

Corporate liquidity and profitability of listed food and beverages firms in Nigeria

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ABSTRACT

The management of corporate liquidity plays a pivotal role in maintaining the financial health of the company during the normal course of business. The objective of this study is to examine the effect of corporate liquidity and profitability of listed Food and Beverages Firms in Nigeria. The study covers the period of six years 2009 to 2014. Data for the study were extracted from the firms' annual reports and accounts. After running the OLS regression, a robustness test was conducted for validity of statistical inferences, the data was empirically tested between the dependent and the independent variables. A multiple regression was employed to test the model of the study using Robust OLS. The results from the analysis revealed a strong positive relationship between quick ratio, accounts payable, IFRS, firm size and ROA of Listed Food and Beverages Firms in Nigeria, while accounts receivable was found to be inversely significantly related to ROA of Listed Food and Beverages Firms in Nigeria. Cash conversion cycle was inversely but statistically not significantly related to ROA. In line with the above findings, the study recommended that the management of listed Food and Beverages Firms in Nigeria should maintain a higher quick ratio as it will have a positive impact on their profitability and that it has empirically proved that higher quick ratio signifies more profitability, they should also try to reduce their collection period because shorter collection period increases their profitability. Finally, the management should also delay their short term obligations as it was found that more profitable firms do wait a little longer to pay their bills.

Keyword: Quick ratio, accounts receivable, accounts payable, cash conversion cycle, IFRS, firm size, return on asset.

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INTRODUCTION

The management of corporate liquidity is one of the most vital areas in determining whether a firm will be successful. The liquidity of a firm represents its ability to carry out all its obligations without affecting the business operations. A business can run smoothly only in the presence of adequate working capital. In this situation, the short term liability can be paid within a short period. Thus it helps to strengthen the solvency position of a business.

The management of corporate liquidity is also an important component of corporate finance as it directly affects the liquidity and profitability of the company. Indeed, interaction between working capital management practices and profitability should be a major area of research focus. According to Kargar and Bluementhal

(1994), any firm that puts inaccurate working capital management procedures into practice may likely face bankruptcy even though its profitability is constantly positive. Hence, it must be avoided to exceed from optimal working capital level by making an emphasis on the aim of profit maximization or just in direct contradiction, to focus only on liquidity and consequently pass over to profitability. In general, excessive levels of working capital will result in a substandard return on assets while inadequate amount of it will lead to shortages and difficulties in maintaining day-to-day operations.

Additionally, management of corporate liquidity or working capital management constitutes an important source of capital for small and medium scale enterprises

as well as high flying firms. In most developing countries, these categories of firms face limited access to long term capital markets. To overcome this constraint, these firms tend to rely more heavily on owner financing, trade credit and short term capital bank loans (Chittenden et al., 1998). Hence, working capital position of such firms is not only an internal firm-specific matter, but also an important indicator of risk for creditors (Moyer et al., 1992). Firms with high amount of working capital are able to meet their short term obligations easily thereby decreasing the risk of default and enhancing their borrowing capability. And, as increase in borrowing capability is often perceived as indication of decrease in cost of debt (and also in cost of capital), it is possible to state that the efficiency in working capital management affects not just the short term financial performance (profitability) but also long-term financial performance.

Profitability as performance measure is ability of asset to generate profit (return on asset ROA). It can also be measured as the rate of return on investment (ROI). If there will be an unjustifiable over-investment in current assets then this would negatively affect the rate of return on investment (Vishnani and Shah, 2007). The basic purpose of managing working capital is controlling of current financial resources of a firm in such a way that a balance is created between profitability of the firm and risk associated with that profitability (Ricci and Vito, 2000). Every business requires working capital for its survival. Working capital is a vital part of business investment which is essential for continuous business operations. It is required by a firm to maintain its liquidity, solvency and profitability (Mukhopadhyay, 2004). The importance of managing working capital of a business efficiently cannot be overlooked (Filbeck and Krueger, 2005). Working capital management explicitly impacts both the profitability and level of desired liquidity of a business (Raheman and Nasr, 2007). If a firm will invest heavily in working capital, that is, more than its needs, then the profits which can be generated by investing these resources in fixed or long term assets will be diminished. Moreover, the firm will have to incur the cost of storing inventory for longer periods as well as the cost of handling excessive inventory (Arnold, 2008). On the other hand, if a firm will invest heavily in fixed assets to generate profits by neglecting its short-term capital needs then it is quite possible that it may have to face bankruptcy because of insufficient funds. The profitability as well as adequate level of liquidity is required to be maintained for the survival of a business, so if a firm will not pay sufficient attention to its working capital management, then it is quite possible that the firm would have to face bankruptcy (Kargar and Blumenthal, 1994). Shortage of working capital is normally attributed as the major cause of failure of many small businesses in various developing and developed countries (Rafuse, 1996).

One of the important attributes of working capital

management that influences firm's profitability is liquidity. This depends on the amount of cash a company has at hand or can generate quickly which shows how healthy the company is financially. High levels of available cash indicate that the business can pay off debt easily as at when due. The types of assets a company has and the marketability of those assets indicates its financial liquidity. Liquidity refers to the firms' ability to convert its current assets into cash in order to meet its day-to-day operations for better performance (Tatahi and Heshmati, 2009). It is measured as the ratio of current assets to current liabilities in order to determine whether firm's current assets can be used to settle its short terms financial obligations as at when due.

Another important component of working capital management is accounts payable or trade creditors. According to Bates (1971), trade creditors form a heterogeneous group, and sums other than pure trade credit and debt are often included. Trade credit is a spontaneous source of financing that reduces the amount required to finance the sums tied up in the inventory and customer accounts, bearing in mind that financing from supplies can have a very high implicit cost if early payment discounts are available. In fact, the opportunity cost may exceed 20 per cent depending on the discount percentage and the discount period granted (Wilner, 2000). Since money is also locked up in working capital, the greater the investment in current assets, the lower the risk, but also the lower the profitability obtained. In this respect, previous studies have analyzed the high cost of trade credit and found that firms finance themselves with seller credit when they do not have other more economic sources of financing available (Petersen and Rajan, 1997).

Accounts receivables represent customers who have not yet made payment for goods or services, which the company has provided for them. The primary aim of debtor management is to maximize the time-lapse between completion of sales and receipt of payment. As working capital management component, it shows the average number of days that the firm takes to collect payment from its customers. Therefore, management needs to install control mechanisms over credit sale policies and credit customers. The controlling process is intended to detect deviations from policy and to provide signals of deviations from expectations. Some of the deviations may be due to uncontrollable random external factors but others may be controllable. So, the main objective of credit and accounts receivable control is to give signals when (non-random) deviations in sales, collection expenses, receivables turnover and bad debts occur (Scherr, 1989).

Cash conversion cycle is also a popular component of corporate liquidity. It indicates the firm's ability to convert its resources into cash. It is the time in which the firm's cash is tied up in operations and unavailable for other activities. The advantage of cash conversion cycle (CCC)

is that it helps to evaluate changes in working capital. Cash conversion cycle which can also be referred to as cash conversion period connotes the number of days it takes for the firm to collect the proceeds of sales, measured from when the actual payment for inventory was made (Uremadu et al., 2012). How cash conversion cycle is managed will determine its profitability and continued existence. Gill et al. (2010) posit that managers can create profits for their companies by handling correctly the cash conversion cycle. However, a profitable business may fail, if it does not have adequate cash flow (shorter cash conversion cycle) to meet its current obligations and this may force firms to close-down (Singh and Asress, 2011).

Understanding the relationship between corporate liquidity and profitability of various sectors of an economy is important to all stakeholders. Studies have been conducted in different parts of the world on the role that corporate liquidity plays in determining corporate performance. These studies provide different opinions on the direction of their association. The outcome of the studies, which are mostly, conducted in developed nations motivated more studies in the area in order to investigate whether these components of corporate liquidity can influence profitability in different economies.

One of the distinctive attributes of this study is the inclusion of IFRS as an intervening variable. This was motivated as a result of IFRS adoption by the listed companies in Nigeria in January, 2012. The non-use of the IFRS which directly affects most of the items of the financial statements as result of the changes in the Accounting Standards provided a gap that needed to be filled. Hence, studying corporate liquidity and profitability in the subsector of manufacturing of Food and Beverages firms is expected to be of great importance considering the fact that it has larger number of Firms.

This study therefore examines the Impact of Corporate Liquidity on Profitability of Listed Food and Beverages Firms in Nigeria. And the study hypothesized that corporate liquidity has no significant impact on the profitability of Listed Food and Beverages Firms in Nigeria. To successfully achieve the abovementioned objective and empirically test the foregoing hypothesis, the paper is divided into five sections namely introduction, literature review and theoretical framework, methodology and model specification, results and discussions, and finally conclusion and recommendations.

LITERATURE REVIEW

Review of empirical studies

Quick ratio and profitability

Yahya and Bala (2015) examined the effect of working

capital management and financial performance of listed deposit money banks in Nigeria. They took a sample of 13 banks for the period of six years 2007 to 2013. Their finding revealed a strong positive significant relationship with financial performance. Arshad and Gondal (2013) studied impact of working capital management and profitability of listed cement industries in Pakistan. They took a sample of 21 listed cement companies in Karachi Stock Exchange for the period of 2004 to 2010. The result of study showed that there is significant negative relationship between average collection period and profitability of the firms. Ailemen and Folashade (2014) evaluated the effect of working capital management on profitability of manufacturing sector in Nigeria. The study took a sample of Nestle and Cadbury Nigeria Plc for the period 2008 to 2012. Their study found that quick ratio was positively but insignificant related profitability. It can be argued that the study of Shah Ailemen and Folashade (2014), used 2008 to 2012 as the period of the study. This may create a vacuum for only two groups of companies and cannot be used for generalization. In that, it requires additional number of years and companies to see what will be the likely changes, and this is what this study tends to find out among others.

Accounts receivable and profitability

Raheman and Nasr (2007) performed an analysis on 94 firms listed at Karachi Stock Exchange, Pakistan, based on a time span of 6 years from 1999 to 2004. They have taken average collection period as one of the indicators of working capital. They found that profitability and working capital management are negatively related to each other.

Gill et al. (2010) studied the relationship of working capital management and profitability and took a sample 88 companies in New York. The time span of the study was three years from 2005 to 2007. They stated that if the collection period of accounts is greater, then there would be less profitability. This indicates there is an inverse relationship between collection period and performance. Akoto Vitor and Angmor (2013) examined working capital management and profitability of listed manufacturing firms in Ghana. They took a sample of 13 listed Ghanaian manufacturing firms for the period of 2005 to 2009. Their finding revealed that Averages collection period was negatively and significantly related to profitability. Makori and Jagongo (2013) studied working capital management and firms' profitability of listed manufacturing and construction firms on Nairobi Stock Exchange in Kenya. They took a panel data of five companies for the period of 2003 to 2012. The study found that average collection period was negatively and significantly related to firms' profitability. Kaddumi and Ramadan (2012) conducted a study to assess the effect of working capital management on the performance listed

companies at Amman Stock Exchange in Jordan. They explained that there is negative average collection period with profitability. This also implies that handling proper inventory and shortening the debtor's collection period will increase the profitability. Looking at some of the above findings, it may be argued that the work of Gill et al. (2010) used only three years 2005 to 2007. Therefore, the time frame is relatively short. For that the study needs to be revisited by including other periods that were not captured which may be affected by some changes for example, changes in accounting standards.

Accounts payable and profitability

Raheman et al. (2010) studied the impact of working capital management on the performance of a firm. The study showed that average payment period has no significant effect on performance. Makori and Jagongo (2013) examined the effect of working capital management and firms' profitability of listed manufacturing and construction firms on Nairobi Stock Exchange in Kenya. They took a panel data of five companies for the period of 2003 to 2012. The study indicated that average payment period was positively and significantly related to firms' profitability.

Kaddumi and Ramadan (2012) conducted a study to assess the effect of working capital management on the performance listed companies at Amman Stock Exchange in Jordan. They found that there is positive relationship between average payment period and the profitability. This shows that increasing days of payment period will increase the profitability. Akoto Vitor and Angmor (2013) examined working capital management and profitability of listed manufacturing firms in Ghana. They took a sample of 13 listed Ghanaian manufacturing firms for the period of 2005 to 2009. Their finding showed that Average Payment period was positively but statistically not impacting on profitability.

Cash conversion cycle and profitability

Several studies used cash conversion cycle as one of the proxies of corporate liquidity. Some of these studies include Nahum and Neil (2010) who examined the relationship between working capital management and profitability by taking the sample of 88 firms listed at New York stock for the period of three years from 2005 to 2007. Their study found statistically significant relationship between cash conversion cycle and profitability, measured through gross operating profit. Rahman and Nasr (2007) conducted a study on working capital management and profitability of Pakistani Firm. Their study revealed that cash conversion cycle has negative significant effect on profitability. In the vein, Padachi (2006) analyzed working capital management

and profitability he took a sample of manufacturing firm of Mauritius for the period of 1998 to 2003. The study revealed that cash conversion cycle has positive impact on performance proxied by return on total assets. Mohamad and Saad (2010) examined secondary data of 172 firms in Malaysia by studying the impact of various components of working capital on profitability and market value of the firms. The study covered a time span of five years from 2003 to 2007 and adopted multivariate regression to run the results by using Tobin's Q (TQ), return on invested capital (ROIC) and return on assets (ROA) as a measurement of financial performance of the selected firms. The results showed that an inverse relationship between cash conversion cycle and performance. Gill et al. (2010) studied the relationship of working capital management and profitability and took a sample 88 companies in New York. The time span of the study was three years from 2005 to 2007. The study found that cash conversion cycle is positively related with financial performance. Nimalthasana (2010) has done a study using the manufacturing companies in CSE to identify the effect of WCM on profitability. He has found out a negative relationship between cash conversion cycle and profitability.

Theoretical framework

Several theories have been propounded by various scholars on corporate liquidity and profitability of firms. For the purpose of this study pecking order theory was adopted to underpin the dependent and independent variables.

Pecking order theory

The theory emerges as a result of asymmetric information existing in the financial markets, that is, corporate managers often have better information about the health of their companies than outside investors. Apart from the transaction costs of issuing new securities, companies have to accept the information costs arising from asymmetric information. In this way, new securities issued on the financial market could be infra-valued because of informational asymmetries, and this is especially true in the case of new equities. Myers and Majluf (1984) introduced very influential pecking order theory saying; manager prefers to finance deficit of capital by issuing safe security. The theory states that, in the event where retained earnings and other internal source of financing will be low to invest then manager will issue debt and only issue new equity with possibility of issuing junk debt (Financial distress possibility). An important survey of Myers (2003) documented the following findings on the pecking order theory of corporate financing:

- i) Firms prefer to use internal source of fund as their first choice.
- ii) Dividend payout ratio has separate determinants. A change in dividend payout ratio does not facilitate capital expenditure.
- iii) In the question of external financing, debt issuance is more preferable by the firm than issuance of equity.
- iv) The firm's debt ratio shows their requirement of external financing. A determinant of cash holding from the perspective of pecking order theory has been supported by other researchers more than trade off theory. Sebastian (2010) Examine Dutch firm's liquidity and solvency and their effect on financial decision. He discovers that, corporate liquidity and solvency interact through information, hedging, and leverage channels. The information and hedging channels increase equity-value of firms which helps to pay regular dividend and most importantly reduce volatility in cash flow

Trade off theory

An efficient working capital is achieved when there is a trade-off between liquidity and profitability and the shareholders' value. Efficiency in working capital management seeks to ensure that the investment in working capital components is neither too little nor too high. The former could give rise to illiquidity, stock outs, and lost sales, whereas the latter amounts to waste (Tully, 1994). With regards to profitability, the level of investment in working capital and the financing of this investment, at any particular level of output, involve a risk-return trade-off (Raheman and Nasr, 2007). Generally, the higher the risk the higher the return will be demanded by management and shareholders in order to finance any investment in working capital (Gitman, 1997). When the working capital requirements are not properly managed and are allocated more than required, it renders the management inefficient and reduces the benefits of short-term investments. On the other hand, if the working capital is too low, the company may miss a lot of profitable investment opportunities or suffer short-term liquidity crisis, leading to the degradation of company credit, as it cannot respond effectively to temporary capital requirements. There may be various external and internal factors that may induce the firms to strike a balance between meeting unforeseen capital requirements and avoiding inefficient management of capital (Afande, 2015). Therefore, the study adopted pecking order theory and trade-off theory from the efficiency working management perspective to anchor the variables of the study because the theories establish a logical link between the management of corporate liquidity and profitability.

METHODOLOGY

The research design used for the study is the ex-post facto

research design because of the cause and effect relationship to be derived from the regression. Regression is used to test the influence of working capital on performance of listed Food and Beverages Firms in Nigeria.

The population of this study consists of all the twenty one (21) listed Food and Beverages Firms on the Nigerian Stock Exchange (NSE) as recorded in the NSE Fact Book of 2014.

The sampling technique used is purposive sampling; this was done in the following manner; all Food and Beverages Firms listed after 2009 are excluded considering the period of the study. And that the companies must have published its financial statements for the period of the study (2009 to 2014). In line with the abovementioned points, that is, after the application of filtering criteria, six (6) Firms were qualified, the remaining were filtered because they did not provide the available information required necessary for the study.

Variables measurement and model specification

The study used one dependent and four independent variables. The dependent variable, profitability was represented by ROA while the independent variables were quick ratio, accounts receivables and, accounts payable and Cash conversion cycle.

Table 1 presents the summary of variables and their measurements as used in the study.

Model specification for this study is given as follows:

$$ROA_{it} = \beta_{0it} + \beta_1 QR_{it} + \beta_2 AR_{it} + \beta_3 AP_{it} + \beta_4 CC_{it} + \beta_5 FSZ_{it} + \beta_6 IFRS_{it} + \mu_{it}$$

Where:

ROA = Return on Asset of firm i time t

QR = Quick ratio of firm i time t

AR = Accounts receivables of firm i time t

AP = Accounts payable of firm i time t

FSZ = Firm Size of firm i time t

CC = Cash Conversion Cycle of firm i time t

β_0 = the intercept/constant;

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5,$ = are the coefficients;

μ = error term

Robustness test

A robustness test is conducted in this study to improve the validity of statistical inference. These include multicollinearity test, heteroscedasticity test, hausman specification test and Breusch and Pagan langrange multiplier test.

RESULTS AND DISCUSSION

Correlation matrix

Table 2 displays the correlation. The correlation matrix is used to determine the degree of relationship between the dependent and independent variables of the study as well as independent variables themselves. These associations among the variables of the study are presented in the table. The full results are contained in the appendix.

Table 2 indicates that quick ratio was 44% positively correlated with return on asset. Again, accounts receivable was weak positively associated with return on asset of listed Food and Beverages Firms in Nigeria.

Table 1. Summary of variables and measurement.

No.	Variable	Measurement
1	Profitability	Profit after tax to total asset (ROA)
3	Quick ratio	Current asset less stock to current liabilities
4	Average collection period	Accounts receivable/Net sales × 365
5	Average payment period	Accounts Payable/ Net sales × 365
6	Cash conversion cycle	Stock/Cost of goods sold × 365 + Accounts receivables – Accounts payable
7	IFRS	Dichotomous variable; 1 representing IFRS period and zero otherwise
8	Firm size	Natural log. of the total assets

Source: Compiled by the authors, 2016.

Table 2. Correlation matrix.

	ROA	QR	AR	AP	CC	IFRS	FSZ
ROA	1						
QR	0.4444	1					
AR	0.0060	-0.1804	1				
AP	-0.3893	-0.1885	-0.1944	1			
CC	0.1782	0.17766	-0.0148	-0.2023	1		
IFRS	0.1791	-0.1120	-0.2236	0.1994	-0.0821	1	
FSZ	0.0899	-0.1289	-0.4011	0.3348	-0.2304	0.0060	1

Source: Stata 13 Output (2016).

While accounts payable was negatively related to return on asset of Food and Beverages Firms in Nigeria. Also cash conversion cycle, IFRS and firm size weak showed positively weak relationship with return on asset to the tune of about 18, 18 and 9%. This correlation matrix will not serve as a basis for generalization on the actual relationship between corporate liquidity and profitability as correlation matrix only gives a mere degree of association between the dependent variable and the independent variables themselves. Thus, regression shows causation.

It can be observed that the relationship between the independent variables themselves are not strong, an indication that serial correlation may not pose problem to model. This can be clearly observed from the two indicators (that is, tolerance value and variance inflation factor VIF) which are within less than 1 and less than 10 respectively (see the appendix). This further justifies the appropriateness of fitting the study model with five independent variables.

Analysis and interpretation of regression result

This section presents the regression result of the dependent variable (ROA) and the independent variables of the study (quick ratio, accounts receivable, accounts payable, cash conversion cycle, IFRS and firm size). The presentation was followed with the analysis of the

association between the dependent variable and each individual independent variable and also the cumulative analysis was also captured.

The regression results revealed that quick ratio as depicted in Table 3, has a coefficient value of 0.8491 which is significant at 1%. This indicates that quick ratio has positive, strong and significant impact on return on asset of listed Food and Beverage Firms in Nigeria. Also, this implies that for every one percent (1%) proportionate increase in the quick ratio, the return on asset of the listed Food and Beverage Firms in Nigeria will increase by approximately 85 kobo. This may be as a result of the fact that, the stock which can be regarded as the weak form of liquidity than cash and other items that form the asset has been removed from the calculation of quick ratio and as such its influence on performance was highly felt. This makes the study to reject the second null hypothesis which stated that current ratio has no significant impact on performance of listed Food and Beverage firms in Nigeria. This is in line with the findings of Aileman and Folashade (2014) and Yahya and Bala (2015) who documented that quick ratio being more liquid than current ratio, has more influence in improving the profitability firms. This may be as a result of the fact that, the stock which can be regarded as the weak form of liquidity than cash and other items that form the asset, has been removed from the calculation of quick ratio and as such its influence on performance was highly felt. However, it contradicts the findings of Arshad and Gondal

Table 3. Summary of regression result.

Variables	Coefficient	t-Statistics	P-values
Intercept	-0.3257	-0.84	0.400
CR	0.8491	5.82	0.000
AR	-1.5858	-5.86	0.000
AP	0.1541	1.69	0.091
CC	-0.0373	-0.12	0.904
IFRS	0.0731	2.320	0.020
FSZ	0.0210	2.42	0.016
R ²		0.53	
F-Stat		5.42	
F-Significance		0.001	

Source: Stata 13 Output (2016).

(2013) and Shah and Sana (2006) who reported a negative relationship between quick ratio and profitability.

The result also reveals that Accounts receivable has a beta value of -1.5858 which is significant 1%. This means that accounts receivable is significantly influencing return on asset of listed Food and Beverage Firms in Nigeria. It connotes that when there is an increase in accounts receivable by one percent (1%), the return on asset of listed Food and Beverage Firms will decrease by approximately 1 Naira 60 kobo. This means that, shorter collection period is better for improving the profitability of listed Food and Beverages Firms in Nigeria.

This provides the basis for rejecting the second null hypothesis which presumed that accounts receivable has no significant impact on performance of listed Food and Beverage firms in Nigeria. This supports the findings of Raheman and Nasr (2007), Raheman et al. (2010) and Kaddumi and Ramadan (2012) who argued that profitable firms do not wait longer to receive from their customers. This may not be a surprise because the earlier it takes the firms to receive from their customers the better opportunity they have to invest in any available profitable venture. However, it is contrary to the findings of Gill et al. (2010) and Akoto et al. (2013) who documented that accounts receivable have positive influence on firms' profitability which means that longer accounts receivable periods improve profitability.

It can also be observed that accounts payable has a beta value of 0.1541 which is significant at 10%. This means that average payment period is positively, significantly influencing return on asset of listed Food and Beverage Firms in Nigeria. It implies that when there is an increase in creditors' payment by one percent (1%), the return on asset of listed Food and Beverage Firms will increase by 15%. This suggests that more profitable firms do wait longer to pay their bills. The study therefore reject the last null hypothesis which was stated that accounts payable has no significant impact on profitability of listed Food and Beverage firms in Nigeria. The study is

consistent with the findings of Makor and Jagongo (2013) and Raheman et al. (2010) who revealed that accounts payable have positive significant influence on profitability. This may be as a result of the fact that profitable firm delay a little to settle their obligations for anticipation of any possible short term investment that would have a positive impact on their returns. This contradicts the findings of Mugu (2014), Soenem (1993) and Rahman and Nasr (2007) who found that accounts payable have negative impact on firms' financial performance. This indicates that more profitable firms do not wait longer to pay their obligations.

The study also revealed that cash conversion cycle was negatively but statistically none significantly related to profitability of listed food and beverages firms in Nigeria. This implies that shorter cash conversion cycle is better for financial success, but this should not be critical when considering components of corporate liquidity that can influence the profitability of listed food and beverages in Nigeria. This provides a basis for not rejecting the last null hypothesis which was predicted that cash conversion cycle has no significant effect on profitability of listed Food and Beverage firms in Nigeria.

Again, the result also showed that IFRS has a positive beta coefficient of 0.0731 with p-value of 0.020 indicating a 5% level of significance. This means that IFRS is positively and significantly impacting on the profitability of listed food and beverages firms in Nigeria. This implies that listed food and beverages exhibit higher profitability under IFRS than under the pre adoption periods where the financial statements were prepared using domestic accounting standards. This may not be surprise as a lot accounting numbers have higher values under IFRS for instance; assets now are valued using fair value rather than the use historical cost approach used by the domestic accounting standards.

Finally, firm size was positively and significantly related to profitability. This can be deduced from the beta coefficient of 0.0210 and p-value of 0.016. This indicates

that a 1% increase in total asset will result to 2 kobo increase in return on asset. This therefore means larger firms are more profitable than smaller firms.

The cumulative R^2 of 0.53 which is the coefficient of determination gave the proportion of the total variation in the dependent variable explained by the independent variable jointly. Consequently, it signified that 53% of the total variation on return on asset of listed Food and Beverage Firms in Nigeria was caused by their quick ratio, accounts receivable, accounts payable, cash conversion cycle, IFRS and firm size. The F-statistics of 5.42 which is significant at 1% indicates that the return on asset and working capital management model was fit. This indicates that the independent variables are properly selected, combined and used. It implies that for any change in corporate liquidity of listed Food and Beverage Firms in Nigeria; their return on asset will be directly affected. The value of F-statistic which was statistically significant at 1% means that there is a 99 percent probability that the relationship among the variables was not due to mere chance.

Validity and reliability test

In order to make better the validity of all statistical inferences to be drawn for the study, this section presents the result of robustness test conducted. The robustness test included multicollinearity test and serial correlation test.

Multicollinearity test

This was conducted to check whether there was a correlation between the independent variables which will mislead the result of the study. Table 2 presented the matrix of the linear relationships among the independent variables of the study. From the observation, none of the variables has a higher correlation above 70%; the low magnitude of the correlations amongst the explanatory variables implies that multicollinearity was not a problem in the sample of the study. In a bid to prove and substantiate the absence of serious multicollinearity between the exogenous variables, colinearity diagnostics tests are observed as the tolerance values and the variance inflation factors (VIF) values portrays no multicollinearity in the data.

The tolerance value and the variance inflation factor (VIF) are two advanced measures of assessing multicollinearity between the explanatory variables. The variance inflation factor and tolerance are computed using STATA and were found to be consistently smaller than ten and one respectively, indicating absence of multicollinearity (Neter et al., 1996). This shows the appropriateness of fitting the study model with four independent variables. In addition, the absence of

multicollinearity between the explanatory variables were further substantiated by the tolerance values which were consistently smaller than 1.00 (Tobachnick and Fidell, 1996).

Heteroscedasticity test

Breusch-Pagan / Cook-Weisberg is used to test the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. The alternative hypothesis states that the error variances increase (or decrease) as the predicted values of Y increase, that is, the bigger the predicted value of Y, the bigger the error variance is. A large chi-square would indicate that heteroscedasticity was present. In the result obtained from the heteroscedasticity test conducted in this work, the chi-square value (0.37) was small and the p-value (0.5448) is large, indicating heteroscedasticity was present and this shows a violation of assumption number four of classical linear regression model which states that there must be constant variance, that is, the disturbances u_i appearing in the population regression function are homoscedastic. Therefore, the researchers conducted fixed and random effect model to take into account the individual characteristics that may arise in the cross sectional data. This will enable whatever conclusions drawn or inferences made to be free line of mislead. After conducting the hausman test, it suggests that random model is more appropriate. This enables the researchers to further conduct for langrange multiplier test random effect. After conducting it, the p-value was found to be insignificant which implies that OLS is more appropriate. For that a robust OLS result was used to interpret the statistical relationship corporate liquidity and profitability of listed Food and Beverages Firms in Nigeria.

CONCLUSIONS AND RECOMMENDATIONS

In line with the findings of the study, it was concluded that the quick ratio in the Food and Beverage Firms within the period of the study has helped to improve their financial performance. Also, the study concluded that current ratio has significantly, strongly and positively influenced the profitability of listed Food and Beverage Firms in Nigeria. The study also concluded that the longer it takes to collect cash from customers in the listed Food and Beverages Firms the lesser the profitability. It was also established that he earlier it takes the listed Food and Beverages Firms in Nigeria to settle their bills the higher the profitability. The study also asserted the cash conversion cycle would serve as a better component of corporate liquidity that influences profitability of listed Food and Beverages Firms in Nigeria. Finally, it was concluded that listed Food and Beverages Firms reported

higher profitability in the post IFRS than in the pre IFRS adoption. However, the study was concluded that larger firms are more profitable than the smaller ones in the listed Food and Beverages Firms in Nigeria.

In line with the findings of the study the following recommendations are proffered:

1. The management of listed Food and Beverages Firms in Nigeria should increase the quick ratio as the result revealed that the higher the quick ratio, the higher the profitability of the firms. Therefore listed Food and Beverages Firms in Nigeria should try and maintain a higher quick ratio as it will have a positive impact on their profitability.
2. The management should also try to reduce their collection period as it was found that more profitable firms do not wait longer to collect from customers. They should also delay in the settlement of their bills because the longer it takes the better the performance. And finally they should not put much emphasis on the cash conversion cycle as it is not a critical factor to consider when taking decision to improve profitability.

Limitations of study

Like any other research, our study is also associated with some limitations. These limitations include the following:

1. The study is only limited to the domain of the listed Food and Beverages Firms in Nigeria. As such, our findings and recommendations are only applicable to listed Food and Beverages Firms in Nigeria.
2. The sample size is relatively small; as such generalisation of findings may not be possible.

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APPENDIX

```

----- (R)
Statistics/Data Analysis 13.0 Copyright 1985-2013 StataCorp LP
StataCorp
4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)
MP - Parallel Edition

```

```

3-user 8-core Stata network perpetual license:
Serial number: 501306208483
Licensed to: Hussaini
KASU, Kaduna

```

Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables

```
. edit
```

```
. *(10 variables, 36 observations pasted into data editor)
```

```
. su roa qr ar ap cc ifrs fsz
```

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	36	.2654356	.1256967	.034059	.518115
qr	36	.2133333	.0754775	.166	.333
ar	36	.0317939	.0364769	.00101	.16755
ap	36	.3350222	.2242043	.0005	.666
cc	36	.6172599	.096925	.4	.778151
ifrs	36	.5	.5070926	0	1
fsz	36	18.79316	2.993088	12.7817	21.3306

```
. pwcorr roa qr ar ap cc ifrs fsz, star (0.05) sig
```

	roa	qr	ar	ap	cc	ifrs	fsz
roa	1.0000						
qr	0.4444*	1.0000					
	0.0066						
ar	-0.3893*	-0.1885	1.0000				
	0.0189	0.2709					
ap	0.0060	-0.1804	-0.1944	1.0000			
	0.9721	0.2925	0.2559				
cc	-0.1782	0.1766	0.2083	-0.0148	1.0000		
	0.2984	0.3028	0.2229	0.9317			
ifrs	0.0899	-0.1120	0.1994	-0.2236	-0.0821	1.0000	
	0.6021	0.5156	0.2437	0.1900	0.6341		
fsz	0.1791	-0.1289	0.3348*	-0.4011*	-0.2304	0.0060	1.0000
	0.2959	0.4537	0.0460	0.0153	0.1763	0.9724	

```
. reg roa qr ar ap cc ifrs fsz
```

Source	SS	df	MS	Number of obs =	36
Model	.292385879	6	.04873098	F(6, 29) =	5.42
Residual	.260602626	29	.008986297	Prob > F =	0.0007
				R-squared =	0.5287
				Adj R-squared =	0.4312
				Root MSE =	.0948
Total	.552988505	35	.015799672		

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
qr	.8491293	.2311968	3.67	0.001	.3762789 1.32198
ar	-1.585788	.51684	-3.07	0.005	-2.642844 -.5287313
ap	.1540994	.0846155	1.82	0.079	-.0189587 .3271575
cc	-.037303	.1857645	-0.20	0.842	-.4172341 .3426281
ifrs	.0730816	.0341004	2.14	0.041	.0033384 .1428247
fsz	.0210297	.0066719	3.15	0.004	.0073842 .0346753
_cons	-.3256507	.2144158	-1.52	0.140	-.7641803 .1128788

```
. hettest
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of roa

chi2(1) = 0.37
Prob > chi2 = 0.5448

```
. vif
```

Variable	VIF	1/VIF
fsz	1.55	0.643839
ap	1.40	0.713387
ar	1.38	0.722380
cc	1.26	0.791983
qr	1.19	0.843167
ifrs	1.16	0.858656
Mean VIF	1.33	

```
. reg roa qr ar ap cc ifrs fsz
```

Source	SS	df	MS	Number of obs = 36		
Model	.292385879	6	.04873098	F(6, 29) =	5.42	
Residual	.260602626	29	.008986297	Prob > F =	0.0007	
Total	.552988505	35	.015799672	R-squared =	0.5287	
				Adj R-squared =	0.4312	
				Root MSE =	.0948	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
qr	.8491293	.2311968	3.67	0.001	.3762789	1.32198
ar	-1.585788	.51684	-3.07	0.005	-2.642844	-.5287313
ap	.1540994	.0846155	1.82	0.079	-.0189587	.3271575
cc	-.037303	.1857645	-0.20	0.842	-.4172341	.3426281
ifrs	.0730816	.0341004	2.14	0.041	.0033384	.1428247
fsz	.0210297	.0066719	3.15	0.004	.0073842	.0346753
_cons	-.3256507	.2144158	-1.52	0.140	-.7641803	.1128788

```
. hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of roa

chi2(1) = 0.37
Prob > chi2 = 0.5448
```

```
. vif
```

Variable	VIF	1/VIF
fsz	1.55	0.643839
ap	1.40	0.713387
ar	1.38	0.722380
cc	1.26	0.791983
qr	1.19	0.843167
ifrs	1.16	0.858656
Mean VIF	1.33	

```
. xtset id year, yearly
panel variable: id (strongly balanced)
time variable: year, 2009 to 2014
delta: 1 year
```

```
. xtreg roa qr ar ap cc ifrs fsz, fe
```

```
Fixed-effects (within) regression
Group variable: id

Number of obs = 36
Number of groups = 6

R-sq: within = 0.5168
between = 0.2059
overall = 0.4799

Obs per group: min = 6
avg = 6.0
max = 6

F(6,24) = 4.28
Prob > F = 0.0045

corr(u_i, Xb) = -0.1793
```

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
qr	.8142086	.2529884	3.22	0.004	.2920662	1.336351
ar	-1.80426	.607412	-2.97	0.007	-3.057896	-.5506231
ap	.1881267	.1236012	1.52	0.141	-.0669738	.4432271
cc	-.000935	.2044851	-0.00	0.996	-.4229716	.4211015
ifrs	.079808	.0383816	2.08	0.048	.0005923	.1590238
fsz	.0142055	.016263	0.87	0.391	-.0193597	.0477706
_cons	-.2202172	.3516718	-0.63	0.537	-.9460322	.5055978
sigma_u	.03594454					
sigma_e	.10208088					
rho	.11031018	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(5, 24) = 0.20 Prob > F = 0.9586
```

```
. xtreg roa qr ar ap cc ifrs fsz, re
```

```
Random-effects GLS regression
Group variable: id

Number of obs = 36
Number of groups = 6

R-sq: within = 0.5088
between = 0.8266
overall = 0.5287

Obs per group: min = 6
avg = 6.0
max = 6

Wald chi2(6) = 32.54
Prob > chi2 = 0.0000

corr(u_i, X) = 0 (assumed)
```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
qr	.8491293	.2311968	3.67	0.000	.395992	1.302267
ar	-1.585788	.51684	-3.07	0.002	-2.598776	-.5728
ap	.1540994	.0846155	1.82	0.069	-.0117439	.3199427
cc	-.037303	.1857645	-0.20	0.841	-.4013948	.3267887
ifrs	.0730816	.0341004	2.14	0.032	.006246	.1399172
fsz	.0210297	.0066719	3.15	0.002	.0079531	.0341064
_cons	-.3256507	.2144158	-1.52	0.129	-.745898	.0945965
sigma_u	0					
sigma_e	.10208088					
rho	0	(fraction of variance due to u_i)				

```
. xtreg roa qr ar ap cc ifrs fsz, re

Random-effects GLS regression              Number of obs   =       36
Group variable: id                        Number of groups =        6

R-sq:  within = 0.5088                    Obs per group:  min =        6
        between = 0.8266                   avg =          6.0
        overall = 0.5287                   max =          6

corr(u_i, X) = 0 (assumed)                Wald chi2(6)    =       32.54
                                                Prob > chi2     =       0.0000
```

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
qr	.8491293	.2311968	3.67	0.000	.395992	1.302267
ar	-1.585788	.51684	-3.07	0.002	-2.598776	-.5728
ap	.1540994	.0846155	1.82	0.069	-.0117439	.3199427
cc	-.037303	.1857645	-0.20	0.841	-.4013948	.3267887
ifrs	.0730816	.0341004	2.14	0.032	.006246	.1399172
fsz	.0210297	.0066719	3.15	0.002	.0079531	.0341064
_cons	-.3256507	.2144158	-1.52	0.129	-.745898	.0945965
sigma_u	0					
sigma_e	.10208088					
rho	0	(fraction of variance due to u_i)				

```
. est store fe
. est store re
. hausman fe re
```

Note: the rank of the differenced variance matrix (0) does not equal the number of coefficients being tested (6); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
qr	.8491293	.8491293	0	0
ar	-1.585788	-1.585788	0	0
ap	.1540994	.1540994	0	0
cc	-.037303	-.037303	0	0
ifrs	.0730816	.0730816	0	0
fsz	.0210297	.0210297	0	0

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(0) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 0.00
 Prob>chi2 = .
 (V_b-V_B is not positive definite)

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

```
roa[id,t] = Xb + u[id] + e[id,t]
```

Estimated results:

	Var	sd = sqrt(Var)
roa	.0157997	.1256967
e	.0104205	.1020809
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00
 Prob > chibar2 = 1.0000

```
. xtreg roa qr ar ap cc ifrs fsz, re vce(robust)
```

```
Random-effects GLS regression              Number of obs   =       36
Group variable: id                        Number of groups =        6

R-sq:  within = 0.5088                    Obs per group:  min =        6
        between = 0.8266                   avg =          6.0
        overall = 0.5287                   max =          6

corr(u_i, X) = 0 (assumed)                Wald chi2(4)    =       .
                                                Prob > chi2     =       .
```

(Std. Err. adjusted for 6 clusters in id)

	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
qr	.8491293	.1458684	5.82	0.000	.5632326	1.135026
ar	-1.585788	.2704742	-5.86	0.000	-2.115907	-1.055668
ap	.1540994	.0911782	1.69	0.091	-.0246066	.3328054
cc	-.037303	.308821	-0.12	0.904	-.642581	.567975
ifrs	.0730816	.0314384	2.32	0.020	.0114634	.1346998
fsz	.0210297	.0086886	2.42	0.016	.0040004	.0380591
_cons	-.3256507	.3872972	-0.84	0.400	-1.084739	.4334378
sigma_u	0					
sigma_e	.10208088					
rho	0	(fraction of variance due to u_i)				

