

Liquidity Management and Profitability of Listed Food and Beverages Companies in Nigeria

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Abstracts: *This study examines the relationship between liquidity management and profitability of listed food and beverages companies in Nigeria over a 10-year period from 2004 to 2013. Out of the 21 listed food and beverages companies in Nigeria, a sample size of 10 firms was drawn. The study adopted an ex-post facto research design. Panel data was obtained from the annual reports and accounts of the sampled firms and was analysed using descriptive statistics and generalized least squares multiple regression techniques. The study found that: cash conversion cycle has an insignificant negative impact on Return on Equity and Earnings per Share respectively. The study concludes that management of listed food and beverages companies in Nigeria can maximize the return to shareholders by shortening the cash conversion cycle of the companies to a justifiable minimum. In view of the findings and conclusion drawn, the study recommends among others, that management of listed food and beverages companies in Nigeria should maximize the use of trade credit and ensure effective and efficient management of cash flows, which result to shorter cash conversion cycles and improve profitability.*

Key Words: *Cash Conversion Cycle, Liquidity, Management, Profitability.*

I. Introduction

Liquidity management is the management of a firm's investment in current assets, current liabilities, short-term borrowings and management of surplus or deficit cash for short term periods, which affect the firm's profitability [1]. Liquidity is one of the goals of working capital management hence its management revolves around the management of the components of working capital. These include inventories, receivables, cash and short-term securities and current liabilities. Thus, liquidity management has to do with the timely conversion of inventories and accounts receivable into cash; timely payment of accounts payables; and the investment of excesses into short term marketable securities.

Investment of excess cash, minimization of inventories, speedy collection of receivables, and elimination of unnecessary and costly short-term financing all contribute to profit maximization. Firms, in managing working capital, seek to avoid illiquidity and excess liquidity. Illiquidity is highly risky. It creates a bad credit image, loss of creditors' confidence, high-cost emergency borrowing, or even closure of the firm. On the other hand, high level of working capital will require high cost of holding current assets, which affect profitability negatively [2].

Corporate profitability is the ability of management of a firm to use resources/assets efficiently in the primary mode of business to generate returns/revenue [3]. Profitability and management efficiency are positively associated such that poor current profitability may threaten current management efficiency and vice versa. Profitability is related to the goal of shareholders' wealth maximization, and investment in current assets is made only if an acceptable return is obtained [4].

Statement Of The Problem

The concepts of liquidity management and corporate profitability are very important in the development, survival, sustainability, growth and performance of a firm. Yet, profitability does not translate to liquidity in all cases; a firm may be profitable without necessarily being liquid and vice versa, due to the realization and accrual concepts of financial reporting [5]. Effective management of liquid assets entails curtailing the length of time such assets are converted into cash to ensure timely off-setting of short term obligations as they fall due. Thus, shortening the cash conversion cycle releases liquidity and impacts directly on the profitability of a firm [6]. The Food and Beverages industry in Nigeria is not an exception to this fact. Food and beverages companies in Nigeria involve in the processing of raw food materials, packaging, and distribution. These food materials include fresh prepared food as well as packaged food, alcoholic and non-alcoholic beverages, and products meant for human consumption. As manufacturing outfits, these companies require investment in inventories, which is financed either through cash or trade credit (amounting to accounts payable); utilize the trade credit as a marketing tool to maintain or expand sales; need cash to finance day-to-day operations and any excesses therefrom are invested in marketable securities; and desire to be profitable.

However, the appropriate time frame within which liquid assets would be converted into cash to positively impact profitability remains a bone of contention to every individual firm. This is dependent on the nature and size of business, manufacturing cycle, business fluctuations, production policy, credit policy, and growth and expansion activities of the firms, which changes over time. In addition, different studies attempt to determine the impact liquidity management exerts on profitability of firms across the globe. [7] found an insignificant negative relationship while [5] reported a significant negative relationship between the cash conversion cycle (CCC) and profitability of manufacturing companies in Nigeria; [8] saw an insignificant negative relationship between CCC and profitability of Polish Information Technology firms; [9] found an insignificant negative relationship between CCC and profitability of the manufacturing sector in Pakistan; on the contrary, [10] reported an insignificant positive relationship between CCC and profitability of non-financial firms in India; and so on. The variation in impact could be as a result of individual firm or industry effects, which is an indication that choosing a particular industry and adopting a more robust tool of analysis would yield a better result.

Objectives Of The Study

Therefore, this paper assesses the impact of liquidity management on corporate profitability of listed food and beverages companies in Nigeria to ascertain the extent of the influence liquidity management, measured in terms of cash conversion cycle (CCC), exerts on their profitability. Specific objectives include examining: (i) the impact of CCC on the return on equity (ROE) of listed food and beverages companies in Nigeria; and (ii) the impact of CCC on the earnings per share (EPS) of listed food and beverages companies in Nigeria.

Hypotheses Of The Study

Sequel to the research objectives stated, this paper seeks to test the null hypotheses that:

- i. Liquidity management has no impact on ROE of listed food and beverages companies in Nigeria; and
- ii. Liquidity management has no impact on EPS of listed food and beverages companies in Nigeria.

Theoretical Framework and Literature Review

Theoretical Framework

Previous studies have upheld two theories that explain liquidity management to include: the cash conversion cycle (CCC) theory and the operating cycle theory. The CCC was introduced by Verlyn Richards and Eugene Laughlin in 1980. The CCC theory integrates both current assets and current liabilities, resulting to the net working capital. [11] devised this method of working capital as part of a broader framework of analysis known as the working capital cycle. It claims that the method is superior to other forms of liquidity analysis that rely on ratio analysis or a decomposition of working capital. The CCC is calculated by subtracting the payables deferral period from the sum of the inventory conversion period and the receivables conversion period [12]. Since each of these three components is denominated by some number of days, the CCC is also expressed in number of days. It has been interpreted as a time interval between the cash outlays that arise during the production of output and the cash inflows that result from the sale of the output and the collection of the accounts receivable. However, the current ratio and its variations are most commonly used to assess a company's liquidity, but these measures do not incorporate the element of time. Adding the cash conversion cycle (CCC) to those traditional measures leads to a more thorough analysis of a company's liquidity position [13].

The operating cycle theory is synonymous to the CCC theory. However, the position of operating cycle theory places limited emphasis on current liabilities. Hence, it weakens the position that payables are a source of financing the activities of the firm [12]; [14]. This is a proof of inadequacy of the operating cycle theory. Thus, incorporating current liabilities gives a net working capital, which enhances liquidity analysis and understanding. It is on this basis that this paper adopts the CCC theory of liquidity management.

Concept Of Liquidity Management

Liquidity Management has been an area of concern to the management of firms because of the uncertain nature of the future. It is receiving serious attention all over the world especially with the current state of the world's economy. Moreover, the concern of business owners and managers all over the world is to devise a strategy of managing their day to day operations in order to meet their obligations as they fall due and increase profitability and shareholders' wealth. It involves planning and controlling current assets and current liabilities in such a way that: (i) the risk of not meeting short-term obligations, that fall due, is eliminated; and (ii) too much investment in current assets is avoided [15]. The concept of liquidity management is considered from the perspective of working capital management as most of the proxies used for measuring corporate liquidity are a function of the components of working capital. [1] identified two concepts of working capital to include: (i) gross working capital; and (ii) net working capital, which are both significant to management. The gross

working capital is a firm's investment in current assets and how it is financed. On the other hand, the net working capital indicates the liquidity position of the firm and suggests the extent to which the working capital needs may be financed by permanent sources of funds. The net working capital is current assets less current liabilities. It could be positive or negative, depending on the size of current assets and current liabilities [16]; [1]. Thus, investment in current assets should just be enough to meet current obligations as excess or inadequate current assets poses a risk to the firm.

Working capital has been taken as an important tool to analyse the sustainability and liquidity position of a firm that may help to obtain maximum returns at minimum cost. According to [17], the goals of working capital include: profit maximization; risk minimization; and liquidity maintenance. The appropriate level of working capital investment is achieved through the trade-off between expected return and the risk that the firm may be unable to settle its maturing financial obligations. The investment of excess cash; minimization of inventories; speedy collection of receivables; and elimination of unnecessary and costly short-term financing all contribute to profit maximization [18]. Managing working capital has to do with avoidance of illiquidity (which is highly risky and creates a bad credit image, loss of creditors' confidence, high-cost emergency borrowing, unnecessary legal battles or even closure of the firm) and excess liquidity (which requires high carrying cost that affect profitability negatively). This indicates that working capital should neither be too high nor too low. A well monitored minimum level of working capital at a calculated risk is always good for a better profitability [17].

Liquidity management is the routine process of managing a firm's investment in current assets, current liabilities, short-term borrowings and short-term investment of surplus cash, which affect the profitability of the firm [1]. Current assets are constituted by the money and other assets that are readily convertible into cash. Cash itself is, by definition, the most liquid form of assets; other assets having varying degree of liquidity depending on the ease with which they can be converted into cash. The current liabilities include all types of liabilities which will mature for payment within a period of one year such as bank overdraft, trade creditors, bills payable, outstanding expenses, etc. [19]. In the process of running the business, an asset-liability mismatch may occur which may increase a firm's profitability in the short run but at a risk of its insolvency [20]. On the other hand, too much focus on liquidity will be at the expense of profitability [21]; [7]. Thus, liquidity management is seen to revolve around the management of current assets and it is measured using ratios such as ICP, Inventory Turnover (IT), ARCP, Accounts Receivables Turnover (ART), APPP, Accounts Payable Turnover (APT), and the CCC. Invariably, what determines the working capital of a firm is also the determinant of the firm's liquidity needs [15]. However, liquidity in excess of what is adequately required by the firm to finance its operations may be counter-productive. Hence, the rates at which current assets are turned over in relation to total sales of a given time period is of critical importance to the total funds employed in those assets[5].

Liquidity management is concerned with the different processes and procedures of planning, handling or monitoring a firm's investment in current assets. [22] defined the different components of liquidity management to include: inventory, receivables, cash, payables, liquid funds, currency management and risks, and short term financing. The goal of current assets management policy is to maximize the value of the firm. As a result, firms follow a simple process of deciding on the policy and adopting incremental analysis to estimate the operating profit; level of investment; the rate of return on investment; and comparing the rate of return on investment with the cost of funds used in financing the investment. Thus, a change in policy is desirable if the incremental rate of return (IRR) exceeds the required rate of return (RRR) and the value of a firm is maximized at a point where the IRR equals the incremental/marginal cost of funds used to finance investment in the current asset [1].

Effective management of a firm's liquidity can result in better profit margins and higher turnover ratios, which in turn can lead to higher profitability. It is largely concerned with how cash is converted within a firm, in other words it involves the short-run inflow and outflow of cash. A shorter CCC is better for a firm and the way of achieving this is by looking at all the components and understanding the relationship between them. Improvements can be made by speeding up the collection process and delaying the payment process [2]. The CCC is one measure that firms use in examining their cash cycle. Basically the CCC will tell how long it takes for the company to transform goods or services into cash in the firm's account and hence the shorter the CCC ratio, the better for the firm. On the other hand, the longer the CCC becomes, the less liquid is the firm [23];[24]; [25]; [26].

Concept Of Profitability

Corporate profitability is a measure of the amount by which a company's revenues exceeds its relevant expenses. It is an evaluation of management's ability to create earnings from revenue-generating bases within an organization[3]; [4]. Thus, Management is interested in measuring the operating performance in terms of profitability. Hence, a low profit margin would suggest ineffective management and investors would be hesitant to invest in the firm [3]. Profitability is the ability to make returns from all the business activities of an organization, company, firm, or an enterprise and the concern of every firm lies with its profitability. Profitability shows how efficiently the management can make profit by using all the resources available in the

market [27]. Profitability is also considered as the rate of return on investment and a widely used financial measure of performance. Hence, if there will be an unjustifiable over investment in current assets then this would negatively affect the rate of return on investment [28]. The primary goal of managing working capital is to control current financial resources of a firm in such a way that a balance is reached between profitability of the firm and risk associated with that profitability [29]. The greater the risk associated with a business the more profitable it is adjudged and vice-versa. Profitability is determined by the capital structure, size, growth, market discipline, risk and reputation of a firm [30].

Corporate profitability is measured using ratio analysis. Profitability in relation to sales includes ratios such as gross profit margin (GPM), net profit margin (NPM), operating expense ratio (OER), and so on. However, profitability in relation to investment, which to a greater extent justifies the efficiency and performance of a firm, includes ratios such as return on investment (ROI), return on equity (ROE), earnings per share (EPS), dividend per share (DPS), dividend pay-out ratio (DPR), dividend yield (DY) and earnings yield (EY), price-earnings ratio (P/E), market value to book value ratio (MV/BV), and Tobin's Q (T-Q) [4]; [1]; [27].

Profitability and management efficiency are usually taken to be positively associated such that poor current profitability may threaten current management efficiency and poor management efficiency may threaten profitability [31]. It is related to the goal of shareholders' wealth maximization, and investment in current assets is made only if an acceptable return is obtained [32]; [4]. Therefore, the management of investment in current assets is an aspect of corporate finance and it has the capacity of influencing how profitable a firm is.

Review Of Empirical Studies

Several empirical studies were conducted by different researchers, both local and international, in attempts to unveil the relationship between liquidity management and profitability of firms. Some of these studies focussed on working capital management as it relates to liquidity and firm's profitability, in examining the effect of a firm's management of liquidity on its profitability. These studies are reviewed as follows:

[7] investigated the relationship between liquidity management and profitability, for a 5-year period from 2006 to 2010, on a sample of 30 manufacturing companies listed on the Nigerian Stock Exchange. The study adopted a quantitative method and both descriptive statistics and OLS multiple regression analysis were applied for data analysis. The results reveal that CCC has an insignificant negative impact on ROCE of manufacturing companies in Nigeria during the study period. The association in all the cases was however statistically insignificant, indicating low degree of influence of liquidity on the profitability of the companies.

In Pakistan, [9] conducted an empirical study of the relationship between CCC and profitability for a 5-year period from 2006 to 2010. The study obtained data from a sample of 32 companies was randomly selected from three manufacturing sectors and correlation and OLS regression analysis were used to examine the relationship of CCC with financial performance. It was found that CCC has an insignificant negative relationship with ROA and Earnings before Interest and Taxes (EBIT) of the sampled firms. This implies that a shorter CCC will result to an increase in ROA thus, firms need to shorten their CCC in order maximize profitability. The finding is consistent with the work of [7], who also found an insignificant negative relationship between CCC and ROA; it disagrees with the finding of [5], which also found a negative relationship between CCC and ROA but was significant. This reason could be that while [9]. studied manufacturing firms in Pakistan, [5] studied manufacturing firms in Nigeria.

[5] studied the relationship between liquidity management and corporate profitability using data from selected manufacturing companies quoted on the floor of the Nigerian Stock Exchange. The study covered a 5-year period from 2005 to 2009. It adopted descriptive statistics and correlation technique to determine relationship among variables and findings revealed that liquidity management measured in terms of the companies' credit policies, cash flow management (CFM), and CCC has a significant negative impact on ROI and ROA. The study concluded that managers can increase profitability by putting in place good credit policy, shorter CCC and an effective CFM procedure. This implies that as CCC is shortened, ROI and ROA will improve significantly.

[33] examined the impact of WCM on firms' performance and market value of the firms in Nigeria. The study sampled 54 non-financial firms quoted on the floor of the Nigerian Stock Exchange (NSE) and collected data from their annual reports for a 15-year period from 1995 to 2009. Correlation and OLS multiple regression technique were used to analyse the data. The results show that there is a significant negative relationship between CCC and market valuation and firms' performance. In addition, the results show that debt ratio is positively related to market valuation and negatively related to firms' performance, confirming that there is a significant relationship between market valuation, profitability and working capital components. The study concluded that reduction in the length of CCC will lead to realization of profit maximization objective and consequently, the firms' market value.

[10] studied the effect of working capital management (WCM) on profitability of Indian firms. They use a sample of 263 non-financial firms listed on the Bombay Stock Exchange (BSE) from 2002 to 2008. They analysed the data by using OLS multiple regression. What they found, is in contradiction with all the above

mentioned studies. The study found a positive relation between WCM and firm profitability, although the CCC and ROA relationship is not statistically significant. They found that account receivables are also positively related with ROA and that account payables are negatively related to ROA. The study argued that this is because India is an emerging market. Firms are seen more profitable if they give their clients more trade credit, therefore they have more clients, who means more sales, which in turn leads to more profitability. This outcome contradicts that of [7], who found an insignificant but negative relationship between CCC and ROCE. The reason could be that [7]. studied manufacturing companies in Nigeria rather than non-financial firms in India. In addition, the scope of the study by [10] is 7 years from 2002 to 2008 while that of [7] is 5 years from 2006 to 2010. This means that when Indian firms increase their CCC, profitability will be higher.

[30] examined the relationship between WCM practices and profitability of non-financial firms as applicable to financial firms like banks in Ghana. The random effect panel data of 28 Ghanaian banks over a 10-year period from 1999 to 2008 were collected and analysed using descriptive statistic, correlation analysis and variance inflationary factor (VIF). The VIF was used to test the presence of multicollinearity among the variables. The results showed that cash operating cycle (COC) has a significant positive relationship with banks' profitability, just like ARCP, while APPP exhibits a significant negative relationship with profitability. In addition, credit risk, exchange risk, capital structure and size significantly increase banks' profitability. They recommended that banks should match their assets against liabilities appropriately by finding the optimal combination of current assets and current liabilities that would enable them to stay profitable.

However, in Europe [34] examined the impact of WCM on the profitability of companies, using the CCC as a comprehensive measure of WCM and Gross operating profit (GOP) as the measure of profitability. The study was based on a sample of 2,974 non-financial companies listed on 11 European Stock Exchanges for a 12-year period from 1998 to 2009. Generalized least squares (GLS) and OLS regression models were used for the study. It was found that ARCP, ICP, APPP, CCC, and Profitability has a significant negative relationship, hence companies can improve their profitability by reducing the time span during which working capital is tied up within the company. Similarly, [35] investigated the relation between profitability and CCC of public listed firms on the floor of Vietnam Stock Exchange for a 3-year period from 2006-2008. The study found a significant negative relationship between CCC and GOP. it has a significant weakness due to the shortness of the study period.

The review of empirical studies has shown a significant weakness of some of the studies due to shortness in the period of study, especially the work of [35]. Similarly, the technique for data analysis adopted in each study, except in [34], is limited to descriptive statistics, correlation and OLS regression techniques. [34] combined both the OLS and GLS multiple regression technique however, the study does not address the specific objectives of the current study since it does not examine the impact of liquidity management on ROE and EPS of listed food and beverages companies in Nigeria. Therefore, this current study adopts the GLS regression technique and utilizes ROE and EPS as measures of profitability and the CCC as a proxy for liquidity management to examine the impact of liquidity management on the profitability of listed food and beverages companies in Nigeria.

II. Methodology

The ex-post factor research design is adopted for the study. The population of the study comprised of all the 21 food and beverages companies quoted on the floor of the Nigerian Stock Exchange as at 31st December, 2013. The year of listing; technical suspension due to one reason or the other; and Non-existence of trend records were used as filters on the population, resulting in a sample size of 10 listed Food and Beverages Companies in Nigeria, as contained in table 3.1.

Table 3.1: Sample Size

S/N	COMPANY	YEAR OF LISTING
1	7-Up Bottling Company Plc.	1986
2	Cadbury Nigeria Plc.	1976
3	Flour Mills of Nigeria Plc.	1979
4	Guinness Nigeria Plc.	1965
5	National Salt Company of Nigeria Plc.	1992
6	Nestle Nigeria Plc.	1979
7	Nigerian Breweries Plc.	1973
8	Northern Nigeria Flour Mills Plc.	1978
9	Union Dicon Salt Plc.	1993
10	UTC Nigeria Plc.	1972

Source: Nigerian Stock Exchange 2012/2013 Facts Book

Source Of Data And Variable Measurement For The Study

The source of data for this paper is the annual reports and accounts of the sampled listed food and beverages companies in Nigeria. The dependent variable (profitability) is measured in terms of ROE and EPS, while the independent variable (liquidity management) is proxied by CCC. The size (SIZE) and leverage (LEV) of the sampled firms are introduced as control variables to take care of individual firm effects. The definition and measure of each variable is contained in table 3.2.

Table 3.2: Variables Definition and Measurement

VARIABLE	DESCRIPTION	MEASUREMENT
DEPENDENT:		
Return on Equity (ROE)	ROE measures a firm's return on its shareholders' fund, i.e. ordinary share capital plus reserves (Arnold, 2008).	Profit After Tax (PAT) / Equity capital
Earnings per Share (EPS)	EPS is the ratio of Profit after Tax (PAT) to Number of outstanding ordinary shares. It measures the return per unit of shareholding (Pandey, 2010).	PAT / No. of Ordinary Shares
INDEPENDENT:		
Cash Conversion Cycle (CCC)	The CCC measures the time frame it takes a firm to convert current assets into cash (Pandey, 2010; Arnold, 2008).	Inventory Conversion Period (ICP) + Accounts Receivable Collection Period (ARCP) - Accounts Payable Payment Period (APPP).
CONTROL:		
Size (SIZE)	The SIZE of a firm is measured in terms of its total assets (Vural, Sokmen & Cetenak, 2012).	Natural Log. of Total Assets (TA).
Leverage (LEV)	This is the ratio of a firm's total debts (TD) to its total assets (Pandey, 2010; Arnold, 2008).	TD / TA.

Model Specification

This paper utilizes correlation and multiple regression techniques to estimate the impact of liquidity management on the corporate profitability of listed food and beverages companies in Nigeria. The model is estimated using Generalized Least Squares (GLS). The panel data models are thus:

$$Y_{it} = \alpha + \beta_0 X_{it} + \epsilon_{it} \tag{1}$$

- where: Y_{it} = Dependent variable of firm i for time period t ;
 f = f (ROE, EPS).
 α = Constant/Intercept.
 β_0 = Coefficient of Independent/Explanatory variables.
 X_{it} = Explanatory variables of firm i for time period t ;
 f = f (CCC, SIZE, LEV).
 ϵ_{it} = Error term of firm i for time period t .

Substituting equation (1), the following working models were developed:

$$ROE_{it} = \alpha + \beta_1 CCC_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \epsilon_{it} \tag{2}$$

$$EPS_{it} = \alpha + \beta_1 CCC_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \epsilon_{it} \tag{3}$$

Thus, in order to obtain the greatest and more reliable results, tests for multi-co-linearity, heteroscedasticity and data normality were conducted. In addition, the a priori expectation of this paper is stated as: $\beta_1 < 0$; $\beta_2 > 0$; and $\beta_3 < 0$.

III. Results And Discussion

This section presents the results and discussion of correlation and regression analysis. It presents the result of diagnostic tests for the study.

Correlation Coefficients

The correlation matrix is contained in table 4.1.

Table 4.1: Correlation Matrix

	ROE	EPS	CCC	SIZE	LEV
ROE	1.0000				
EPS	0.0574	1.0000			
CCC	-0.3829	0.1844	1.0000		
SIZE	-0.1008	0.5100	0.5673	1.0000	
LEV	-0.0574	-0.1664	-0.5568	-0.5417	1.0000
	0.5704	0.0979	0.0000	0.0000	

Source: STATA Output

Table 4.1 shows that:there is a significant negative relationship between CCC and ROE, with a correlation coefficient of -0.3829 at a P-value of 0.0001. This shows that a unit increase in CCC decreases ROE by 0.3829CCC; CCC and EPS have an insignificant positive relationship at a correlation coefficient of 0.1844 and P-value of 0.0663. This indicates that if CCC increases by one unit, EPS will insignificantly increase by 0.1844CCC; there is an insignificant negative relationship between SIZE and ROE at -0.1008 correlation coefficient and P-value of 0.3183 thus, a unit increase in SIZE means ROE will insignificantly decrease by 0.1008SIZE. SIZE also correlates with EPS at the coefficient of 0.5100 and CCC at the coefficient of 0.5673. The P-value in both cases is 0.0000, meaning that SIZE has a significant direct variation with EPS and CCC at 0.5100SIZE and 0.5673SIZE respectively. Table 4.1 also shows that: there is an insignificant negative correlation between LEV and ROE at the coefficient of -0.0574 (P-value = 0.5704) and between LEV and EPS at the coefficient of -0.1664 (P-value = 0.0979); LEV significantly correlates with CCC at -0.5568 (P-value = 0.0000) and SIZE at -0.5417 (P-value = 0.0000). This implies that a unit increase in LEV will insignificantly decrease ROE and EPS by 0.0574LEV and 0.1664LEV respectively, while an increase in LEV by one unit will significantly decrease CCC and SIZE by 0.5568LEV and 0.5147LEV respectively.

Diagnostic Tests

Test For Data Normality

Thus, having established the correlation among variables, it was pertinent to conduct diagnostic tests on the data for the study. Hence, the result of the Shapiro-wilk test for data normality is shown in table 4.2.

Table 4.2: Result of Shapiro-wilk Data Normality Test

Variable	W	V	Z	P-Value	Obs.
ROE	0.27988	59.456	9.063	0.00000	100
EPS	0.7675	19.196	6.555	0.00000	100
CCC	0.49487	41.706	8.276	0.00000	100
SIZE	0.91312	7.173	4.371	0.00001	100
LEV	0.31606	56.469	8.948	0.00000	100

Source: STATA Output

The Shapiro-wilk test for normal data tests the null hypothesis that the data is not normally distributed at a 0.05 level of significance. Table 4.2 shows the P-values of 0.00000, 0.00000, 0.00000, 0.00001 and 0.00000 for ROE, EPS, CCC, SIZE and LEV respectively. As a result, the study accepts the null hypothesis that the data values were abnormally distributed.

Test for Multi-co-linearity

In addition to the data normality test, the study conducted tests to check for multi-co-linearity among the independent variables. The result of the Variance Inflation Factor test is contained in tables 4.3.

Table 4.3: Result of Variance Inflation Factor (VIF) for Multi-co-linearity

Variable	VIF	1 / VIF
CCC	1.69	0.590086
SIZE	1.65	0.604268
LEV	1.63	0.614721
Mean VIF	1.66	

Source: STATA Output

Table 4.3 shows that the VIF of 1.69, 1.65 and 1.63 for CCC, SIZE and LEV respectively. The mean VIF is 1.66. Consequently, the VIF are less than 5 and tolerance levels (1 / VIF) are greater than 0.10 in all the cases, implying that there is absence of perfect multi-co-linearity among independent variables of the study. This means that the models for this study are fit.

Test For Heteroscedasticity

The result of heteroscedasticity is presented on Table 4.4. The Table also contains Hausman fixed – random specification test as well as the Breusch and Pagan lagrangian multiplier test for random effects.

Table 4.4: Result of Hetttest, Hausman Specification and Random Effect Test

Test	ROE		EPS	
	Statistic	P-Value	Statistic	P-Value
Hetttest: Chi2	1230.16	0.0000	30.57	0.0000
Hausman: Chi2	1.80	0.6150	0.07	0.9956
Random Effect: Chi2	0.00	1.0000	243.61	0.0000

Source: STATA Output

Table 4.4 shows a hetttest Chi² of 1230.16 at a 0.0000 significance level for fitted values of ROE. Therefore, the study rejects the null hypothesis, which states that there is absence of heteroscedasticity, and concludes that there is presence of heteroscedasticity for fitted values of ROE. To this effect, the residuals of the fixed and random effects GLS regression for fitted values of ROE were used to conduct the Hausman fixed random specification test. The result of the specification test shows a Chi² of 1.80 at aninsignificance level of 0.6150, meaning that the robust fixed-effect GLS regression is not suitable for fitted values of ROE. Consequently, the Breusch and Pagan lagrangian multiplier test for random effects was conducted, resulting to a Chi²of 0.00 at aninsignificance level of 1.000. This implies that the OLS regression best suits fitted values of ROE.

For fitted values of EPS, Table 4.4 shows a hetttest Chi² of 30.57 at a significance level of 0.0000. Thus, the study rejects the null hypothesis and concludes that there is presence of heteroscedasticity among fitted values of EPS. As a consequence, the Hausman fixed random specification test was conducted, the result of which shows a Chi2 of 0.07, which is insignificant at the p-value of 0.9956. This implies that the random effect GLS regression is more suitable for fitted values of EPS. Therefore, the Breusch and Pagan lagrangian multiplier test for random effects shows a Chi2 of 243.61 at the significance level of 0.0000. This indicates that the robust random effect GLS regression is more appropriate for fitted values of EPS.

Result Of Robust OLS And Robust Random Effect GLS Regression

Thus, the model summary of robust OLS regression for fitted values of ROE and robust random effect GLS regression for fitted values of EPS is presented on Table 4.5, which is used to test the hypotheses formulated for the study.

Table 4.5: Regression Result

Variable	ROE			EPS		
	Coeff.	t	P-Value	Coeff.	z	P-Value
CONST.	0.0758151	0.07	0.942	-24.68591	-1.8	0.071
CCC	-0.0038164	-1.04	0.301	-0.0036238	-1.83	0.067
SIZE	0.0851795	0.67	0.502	3.95124	1.91	0.056
LEV	-0.2298373	-1.04	0.303	0.1081797	2.36	0.018
R Square: Within				0.2708		
R Square: Between				0.285		
R Square: Overall				0.281		
F-Value	0.71		0.5467			
Wald Chi2				44.8		0.0000

Source: STATA Output

Table 4.5 reports that the coefficient of the constant (CONST), for fitted values of ROE, is 0.0758151, which defines the value of ROE given a unit rise or fall in any of CCC, SIZE and LEV, while all others are held constant. CCC of the sampled firms during the study period has an insignificant negative relationship with ROE at the coefficient of -0.0038164 and t-value of -1.04 (P-value = 0.301). This indicates that a unit rise in CCC will insignificantly reduce ROE by 0.0038164CCC. This finding is consistent with the finding of [9]who also

found an insignificant negative relationship between CCC and ROA and [5] who also found a significant negative relationship between CCC and ROI and ROA respectively. This finding is in line with the a priori expectation of the study that $\beta_1 < 0$, which implies that a shorter CCC will improve profitability; SIZE of the sampled firms during the study period has an insignificant positive impact on ROE at the coefficient of 0.0851795 and t-value of 0.67 (P-value = 0.502). This implies that every unit increase in SIZE insignificantly increases ROE by 0.0851795SIZE. This finding agrees with the a priori expectation of the study that $\beta_2 > 0$, meaning that as size of the sampled firms grows bigger, there is tendency for improved profitability; and LEV also has an insignificant negative relationship with ROE in the period at the coefficient of -0.2298373 and t-value of -1.04 (P-value = 0.303). This shows that a unit increase in LEV insignificantly reduces ROE by 0.2298373LEV. This finding also agrees with the a priori expectation of the study that $\beta_3 < 0$. This means that the more the sampled firms finance their short-term obligations with debt financing, the less profit is maximized.

The coefficient of the CONST for fitted values of EPS, as presented in table 4.5, is -24.68591. It determines the value of EPS given a unit increase or decrease in any of the fitted values of EPS, while all others are rendered zero. From the Table, it is revealed that CCC of the sampled firms during the study period has an insignificant negative relationship with EPS at the coefficient of -0.0036238 and z-value of -1.83 (P-value = 0.067). This means that increasing CCC by one unit insignificantly decreases EPS by 0.0036238CCC. This finding is consistent with the a priori expectation of the study that $\beta_1 > 0$. This indicates that CCC and EPS have an inverse relationship; However, SIZE of the sampled firms during the period has an insignificant positive impact on EPS. This is evidenced by the coefficient of 3.95124, z-value of 1.91 and P-value of 0.056. By implication, this means that every unit increase in SIZE insignificantly increases EPS by 3.95124SIZE. This is in agreement with the a priori expectation of the study that $\beta_2 > 0$, which implies that SIZE and EPS of the sampled firms have a direct variation; The LEV of the sampled firms during the period has a significant positive relationship with EPS. This is at a coefficient of 0.1081797 and z-value of 2.36 (P-value = 0.018). This result indicates that a unit increase in LEV will significantly increase EPS by 0.1081797LEV. This finding is inconsistent with the a priori expectation of the study that $\beta_3 < 0$. This means that the more the sampled firms finance their short-term obligations with debt financing, the more profit is maximized. However, this applies only when the borrowed fund is obtained from sources with lower costs and/or claims of creditors.

Test Of Hypotheses

Hypothesis I

Hypothesis one states that: Liquidity management has no impact on ROE of listed food and beverages companies in Nigeria. In Table 4.5, the result of the robust OLS regression for fitted values of ROE shows an overall insignificant negative relationship between liquidity management and ROE at an F-value of 0.71 and insignificance level of 0.5467. The F-value from the tables has shown a value of 2.17741. Since F (calculated) is less than F (tabulated), the study rejects the null hypothesis and concludes that liquidity management has an insignificant negative impact on ROE of listed food and beverages companies in Nigeria.

Hypothesis II

Hypothesis two states that: Liquidity management has no impact on EPS of listed food and beverages companies in Nigeria. The result of the robust random effect regression for fitted values of EPS, as presented on Table 4.5, reports an R^2 overall of 0.2810 and a Wald χ^2 of 44.8 at a significance level of 0.0000. This implies an overall significant negative relationship between liquidity management and EPS. The fact that the result shows a positive and significant Wald χ^2 of 44.8, the study rejects the null hypothesis and concludes that liquidity management has a significant negative impact on EPS of listed food and beverages companies in Nigeria.

IV. Conclusion And Recommendations

The fact that CCC of listed food and beverages companies in Nigeria has an insignificant negative relationship with ROE as a measure financial performance and a significant negative relationship with financial performance proxied by EPS; it is a sign of longer CCC. Thus, shortening the CCC of the companies to a justifiable minimum by management can maximize the return to shareholders. In view of the findings and conclusion drawn, the study recommends that management of listed food and beverages companies in Nigeria should shorten the length of time it takes to convert inventories and trade receivables into cash. This strategy would ensure uninterrupted cash and cash equivalent supply and guarantee prompt settlement of trade payables as well as effective and efficient cash flow management. Consequently, a shorter CCC would improve financial performance.

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