WORKING CAPITAL MANAGEMENT AND ITS EFFECTS ON OIL AND GAS INDUSTRY PERFORMANCE IN NIGERIA

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Abstract

The study examined the effects of Working Capital Management(WCM) on firms performance in oil and gas industry in Nigeria, for the period of 2011-2020. The study adopted judgemental sampling techniques, a sample of ten (10) companies in the oil and gas industry in Nigerian.Data were sourced from their annual report and accounts. Descriptive statistics, correlation, panel unit root,Pedroniccointegration test were employed and the multiple regression analysis of the (E-VIEW 9.0) at 0.05 level of significant (95% confidential interval) was used as a basis of testing the hypotheses. The findings revealed that Account Payable Period (APP) and Account Receivable (ARP) have significant effect on Return on Asset (ROA) while Cash Conversion Cycle (CCC) and Inventory Collection Period (ICP) does not have significant effect on ROA. The study concluded that WCM has a significant effect on firm's performance in the Nigeria oil and gas industry. The study recommends that the average number of days that is used by the firms to convert its inventories to cash should be reduced because major source of working capital financing for firms should be repositioned in order to reduce the CCC from its present insignificant status to a significant one.

Key Words: Working Capital, Capital Management, Performance, Account Payablesand Account receivable.

Introduction

Working Capital Management(WCM) is one of the most important and crucial aspects of a company's overall financial management. This is because financial management efficiency is required to ensure a firm's long-term performance and achievement of its ultimate aims, which is to maximize the wealth of its owners (Leonard, Chukwu&Elom, 2018). A specific amount of working capital is required for business operations, and the level of working capital is defined by a government regulation as the cash holding or near cash assets needs of a bank. It is important to remember, however, that the quantity of working capital does not directly give the firm any money

because it is virtually always retained in cash form (Jatin, 2020). A well-managed working capital ensures that the business runs smoothly by allowing the important ingredients (cash, inventory, receivables, and payables) to circulate freely (Uguru, Chukwu, &Elom, 2018; Muhammad, Rubeena&Sumbal, 2019; Hadri& Ahmad, 2018).

The credit policy of the company is determined by the number of days' accounts receivable are outstanding (Ighoroje&Akpokerere, 2021). The number of days inventory is held indicates the inventory management policy, as does the cash conversion cycle (CCC), which is a complete assessment of the quality and efficiency of existing WCM procedures. Thus, if correctly managed, these are the tools that ensure that the firm's daily activities are not affected (Tobias, Victor and Martin, 2020). The amount of profitability of a company is inextricably linked to how working capital is managed. To put it another way, asset return is a function of asset management. The profitability of a company is directly proportional to how efficiently it uses its working capital. Hence, good and efficient WCM is highly desired, as it has a considerable impact on a company's profitability and long-term viability (Muhammad, et al, 2019).

WCM is a critical and difficult finance decision that businesses must make in their day-to-day operations management (Akpokerere&Obonofiemro, 2022). If a firm can fund daily operations expenses and meet other short-term obligations at lower costs, it is said to have efficient WCM (Olamide, 2021). To satisfy daily business operating tasks, management of short-term payables and receivables, as well as long-term assets, is essential (Akpokerere&Ighoroje, 2022). Working capital is made up of both short-term receivables and payables. Working capital can have a good or negative impact on a company's profitability. It would be detrimental to a company's profits if it had surplus and idle current assets (Olamide, 2021). At the same time, a lack of current assets would restrict revenues and lead to bankruptcy. WCM has a direct impact on liquidity and profitability, and organizations can establish a balance between profitability and liquidity by adopting good practices (Muhammad &Sumbal, 2019).

The effective utilization and control of working capital's components: accounts receivables, accounts payables, inventory, and the cash conversion cycle equates to proper working capital management. Because their high or low amount might affect a firm's profit earning capabilities, all of the

components are linked to profitability. Management focuses on efficient credit policy management when it comes to receivables control. When debtors (Accounts Receivables) do not pay their bills on time, problems develop (Ehiedu& Priscilla, 2022). Managers must be conscious of the effects on profitability and associated expenditures while attempting to improve sales credit rules (Jatin, 2020). When it comes to managing accounts payables, businesses use a variety of strategies to ensure that payments are made as efficiently as possible. Companies can take one of two approaches: retrenchment or expansion. Firms focus on the cost of trading in the contraction strategy (Ehiedu,Onuorah&Mbagwu, 2022). Firms in growth mode attempt to get the most out of their funds in the shortest amount of time possible. Both approaches have advantages for the company. While inventory management entails companies attempting to maintain ideal inventories with the goal of increasing inventory turnover and lowering financial expenses, resulting in higher profits (Abdullahi, Garba and Abubakar, 2020).

Despite its importance, only a few empirical studies in Nigeria's oil and gas business have been conducted, to the best of the researchers knowledge as such the researcher have determined that a study in this area is required to close the gap.This study evaluated Nigerian publicly traded oil and gas firms using ROA. Several studies have examined how WCM affects corporate performance in Nigeria, but few have examined oil and gas enterprises, creating a knowledge gap that this study seeks to fill. So, this study explores how WCM affects Nigerian listed oil and gas businesses.

Review of Related Literature

Conceptual Framework

Working Capital management (WCM)

Working capital is essentially the value left over after subtracting short-term liabilities from current assets (Angahar and Alematu, 2019). ICAN (2018) defines working capital as the money a company needs to support the assets it uses for day-to-day operations. Working capital, according to Ani, Okwo, and Ugwunta (2018), is inventory having the potential for conversion or sales in order to generate profit. An organisation must store inventories at a cost and sell its goods or services on credit in order to run a successful business. Both of these business operations are expensive (ICAN, 2018). Working capital is described as "the portion of a firm's present assets which are financed from

long-term finances" by Ismail, Mohammed, and Wan Mohammed (2018). Working capital is defined by Napompech (2019) as the amount invested on the entity's current assets in relation to current obligations that is used to finance the investment.

Therefore, WCM is the answer to the company's short-term liabilities that are required for payment. It is also a prerequisite for the entity's operations to be sustained (Mohammed and Nasr, 2017). Ismail, et al. (2018), stated that WCM is concerned with the usage of funds necessary for the ongoing operations of the organisation in order to achieve its objectives. According to Ebenezer and Asiedu (2017), managing and financing an organization's short-term assets and obligations is WCM. The two objectives of an enterprise, profitability and liquidity, go hand in hand. WCM is one of these. In order to "ensure that the firm is able to continue its day-to-day operations and that it has the sufficient ability to satisfy its present and future short term expenses," WCM main goal is to "ensure that the firm has sufficient ability to satisfy its present and future short term expenses" (Varghese and Dhote, 2014).

Mohammed, et al. (2017) defined WCM as the practice of planning for the acquisition and use of short-term assets. Furthermore, it is the procedure for deciding the organization's policy in planning for its existing assets and liabilities holdings in financing its daily activities. According to Owolabi and Alu (2016), short-term, reversible decisions are those made for a year or less. This short-term choice must be effective in order to maintain the firm's working capital at an ideal level that falls between excess and shortage. This means that having enough working capital is necessary and adds value to the business by lowering risks and enhancing performance (Akindele&Odusina, 2015).

Theoretical Review

The Operating Cycle Theory

The operating cycle is the period of time between when money is spent on buying input resources and when it is brought in through sales (Richards & Laughlin, 1980). Working capital is incorporated into the operational cycle theory along with inventory (Shin &Seonen, 1998). In contrast to the static approach, which primarily emphasises balance sheet operations, the operating cycle theory integrates metrics from the income statement and balance sheet (Richard & Laughlin, 1980).

Researchers can take companies into account as going concerns thanks to the operating cycle hypothesis (Falope&Ajilore, 2009). The operating cycle, however, does not include accounts payable in the liquidity analysis like the cash conversion cycle does. The operating cycle does not therefore offer the net working capital cycle (Richards & Laughlin, 1980).

According to the operational cycle theory, the notion of liquidity can be formed by expanding the static analysis of the statement of financial position's potential liquidation value coverage to include measures recorded on the income statement of a company's operations. Adding receivables and inventory turnover to form an operating cycle idea provides a more accurate way to analyse liquidity. These additional indicators aid in determining the effect that the three primary operations of production, distribution, and collection have on liquidity. Accounts receivable turnover measures how frequently a company converts its average investment in receivables into cash. Therefore, any modifications to a company's credit or collection policies may have an immediate effect on its typical accounts receivable level.

Empirical Review

In 2020, Abdullahi, Garba, and Abubakar used data from six publicly traded Nigerian oil and gas companies from the years 2008 to 2018 to examine the impact of WCM on financial performance (FP). Pooled Ordinary Least Squares (POLS), Fixed Effects and Random Effects models, as well as descriptive analysis using mean, median, minimum and maximum values, were used for panel data approaches. The key findings show that management of inventories has no discernible impact on FP but management of accounts receivables and payables has discernible negative and positive impacts on FP as measured by ROE. The study comes to several conclusions, one of which is that oil and gas companies do not manage their inventories in an effective or efficient way. Additionally, it is established that bad account receivable management reduces shareholders' value as determined by ROE.

WCM effect on the FP of listed Nigerian oil and gas companies was studied by Aitimon and Aniche (2020). Only secondary data covering an 8-year period were used in the study (2011-2018). A sample of 11 oil and gas companies was studied using a correlational study design. The study used the Robust Generalized Least Squares (GLS) multiple regression technique to analyse the data, and

it came to the conclusion that the CCC and the average period of debt settlement are strongly and negatively affecting the ROA of listed oil and gas firms in Nigeria, while the average collection periods are positively affecting it. The average time of inventory retention does not, however, statistically significantly improve the ROA of Nigerian listed oil and gas companies.

A study on the effect of WCM on firm performance in various business cycle phases was undertaken by Tobias, Victor, and Martin in 2020. Evidence from Sweden, which was gathered through secondary sources such the Niarobi Stock Exchange, applicable annual published financial statements, and any other pertinent books of account of the companies operating in Kenya's oil and gas business during the relevant time period (2012-2017). While growth, firm leverage, current asset size, inventory outstanding days, and days of sale outstanding were used to represent working capital management, return on asset was utilized to represent firm performance. The results of the study show that current ratio measurements of liquidity were shown to significantly and positively influence ROE, with a unit rise in current ratio resulting in a 9.45% increase in ROE.

A study on the impact of WCM on the profitability of businesses in the Indian oil and gas industry was conducted by Jatin in 2020. Nine important Indian companies from the oil and natural gas industry were examined for the study. Around 91 percent of the Nifty Oil and Gas Index's weight is represented by the sample that was chosen. The study only uses secondary data that was taken from the audited annual reports of the companies under investigation. Several statistical techniques were used in the study, including multiple regression with panel data, Pearson's correlation, and descriptive analysis. Variables like the current ratio, debt ratio, cash conversion cycle, operating revenue growth, and company size (determined by total assets) were employed in the study as the components of WCM. ROA serves as a proxied indicator of an entity's profitability. The study's findings show that there is a strong inverse association between profitability and debt ratio, current ratio, and operational revenue growth, however there is a negative insignificant relationship between profitability and size, cash conversion cycle, and debt ratio.

WCM and the Performance of Consumer and Industrial Goods Sectors in Nigeria was studied by Okoye, Erin, Modebe, and Achugamonu in 2020. Panel data for forty (40) companies from the consumer and industrial goods sectors of the economy were used to examine the effect of WCM on

the performance of selected companies listed on the Nigerian Stock Exchange. ROA was used as a stand-in for company performance, and working capital management was measured by CCC, average payment period (APP), inventory collection period (ICP), and average collection period (ACP). The Ordinary Least Squares econometric technique was used to estimate the effect of the exogenous factors (CCC, APP, ICP and ACP) on firm performance (endogenous variable). The study's findings show that the performance of a corporation is significantly improved by the CCC, the average payment period, and the inventory conversion period.

In 2019, Salami, Suleiman, Karimu, and Iyanda looked at how WCM affected the financial returns of Nigerian oil companies. Using a panel regression model, data for the study's variables were extracted from the annual reports of nine out of the 14 petroleum companies listed on the Nigerian Stock Exchange between 2010 and 2016. The findings demonstrate how the reversal of the average payment period expectation prevented these enterprises from pursuing efficient WCM. In particular, the results showed that three independent variables; CCC and its two components, average collection period and inventory turnover period—had significant negative effects on the study's two financial return measures, ROA and return on sales, contrary to expectations. Meanwhile, average payment period had a negative impact on profitability. Additionally, the profitability of these enterprises was affected unfavourably and favourably by leverage and size, respectively. This suggests that the actualization of one of the principles of effective working capital management is hampered by a relapse of that principle. Therefore, petroleum companies should make sure that the money allotted from the account payables' delayed days is used for activities that boost profitability. Additionally, they want to put an emphasis on growing the size of their company and using equity financing rather than debt.

Literature Gap: Based on the review of related literature, this particular set of independent variables has been popularly used in the literature to capture the effects of working capital and its components. However, there are mixed results in respect of the effects of WCM on firm performance. Some studies indicate that there exists a negative relation of all components of working capital leading to an increase in the performance and vice versa that a positive relation of different components of working capital leads to decrease the performance of firms as a whole.

Thus, these contrasting findings brought about the study. Furthermore, the majority of research on the impact of WCM on company performance used performance indicators as the dependent variable, such as ROE, Return on Capital Employed, and Return on Investment. Hence, this study used ROA to assess the performance of publicly traded oil and gas companies in Nigeria. Also, while many studies have been done on the impact of WCM on business performance in Nigeria, only a few have been done on firms in the Nigerian oil and gas industry, which leaves a knowledge gap that this study aims to solve. Thus, this research examines the impact of WCM on company performance in Nigerian listed oil and gas companies

Research Methodology

The Ex-Post Facto research design was used because secondary data that are collected from annual reports of the 10 oil and gas companies under examination has to do with events that have already taken place which cannot be manipulated by the researchers. The study made use of judgemental sampling technique in drawing the sample of 10 firms in the Oil and Gas industry.

Multiple regression analysis using ordinary least square (OLS) method with the aids of E-VIEW 9.0 statistical computer software was used to analyze data in order to establish the kind of relationship that exist between the independent variables and the dependent variable used, which serve as the basis of testing the hypotheses raised in this study.. In addition, the model explains vividly the level of relationship which could be either positive or negative based on signs of the coefficients.

This study adopts and modifies the econometric model used by Akinleye&Adeboye (2019), which was modified to suit the variable of the study. The model which specifies firms performance is significantly influenced by the independent variables, is formulated as follows,

ROA = f (CCC, ICP, APP, ARP)

ROA- Return on Asset

CCC- Cash Conversion Circle

ICP- Inventory Cash Period

APP- Account Payable Period

ARP- Account Receivable Period

Thus,

$$\mathbf{ROA = \beta_0 + \beta_1\ CCC + \beta_2\ ICP + \beta_3 APP + \beta_4 ARP + E}$$

Where;β_0= Intercept, β_1-β_4= Coefficient of Independent Variablesand E = Error Term

Result Discussion

Descriptive Statistics

This study made used of descriptive statistics for the purpose of detailed description of the pannel data gotten from the annual reports and accounts of the 10 Oil and Gas companies listed in the Nigeria stock exchange. The descriptive statistics comprises of the minimum, maximum, mean and standard deviation (Std. Dev.) values.

Table 4.2.1: Descriptive Statistics

	LOGROA	LOGCCC	LOGICP	LOGAPP	LOGARP
Mean	0.804866	2.024683	1.413726	2.068259	2.247493
Median	0.684654	1.559379	1.455564	2.001132	1.940006
Maximum	3.125794	5.068271	4.518950	5.140135	5.068289
Minimum	-1.006651	0.604123	-1.369240	-0.054368	0.534670
Std. Dev.	0.787470	1.250881	0.771190	0.821698	1.032310
Skewness	0.924167	1.140665	0.327893	0.835081	1.064186
Kurtosis	4.054610	3.122581	9.473247	6.166207	3.531768
Jarque-Bera	13.77432	12.83126	146.4016	49.12153	18.84991
Probability	0.001021	0.001636	0.000000	0.000000	0.000081
Sum	58.75520	119.4563	117.3392	190.2798	211.2643
Sum Sq. Dev.	44.64790	90.75286	48.76821	61.44211	99.10674
Observations	73	59	83	92	94

Source: E-VIEW Version 9.0 Output, 2022.

Table 4.2.1 above shows the descriptive statistics for the CCC, ICP, APP and ARP, and ROACCC is measured as 360/ Account receivables + 360/ Inventories–360/Average Account Payable. From the descriptive statistics result above, CCC have a minimum value of0.6041, maximum value of 5.0683,

an average value of 2.0247and Std. Dev. value of 1.2509. Since the mean value is greater than the Std. Dev., it implies that (with the mean value of 2.0247) average numbers of days that take the firm to convert stock to cash is quicker.ICPis represented by inventory divided by cost of goods sold multiplied by 365 days. From the descriptive statistics result above, ICP have a minimum value of -1.3692, maximum value of 4.5189, an average value of 1.4137 and Std. Dev. value of 0.7712. It implies (with the mean value of 1.4137) that average numbers of days that take the firm to convert inventory to cash is quicker.APP is represented by account payable divided by cost of goods sold multiplied by 365 days. From the descriptive statistics result above, APP have a minimum value of -0.0544, maximum value of 5.1401, an average value of 2.0683 and Std. Dev. value of 0.8217. It implies (with the mean value of 2.0683) that average numbers of days that take the firm to convert payable to cash is faster or quicker. The ARP is measured by the Average accounts receivable divided by the net sales and then multiply the outcome by average number of days in a year which is usually taking as 365 days, the descriptive statistics analysis result for ARP has a minimum value of 0.5347, maximum value of 5.0683, a mean value of 2.2475 and a Std. Dev. of 1.0323. This implies that the (with the mean value of 2.2475) average numbers of days taken by the firm in the oil and gas industry collection of debts is longer than expected thereby affecting the debtor collection period.ROA measures the performance of firms‟ investment and shows the net income as a percentage of the firms‟ asset. From the descriptive statistics above, ROA has a minimum value of -1.0067, a maximum value of 3.1258, an average value of 0.8049 and Std. Dev. value of 0.7875. Since the mean value is greater than the Std. Dev. value, it implies that the ROA of the firms has increased tremendously for the duration of this study.

Correlation Matrix

Correlation matrix actually shows the relation between independent and dependent variables. This tells the degree of correlation between the independent and dependent variables, whether there is moderate or low degree of correlation.

Table 4.3.1: Correlation output of the Independent and Dependent Variables

	LOGROA	LOGCCC	LOGICP	LOGAPP	LOGARP
LOGROA	1.000000				
LOGCCC	0.347840	1.000000			
LOGICP	-0.224491	-0.495300	1.000000		
LOGAPP	-0.301627	-0.350180	0.679499	1.000000	
LOGARP	0.375538	0.865336	-0.427854	-0.093555	1.000000

Source: E-VIEW Version 9.0 Output, 2022.

The CCC is strongly positively correlated with firm's performance proxy by ROA with a coefficient of correlation of 0.3478. The correlation coefficient (r) of 0.3478,which indicate a strong positive correlation between CCC and firm performance proxy by ROA because the correlation coefficient (r) of 0.3478 is greater than 0.05. ICP has strong negative correlation on firm's performance proxy by ROA. With correlation coefficient (r) of -0.2245, which indicate a strong negative correlation between ICP and ROA because the correlation coefficient (r) of -0.2245 is greater than 0.05. This implies that an increase in the ICP would have influence on firm's performance.APP has strong negative correlation of firm's performance proxy by ROA. With correlation coefficient (r) of -0.3016, which indicate a strong negative correlation between APP and ROA because the correlation coefficient (r) of -0.3016 is greater than 0.05. This implies that an increase in the APP would have an adverse influence on firm's performance.ARP has strong positive correlation of firm's performance proxy by ROA. With correlation coefficient (r) of 0.3755, which indicate a strong positive correlation between ARP and ROA because the correlation coefficient (r) of 0.3755 is greater than the 0.05. This implies that an increase in the ARP would have influence the firm performance

Panel Unit Root TEST

This test is carried out to check if the data series are stationary or not. It is important to note that if a set of data is not stationary, then the result obtained would be absurd and hence, the result from such data would be unacceptable. The best way of checking the stationary of a set of panel data is to carry out a panel unit root test using the Levin, Lin & Chu Test, ImPesaran and Shin W-Test, Augmented Dicker-Fuller's Test and PP Fisher Test. The summarized result is presented in the Table 4.2a below;

Table 4.4.1: PanelUnit Root Test Result

Oil and Gas Firms					
Variables	**Method**	**Statistics**	**Probability**	**@Ist Diff.**	**Check for Stationary**
ROA	Levin, Lin & Chu Test	28.3831	0.0059	1(1)	Stationary
	ImPesaran and Shin W-Test	23.1509	0.0227	1(1)	Stationary
	Augmented Dicker-Fuller's Test	33.2127	0.0020	1(1)	Stationary
	PP Fisher Test	45.4631	0.0000	1(1)	Stationary
CCC	Levin, Lin & Chu Test	-2.61180	0.0045	1(1)	Stationary
	ImPesaran and Shin W-Test	10.6892	0.0255	1(1)	Stationary
	Augmented Dicker-Fuller's Test	6.16035	0.0460	1(1)	Stationary
	PP Fisher Test	21.2951	0.0000	1(1)	Stationary
ICP	Levin, Lin & Chu Test	-3.95315	0.0000	1(1)	Stationary
	ImPesaran and Shin W-Test	-2.44168	0.0073	1(1)	Stationary
	Augmented Dicker-Fuller's Test	36.2015	0.0027	1(1)	Stationary
	PP Fisher Test	68.6287	0.0000	1(1)	Stationary
APP	Levin, Lin & Chu Test	-3.00363	0.0013	1(1)	Stationary
	ImPesaran and Shin W-Test	-3.47386	0.0403	1(1)	Stationary
	Augmented Dicker-Fuller's Test	30.0667	0.0368	1(1)	Stationary
	PP Fisher Test	74.7728	0.0000	1(1)	Stationary
ARP	Levin, Lin & Chu Test	-3.57085	0.0002	1(1)	Stationary
	ImPesaran and Shin W-Test	-1.29814	0.0471	1(1)	Stationary
	Augmented Dicker-Fuller's Test	24.9722	0.0303	1(1)	Stationary
	PP Fisher Test	61.2803	0.0000	1(1)	Stationary

Source: E-Views 9.0 Output (2022).

Table 4.4.1 above reveals the summary of the panel unit root test carried out for the independent variables namely; CCC, ICP, APP and ARP and the ROA for the ten companies in the oil & gas sector listed in the Nigeria stock exchange. The null hypothesis states that the data is not stationary. if the Levin, Lin & Chu Test, ImPesaran and Shin W-Test, Augmented Dicker-Fuller's Test and PP Fisher Test, results show probability values that are lower than the critical value at any level of significance, in order to reject the null hypothesis. It was observed from Table 4.3 above, all probability values of Levin, Lin & Chu Test, ImPesaran and Shin W-Test, Augmented Dicker-Fuller's Test and PP Fisher Test for the variables of ten companies each in the oil & gas sector and consumer goods sector are less than (0.05)5% level of significance. Therefore, we hereby reject the null hypothesis which states that the data is not stationary and the data series are normally distributed and suitable multiple regression.

Pedroni Panel Cointegration Test Results

The first difference value of the each variable in the panel root test reveals that the variable were stationary leading to the rejection of null hypothesis at the 5% level of significance. Therefore, we gain ground to assert that the variables were I(1) order and thereby lending credence for the application of Pedroni panel cointegration test. This is presented below:

Table 4.5.1: Pedroni Panel Cointegration Test Results

Oil and Gas Firms					
Panel Statistics			**Group Statistics**		
Panel	Statistics	Probability	Group	Statistics	Probability
v-Statistic	-8.521555	0.0190	rho-Statistic	1.532176	0.9373
rho-Statistic	1.021671	0.8465	PP-Statistic	1.189027	0.0428
PP-Statistic	0.721871	0.0348	ADF-Statistic	1.463702	0.0284
ADF-Statistic	0.945743	0.0279			

Source: E-VIEW, 9.0 Outputs, 2022.

Pedroni panel cointegration test results for the panel and group Statistics with denotes statistical significance at the 5% (0.05), it could be seen from the Table 4.5.1 the coefficients of panel statistics for v, panel PP, panel ADF and group PP statistics and ADF were significant at 5% level of significant. As such the null hypothesis proposing no cointegration relation among the variables is rejected in all cases for panel v, panel PP, and group PP as well as panel and group ADF statistics were statistically significant. Therefore, the panel cointegration tests point to the existence of a long-run relationship among the variables under study. It also, help to in resolving the problem of unit root test since the ADF has a probability that is less than 0.05, this showed that the data are stationary and suited for multiple regression.

Table 4.6.1:Random Effect Regression and Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	24.89000	4	0.0219

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOGCCC	-0.588706	-0.530712	0.010465	0.5708
LOGICP	-0.484474	0.085029	0.111282	0.0878
LOGAPP	-0.905356	-0.768093	0.012044	0.2110
LOGARP	0.991179	1.092941	0.096514	0.7432

Cross-section random effects test equation:
Dependent Variable: LOGROA
Method: Panel Least Squares
Date: 02/17/23 Time: 11:39
Sample: 2011 2020
Periods included: 10
Cross-sections included: 9
Total panel (unbalanced) observations: 43

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.062629	1.451709	1.420828	0.1657
LOGCCC	-0.588706	0.323388	-1.820435	0.0787
LOGICP	-0.484474	0.495369	-0.978005	0.3359
LOGAPP	-0.905356	0.307596	-2.943325	0.0062
LOGARP	1.092941	0.420432	2.599567	0.0132

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.676115	Mean dependent var	0.902263
Adjusted R-squared	0.546562	S.D. dependent var	0.799685
S.E. of regression	0.538491	Akaike info criterion	1.844555
Sum squared resid	8.699162	Schwarz criterion	2.377011
Log likelihood	-26.65793	Hannan-Quinn criter.	2.040908
F-statistic	5.218801	Durbin-Watson stat	1.633111
Prob(F-statistic)	0.000116		

Source: E-VIEW Version 9.0 Output, 2022.

Panel data is used in this study to determine whether the data should be analyzed through random effect or fixed effect. For this purpose, I use the Hausman test criteria to check which model is more appropriate in this study.

H0: Random Effects model is consistent and efficient.

H1: Random Effects model is inconsistent.

According to the Hausman test random effect model is appropriate in this study.In testing the hypotheses of this study, the Random Effects OLS was chosen because of the Hausman Test result shows Chi-Square of 24.98000 which is greater than 10 and the p-value of value of 0.0219 which is far lesser than the accepted level of significance of 0.05, this implies that the Random Effects OLS result is best for the panel data of the ten (10) Oil and Gas companies selected for this study. More also, Table 4.4.1 above shows the level of significance for CCC, ICP, APP and ARP on ROA which served as the basis for testing the hypotheses.

Discussion of Findings

The findings of this study are hereby discussed and supported with relevant literatures thus;

The p-value of APP is 0.0065 which is less than the set value of 0.05 and the t-ratio value is -2.9433 which indicate the extent of significance to which APP is significance to ROA. The coefficient of APP is -0.9054 which implies that p-value of APP has a negative trend with ROA. One percent (1%) movement in p-value of APP would lead to 90.54% increases in ROA. APP has a significant influence on ROA of listed oil and gas firms in Nigeria. This finding is in line with Muhammad, Rubeena&Sumbal, (2019) and Salami, Suleiman, Karimu and Iyanda, (2019)but contrary to the findings of Akinleye and Adeboye, (2019).

The p-value of ARP is 0.00132 which is less than the significance value of 0.05, which indicates the extent of significance to which ARP affects ROA. The coefficient of ARP is 1.0929, which implies that ARP has a positive trend with return on asset. One percent (1%) increase in ARP would lead to 109.20% increase in ROA. ARP has a significant influence on ROA of listed oil and gas firms in

Nigeria. This finding is in line with the findings of Salami, Suleiman, Karimu and Iyanda, (2019) but contrary to the findings of Akinleye and Adeboye, (2019).

The p-value of CCC is 0.0787 which is more than the set value of 0.05 and the t-ratio value is -1.8204 which indicates the extent of significance to which CCC affects return on asset. The coefficient of CCC is -0.5887 which implies that CCC has a negative insignificant effect with ROA. One percent (1%) movement in CCC would lead to 58.87% decreases in return on asset. CCC has no significant influence on ROA of listed oil and gas firms in Nigeria. This finding is in line Jatin (2020) but contrary to the findings of Okoye, Erin, Modebe and Achugamonu, (2020).

The p-value of ICP is 0.3359 which is more than the set value of 0.05 and the t-ratio value is -0.9780 which indicate that the extent of significance between ICP and ROA. The coefficient of ICP is -0.4845 which implies that ICP has a negative trend with ROA. One percent (1%) movement in ICP would lead to 48.45% decrease inROA. ICP has no significant influence on ROA of listed oil and gas firms in Nigeria. This finding is in line with the findings of Muhammad, Rubeena and Sumbal, (2019) but contrary to the findings of Okoye, Erin, Modebe and Achugamonu, (2020).

Conclusion and Recommendations

The study examined the effect of WCM on firm performance in listed oil and gas firm in Nigeria, for the period of 2011-2020 (10years). The study adopted judgemental sampling techniques.Descriptive statistics and correlation was employed and the multiple regression analysis of the (E-VIEW 9.0) at 0.05 level of significant (95% confidential interval) was used as a basis of testing the hypotheses. The findings revealed that APP and ARP have significant effect on ROA while CCC and ICP do not have significant effect on ROA. The study concluded that WCM has a significant effect on firm's performance in the Nigeria oil and gas industry.The study therefore, recommends that;

i). Since APP has significant relationship with ROA of listed oil and gas firms in Nigeria, this study thereby recommend that the managers should re-negotiate with their regular and important suppliers for further increase in the number of days of accounts payable that are due for payments.

ii). Since ARP has a significant relationship with ROA of listed oil and gas firms in Nigeria, this study thereby recommends that the average numbers of days given to debtors of the firms should be maintained or possibly reduced in order to boost their performance and also enhance their profitability.

iii). CCC has an insignificant relationship with ROA of listed oil and gas firms in Nigeria, the study recommends that the average number of days that is used by the firms to convert its inventories to cash should be reduced because major source of working capital financing for firms should be repositioned in order to reduce the cash conversion cycle from its present insignificant status to a significant one.

iv). ICP has an insignificant relationship with ROA of listed oil and gas firms in Nigeria, we recommend that specialized persons in the fields of finance/accounting should be hired by the firms for expert advice, because this will go a long way in boosting their profitability level.

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