optimal level of liquidity is essential for promoting organizational financial performance and creating more value for shareholders. The careful planning, organization, and apportionment of funds allows firms to easily settle their commitments and build a good image (Akenga, 2017; Orshi, 2016; Ehiedu, 2014; Alshatti, 2015).

Likewise, the capital structure of a firm is a mix of debt and equity (long-term) financing; that is, the resources that a firm owes and owns (Burksaitiene & Draugele, 2018; Sarlija & Harc, 2012; Le & Phan, 2017; Ghasemi & Ab-Razak, 2016; Olusuyi & Felix, 2017). Capital structure shows the level of financial leverage; and this affects the risk and returns of shareholders' as well as the market value of shares (Olokoyo, 2012). It should be optimal such that it achieves the maximum employment of leverage at a minimal cost. The debate on the adequate blend of capital structure to promote the financial performance of firms have continued to attract much academic writing given the relative risk exposures of firms, especially in the pandemic period. This means that excessive equity or debt can lead to dilution of control, high cost of funds, profit sharing, conflict of interest, financial distress and or the risk of bankruptcy (Uremadu & Efobi, 2012; Rajan & Zingales, 1995).

Profitability is a metric that reveals the financial success of any firm. It indicates the efficient nature in which raw materials are utilized to generate above-average return on investment. A lack of profitability may result to business failure. This is because financing can no longer be secured to fund operations, investors will also not be attracted to finance expansionary projects, trading activities will reduce with a fall in share price; and this will in the long run slow the economy.

Having an in-depth understanding of cash flow, liquidity and capital structure of manufacturing firms is vital when analyzing a firm's performance. The manufacturing sector is one of the major sectors that contributes massively to the gross domestic product of any nation (Obamuyi, Edun & Kayode, 2012; Mishra, 2018). They are involved in the business of converting raw materials into finished goods for consumption and other purposes which stimulate the economy. Therefore, they must be liquid and also secure a balanced combination of both debt and equity in order to remain profitable.

Several research studies have been carried out on either cash flow, liquidity or capital structure on performance in particular sectors of the economy. Omorogie, Olofin and Ikpesu (2019) examined capital structure and profitability-liquidity tradeoff in Nigeria. Sanni (2019) investigated capital structure on profitability of listed insurance firms in Nigeria. Cyril (2016) explored capital structure and financial performance of Nigerian quoted conglomerates. Abubakar (2016) analyzed financial leverage and financial performance in the Nigerian health sector. Mohammed (2010) investigated capital structure and performance of listed industrial goods firms in Nigeria. Despite the large volumes of research interest, the puzzle remains. Most studies found differing views which may be due to either the methodology adopted or the time frame, thus bringing to question how it has been employed. More so, there are deviations with regards to the measures utilized. Most studies applied return on assets as a measure of profitability or quick ratio as a measure of liquidity. Some used liquidity to also proxy for cash flows. Although much investigation has been done in developed economies, much has not been done especially among manufacturing firms of developing economies like in the case of Nigeria. It therefore becomes imperative to examine the relationship between cash flows, liquidity and capital structure on profitability of quoted manufacturing firms in Nigeria. These evident gaps in the literature prompt this study.

This study is investigated the effect of cash flow, liquidity and capital structure on the profitability of firms in Nigeria from 2010-2019. Some of the previous studies focused on the generalized least square technique in their estimations. Our study goes beyond the present literature by exploring quantitative dimensions of cash flow, liquidity, capital structure and profitability among quoted firms in Nigerian. Robust techniques like Pedroni and Kao panel cointegration and the generalized method of moments (GMM) were utilized to help unearth the relationship among the variables.

The study is significant to investors as they will be better involved in company's decisions to ensure management makes profitable capital budgeting choices, thus, evading information asymmetry and leading to a balance in transaction power. The study will also guide creditors on loan extension and subsequent repayment. When creditors have information about the level of risk a firm has, it will guide their demand for additional risk premium on external financing. In addition, scholars will find the discussions as input for further research.

The remainder of this study is as follows: section 2 is on review of theoretical and empirical literature; section 3 confers the methods/techniques; section 4 discusses the findings; and section 5 concludes and recommends.

2. Literature Review

2.1 Theoretical Review

The study is anchored on three basic theories. These are the Cash Conversion Cycle (CCC) Theory, the Tradeoff (TO) Theory of Liquidity and Profitability, and the Pecking Order (PO) theory of Capital Structure.

i **The CCC theory** by Richards and Laughlin (1980) is a framework relating the tradeoff between working capital and profitability. A cash conversion cycle explains a firms efficiency in both their operations and cash management. The cash conversion cycle of manufacturing firms should be relatively short in order to secure profitability and signal good health to its investors. This is in support of Oseifuah and Gyekye (2016) that anefficient working capital management is when the conversion cycle is short; leading to liquidity, profitability and then adds value. Mab and Makoni (2019); and Zalaghi and Godini (2019) support the view that a short CCC is fundamental to the profitability of firms.

ii **The Pecking Order (PO) theory** was put forward by Myers and Majluf (1984) to counter the Modigliani-Miller (1958) irrelevancy proposition; which states the irrelevant nature of financial leverage because it does not add value to a firms' stock price. Modigliani-Miller (1959) argues that a firms' market value can only get better if managers' execute only profitable investments using their underlying assets. Nevertheless, Myers and Majluf (1984) claimed otherwise and insist that financial leverage impacst on firms' value. Thus, when seeking for funding for investment opportunities, managers should first follow a pecking order by exhausting their "Cheap retained earnings" before seeking for debt financing, which has a lower cost; and then equity financing if need be (Frank, Goyal, & Shen, 2020). This is because, issuing debt signals that the firm has profitable investments as well as an undervalued stock; while that of equity shows the stock is overvalued and that managers are looking for such financing tool to dilute the firms' shares (Donaldson, 1961). Thus, to achieve profitability with improvements in share price, manufacturing firms with increasing cash flows (liquidity) will tend to utilize their retained earnings in order to avoid issuing cost, then borrow less.

iii **The Static Trade-Off theory** by Modiglanni and Miller (1963) and Miller (1977) observed that an optimal capital structure is a tradeoff between the benefit and cost of equity and debt. Thus, debt is beneficial due to tax deductibility on interest which leads to profit but with an associated liquidity problem. This means that liquidity and profitability have a dual tail end, where movement in one drives the other (Garcia & Martinez, 2007; Sarlija & Kumar, 2012) implying that they are inversely related. In view of chasing one solely, the other will be driven away; unless optimality is maintained. For businesses to survive, m must make plans for optimal liquidity and achieve a sense of balance between profits and liquidity (Yusuf, Nwufo, & Chima, 2019). This optimality position is also strengthened by Orshi (2016), Pourali and Arasteh (2013) that firms try to establish an equilibrium level that is ideal for the cost and benefit of managing cash. A high level of leverage elicits high cost for the payment of debt obligations; thus, hampering profitability. As a result, manufacturing firms may find it difficult to raise cash from other sources.

2.2 Empirical Review

There exists national and international research on the cash flow, liquidity, and capital structure decision of firms, and this has produced conflicting results of either positive or inverse

relationships. In Ghana, Li, Musah, Kong, Adjei Mensah, Antwi, Bawuah, Donkor, Coffie, and Andrew Osei (2020) examined non-financial firms to establish the nexus between financial performance and liquidity. The regression shows that there exists a negative significance between liquidity and profitability. The study thus recommends that the firm should be effective in its liquidity management and also employ good internal control structures to strengthen it. Supriati, Ramaditya and Wardh (2019) examined leverage and liquidity impact on corporate performance using 11 quoted food and beverage firms in the Indonesian stock exchange. The period of study ranges from 2012-2016, and the data was analyzed using both regression and path analysis. From the findings, there is evidence of momentous positive link between liquidity and profitability, assigning liquidity as most weighty factor towards firms' performance. Adnan and Kamran (2019) investigated liquidity and profitability of 12 automobile firms in Pakistan. Cash ratio, current ratio and quick ratio were used to proxy liquidity while return on assets and return on equity substituted for profitability. The panel methodology was employed on a 5-year data and the findings show that only quick ratio demonstrated a positive effect on profitability. The study recommends for firms to adopt an optimal policy in their current assets to achieve higher profits. Oseifuah and Gyekye (2016) assert that an effective working capital management is when the cash conversion cycle is short; leading to liquidity, profitability and adds value. In Nigeria, Yusuf, Nwufo and Chima (2019) researched on the synergy between liquidity and profitability management of 10 quoted banks from 2010-2013. The multiple correlation analysis proves that a significant and inverse relationship exists between liquidity and profitability. It was recommended that banks should thrive towards achieving optimality, however, be cautious of liquidity risk. Charmler, Musah, Akomeah and Gakpetor (2018) also affirmed that liquidity ratios influence the profitability of DMBs positively. These assertions on positive correlation is similar to the findings of Ibrahim (2017); Sarwat (2017); Malik, Awais and Khursheed (2016); Abdullah and Jahan (2014); Khidmat and Rehman (2014) and Ajantham (2013). On the contrary, Noor and Lodhi (2015) examined the link between liquidity and firm's profitability and found that liquidity is negatively related to profitability. Using the Panel OLS method on listed firms in Nigeria, Augustine and Jacob (2017) show presence of negative association between performance and cash management. Schulz (2017) examined a sample of 3363 unlisted SMEs from period 2008 to 2015 and found that liquidity significantly affects ROCE negatively. In addition, Mohanty and Mehrotra, (2018) studied 28 listed SMEs in the Bombay stock exchange and gave proof of both negative and positive association relating liquidity ratios and profitability.

In same vein, the argument on capital structure has produced contradictory understandings. Muhammad (2020) researched on the impact of capital structure on the financial performance of industrial goods firms quoted on the NSE from 2015-2019. Both the generalized least square and random effect regression was utilized to analyze the data. The results from the analysis were significant, and it was recommended that industrial goods firms should maintain large liquid assets to finance their short-tenured obligations when they fall due. Omoregie, Olofin and Ikpesu (2019) adopted a Panel VAR and descriptive technique to examine the tradeoff between liquidity & profitability of 18 quoted manufacturing firms in Nigeria. Their findings show that variables

have a significant link which is however a result of changes in business cycles. This means that, in boom periods, an increase in debt leads to an increase in profits and stable liquidity; and vice versa. Sanni (2019) assessed the capital structure and profitability link of 15 quoted insurance firms. Employing a panel regression method, the result proves that short term debt is negative but significant while long term debt is positive and significant with profitability. Nwanna and Ivie (2017) examined how capital structure affects firm's performance in Nigeria from 2006-2015; using a sample of 13 deposit money banks (DMBs). Applying multiple OLS method, the result reveals that D/E ratio has substantial negative effect on profitability. Similarly, Prempeh and Nsiah Asare (2016) studied 5 quoted manufacturing firms in Ghana between 2005 and 2015, using both the Random and Fixed effect models. They found support for the negative association between capital structure and profitability. Also, Abubakar (2015) sampled 9 DMBs in Nigeria over 2005-2013. Applying the correlational analysis method, the study presents evidence of negative but significant relationships. Abubakar (2016) studied 5 quoted firms in the healthcare sector of Nigeria from 2005-2014. The study observed that D/E ratio significantly affects profitability negatively.

Among 66 quoted non-financial firms, Abubakar (2017) found a positive link between capital structure and profitability between 2005 and 2014. Enekwe, Agu, and Eziedo (2014) used the Pearson correlation on 3 pharmaceutical firms in Nigeria and found that D/E ratio spurs profitability positively. However, Nwaolisa and Chijindu (2016) assessment on how capital structure affects profitability of 23 consumer goods firms during 1993-2013 show that capital structure is not significant to profitability. Cyril (2016) explored capital and financial performance of conglomerates in the Nigerian economy from 2011-2015. The dependent variables are return on assets, return on equity and asset turnover ratio, while the independent variables are debt and equity. The panel OLS was adopted for the analysis and it revealed that capital structure has a significant relationship with return on asset and asset turnover ratio. The study therefore advocated for an appropriate employment of debt and equity to ascertain profitability.

In summary, existing studies have exhibited varied conclusions on capital structure, liquidity and cash flows on performance, employing diverse measures. Though most theoretical justifications are judged from discoveries from reviewed literatures, there still exists a lacuna on how cash flows, liquidity, and capital structure relate with profitability. It therefore becomes imperative to identify this link. This research fills the gap by specifically separating cash flows from liquidity and how it individually affects profitability. Consequently, the hypothesis of the study is stated as:

***H0$_1$**: cash flows have no significant effect on profitability.*
***H0$_2$**: there is no positive and significant relationship between liquidity and profitability.*
***H0$_3$**: the relationship between capital structure and profitability is insignificant.*

3. Methodology

This study embraced the longitudinal research design. Subject to data availability, annual series were obtained from the financial statement of 20 manufacturing firms quoted on the stock exchange from 2010-2019. In order to capture cash flow, liquidity, capital structure and profitability, we used the cash conversion cycle which is the sum of average collection period and inventory turnover less average payment period; the proxy for liquidity is the ratio of current assets to current liabilities; that of capital structure is the ratio of debt to equity; and for profitability, it is return on equity which is the ratio of earnings after tax to shareholders' fund. The reason for the choice of current ratio is because it gives a more accurate representation of how liquid a firm is. It thus incorporates inventory, cash securities, prepaid expenses, and accounts receivables that are quite difficult to liquidate. In support with the shareholders' wealth maximization principle, the return on equity was adopted for the study because it gives a better explanation to investors on the firms' investment strategies and the level of income they are generating from shareholders' equity. The study utilizes the unit root, descriptive analysis, Pedroni and Kao cointegration, and Generalized Method of Moments (GMM) methods.

In line with the objectives of the study, our functional and econometric model is:

$$\mathbf{ROE} = f\ \mathbf{(CCO, CURA, DER)} \quad 1$$

$$\mathbf{ROE}_{it} = \beta_0 + \mathbf{ROE}_{it-1} + \beta_1\mathbf{CCO}_{it} + \beta_2\mathbf{CURA}_{it} + \beta_3\mathbf{DER}_{it} + \alpha_i + \varepsilon_{it} \quad 2$$

Where;

i **CCO** is the cash conversion cycle. It determines the length of time between a firms' cash flow and its net profit. This cycle should be short so that much of the firms' working capital is not tied up for longer periods. Appropriately, we expect a negative but significant relationship between cash conversion cycle and profitability. That is CCO < 0.

ii **CURA** is the proxy for liquidity and measures the ratio of current assets to current liabilities. A higher liquidity ratio shows that a firm is more liquid and has better coverage of outstanding debts. Appropriately, we expect a positive and significant relationship between liquidity and profitability. That is CURA > 0.

iii **DER** is the proxy for capital structure and explains the gearing ratio. A high gearing ratio connotes a high degree of leverage and such a firm is perceived by investors as having higher financial leverage; making them more likely to be affected by economic downturns. On the other hand, a firm's high leverage ratio can also be seen as having profitable investments that impacts positively on their share prices. Appropriately, we expect a positive and significant relationship between capital structure and profitability. That is DER > 0.

4. Results and Discussion

4.1 Summary Statistics

Table 1: Descriptive Test Outcome

	ROE	CCO	CURA	DER
Mean	0.240217	73.31126	1.894446	0.242430
Std. Dev.	0.100613	29.84629	0.787644	0.152850

Skewness	0.270193	0.370377	-0.231598	1.357837
Kurtosis	3.185861	2.689739	3.098267	5.141440
Jarque-Bera	2.721343	5.374825	1.868386	99.67208
Probability	0.256489	0.068057	0.392903	0.000000

Source: E-views10 output

Table 1 display the individual yearly mean of ROE, CCO, CURA, and DER. The level of variability as compared is their respective mean is high signifying the level of risk associated with the activities of manufacturing firms in Nigeria. ROE, CCO, and DER are positively skewed and mesokurtic as their values are equal to 3; whereas CURA is negatively skewed and leptokurtic as its value is above 3. The J-Bera p-value show that ROE, CCO, and CURA have normal distributions but DER is not.

4.2 Stationary Test

Table 2: Levin, Lin & Chu Stationarity (Pooled ADF) Test

Variables	Levin, Lin & Chu Test Statistics	P-value	Conclusion
ROE	-17.5414	0.0000	I(1)
CCO	-4.93557	0.0000	I(1)
CURA	-5.63271	0.0000	I(1)
DER	-4.16931	0.0000	I(1)

Source: E-views10 output

Table 2 shows the stationarity test of all the variables at the 5% level of significance. The Levin, Lin & Chu test (2002) is a first-generation panel unit root test that assumes cross-sectional independence of individual processes, and removes autocorrelation in the dependent variable. The essence of this test is to ensure consistency and proper modelling by proving if the variables do not have seasonal effects or trends. From the analysis, all the variables are integrated only at first difference I (1). Thus, we can test for long-run association amongst the variables.

4.3 Panel Co-integration Test

Table 3 Pedroni Residual & Kao Cointegration Test

Variables: ROE CCO CURA DER							
Alternative Hypothesis:	**Common AR Coefficients**		**Within Dimension**			**Between Dimension**	
	Statistic	**Prob**	**Weighted St.**	**Prob**		**Statistic**	**Prob**
Panel v-Statistic	0.198491	0.4213	-5.528704	1.0000	Group rho-Statistic	3.983819	1.0000
Panel rho-Statistic	1.735679	0.9587	1.718058	0.9571	Group PP-Statistic	-7.372750	0.0000
Panel PP-Statistic	-4.110931	0.0000	2.513277	0.9940	Group ADF-Statist.	-3.741875	0.0001
Panel ADF-Statistic	0.148457	0.5590	4.888020	1.0000			
Kao Cointegration Test							

		t-Statistic	Prob.	
ADF		0.842842	0.1997	

Source: E-views10 output

Table 3 shows the Pedroni and Kao cointegration test (1999). We employed both test to identify cointegration across and within groups of variables, which allows for separate intercepts and separate deterministic trends. From estimation, only 3 of the statistics are significant at 5% level. Similarly, the Kao test validates the absence of significant relationship amongst the variables. Thus, we conclude that there is no long-run relationship among the variables. Hence, we proceed with the short-run test-GMM to determine the nature of the association among the variables.

4.4 Short-run Test

Table 4: Panel Generalized Method of Moments

Variables	Coefficient	Standard Error	t-Statistic	Probability
ROE(-1)	0.219777	0.031621	6.950284	0.0000
CCO	0.000985	0.000155	6.351707	0.0000
CURA	-0.006585	0.006816	-0.966213	0.3354
DER	0.308119	0.018519	16.63822	0.0000
Effects Specification Cross-Section Fixed (First Difference)				
Mean Dependent Variable	0.002789		S.D. Dependent Variable	0.069813
Standard Error	0.073244		Sum Squared Residual	0.836893
J-Statistic	17.33255		Instrument Rank	20
Probability of J-Statistic	0.364400			

Source: E-views10 output

Table 4 shows that the lagged value of ROE is positive (0.219777) and significant (0.0000); DER is positive (0.308119) and significant with p-va of 0.0000. A 1% increase in DER would cause ROE to increase by 0.308119%. CCO is positive (0.000985) and significant with p-va of 0.0000. A unit increase in CCO would lead to about 0.000985% increase in ROE. However, CURA is negative (-0.006585) and insignificant with p-va of 0.3354. Thus, a 1% increase in CURA would lead to about 0.006585% decrease in ROE.

4.5 Wald Test

Table 5 Wald Test of Significance

Test Stat.	Value	DF	Probability
F-Statistic	365.1052	(4, 156)	0.0000
Chi-Square	1460.421	4	0.0000

Source: E-views 10 Output

Table 5 presents the Wald test used to prove the collective significance of the explanatory variables on the explained variable. The probability value of the chi-square explains that at the 5% level, all the explanatory variables collectively explain profitability. Precisely, previous periods ROE, cash flow, liquidity, and capital structure explains the current ROE of manufacturing firms in Nigeria.

4.6 Diagnostic Test

Table 6 Arellano-Bond Serial Correlation Test

Test Order	m-Statistic	Rho	SE(rho)	Probability
AR(1)	-1.651223	-0.275801	0.167028	0.0987
AR(2)	0.159057	0.014126	0.088812	0.8736

Source: E-views 10 Output

From table 6, AR (1) and AR (2) demonstrate that the model is free from first-order serial correlation given that their respective probability values of 0.0987 and 0.8736 are more than the 5% level of significance. This means that individually the variables are unrelated.

4.7 Discussion of Findings and Policy Implications

From the Panel GMM estimation in table 4.4, cash conversion cycle is positive and significant; meaning that cash is tied up for longer periods. This is not in line with apriori expectation. Thus, manufacturing firms in Nigeria take longer periods to convert their finished goods inventory into cash. This may be attributed to failure on the part of management on collection of debt or tied-up inventory or quick payments made to suppliers. Al-Abass (2017) opine that a long cycle means that the firm is paying its suppliers for its inventory but at the same time, not receiving cash from its customers. Shin and Soenen (1998) assert that when a firm takes longer periods in their cash conversion cycle, then they have to rely more on external financing to meet up with their short-tenured obligations, leading to reduced profitability.

In another development, liquidity is negative and has no bearing on ROE. This is due to the firm's assets having a high quantity of inventory that cannot be quickly converted to cash to pay debt commitments. Thus, manufacturing firms in Nigeria are finding it difficult to pay up current obligations; and thus relying on either debt or equity to finance working capital. This finding is consistent with Augustine and Jacob (2017) and Noor and Lodhi (2015), that liquidity has a negative relationship with profitability.

However, Debt-Equity ratio is positive and significant and in line with apriori expectation. The coefficient has a value of 0.308119 and significant at the 5% level; which is a mid-level gearing between 0.25 and 0.50, and is predictably considered optimal. This means that manufacturing firms employ efficient management of their debt levels and as such they are financially stable. The acquired debt is being professionally employed for expansionary objectives, enhancing new product lines or services which has aided profits. This finding is consistent with Abubakar (2017), Nwaolisa and Chijindu (2016), and Enekwe et al. (2014) that optimal capital structure increases company performance. The following limitation were identified in this study.

i The study was conducted for quoted manufacturing firms only; for this reason, the result may differ if same is applied to other sectors of the Nigerian economy

ii The choice of only 20 manufacturing firms as the sample size for this study means that it does not represent the whole population of listed manufacturing firms in Nigeria.

iii Also, we employed accounting data which is historical and susceptible to manipulation by firms' management.

5. Summary and Conclusion

We investigate the impact of cash flow, liquidity, and capital structure on the profitability of 20 Nigerian publicly traded manufacturing firms from 2010 to 2019, covering a 10-years sample size. The factors of interest are return on equity, cash conversion cycle, liquidity ratio, and gearing ratio. We evaluated the data from the annual reports of the mentioned corporations using the Panel Unit Root, Descriptive Analysis, Pedroni and Kao Cointegration, and GMM approaches. We also conducted the Wald test for collective significance as well as the Arellano-Bond Serial Correlation Test. The result of the panel unit root test evidence stationarity of the variables after being first-differenced. From the co-integration test, there exist no long run equilibrium relationship; and the panel GMM revealed that cash conversion cycle has a long cycle which indicates that finished goods are not easily converted to cash. Also, findings from the liquidity estimation indicates that manufacturing firms in Nigeria are in difficult shape as regards their liquidity status. This means that they are unable to meet up with short term debt settlements. Only findings from the gearing ratio is positive and significant and in line with apriori expectation. Thus, manufacturing firms' arrive at an optimal level on decisions regarding their capital structure. The acquisition of debt and equity capital is efficiently utilized for the growth of their businesses.

Consequent on these findings, we make the following recommendations:

i Management of manufacturing firms in Nigeria should employ proper credit management like giving discounts to their customers for early payment, or reducing their cost of holding inventory by selling off before restocking as well as delaying payments to be made to their creditors. This is in support with a recent study by Olulu-Briggs and Wobo (2022) that for telecommunication firms to see improvement in their financial performance, payments to their suppliers should be deferred so that these payables can function as a source of finance.

ii In order to conserve liquidity, managers of manufacturing firms should also consider refinancing some of their short-tenured obligations to the long term or sell off all non-income generating assets.

iii In addition, management may also consider work efficiency by initiating system and process automation for increased work flows that will help save cost.

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