Effect of liquidity and leverage on the financial performance of Nigerian listed consumer goods firms

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Abstract
The study examines liquidity effect of leverage on the financial performance of Nigerian listed firms using data of seventeen consumer goods firms listed on the Nigerian Stock Exchange using the annual report of 2012 to 2017. The objective of the study is to determine the impact of liquidity on profitability and to determine the impact of leverage on profitability. The study adopted multiple regression method, with pooled Ordinary Least Squares as estimation technique. The population of the study was made up of 28 consumer goods firms that are listed on the Nigerian Stock Exchange's floor as of December 31, 2018. 17 companies were chosen as a sample for the study from 2012 to 2017 using a purposive sampling technique. The finding revealed that leverage proxies- degree of operating leverage and degree of combined leverage have significant effect on financial performance. The study could not however provide empirical evidence in support of liquidity proxies- current ratio and quick asset ratio having significant effect on financial performance of the companies. The study recommends that to improve profitability level, corporate managers and top decision makers of Nigerian listed consumer goods firms should take advantage of debts' tax shield from the interest in companies' financial structure and develop robust strategies that will monitor and efficiently manage liquidity requirements.

Keywords: Current ratio, Quick ratio, Leverage, Liquidity, Profitability

1. Introduction
The preference for a mixture of capital structure while considering the nexus between profitability and risks is one of the challenging and demanding corporate decisions that organizations face (Titman and Wessel, 1988). The proportion of fixed interest capital (debt and preference share capital) used to fund company's operations is referred to as leverage. As a result, it is assumed that as the degree of leverage rises, the risk of a company failing to make its fixed payment obligations rises as well (Akinsulire, 2011). Liquidity management refers to the management of a company's current assets, current obligations, short-term borrowings, and surplus or deficit cash over a short period of time (Pandey,

2010). Financial performance, or profitability, on the other hand, refers to an organization's management's capacity to employ resources efficiently in the core operations of the firm to create sufficient income and provide returns to a variety of stakeholders.

Leverage and liquidity are linked because a leverage company uses liquid assets as a safety net to absorb market economic shocks as well as service debt and the resulting future fixed charges (Oduol, 2011). As a result, debt and liquidity management are likely to have a significant impact on a company's profitability. This could be because different measurements were utilized to proxy the variables. According to a review of the literature,

some studies, such as Bei and Wijewardana (2012), Enekwe, Agu and Eziedo (2014), Kaya (2014), Ahmad, Salman and Shamsi (2015), Adenugba, Ige and Kesinro (2016), and Nwant to and Ivie (2017), focused solely on the relationship between leverage and profitability, whereas others, such as Ibe (2013), Lartey, Antwi and Boadi (2013).

Furthermore, the bulk of the empirical research examined (Bei and Wijewardana, 2012; Lartey et al., 2013; Acheampong, Agalega, and Shibu, 2014; Raheel and Shah, 2015; Ghasemi and Ab Razak, 2016; Moghaddam and Abbaspour, 2017; Mulyana, Zuraida, and Saputra, 2018) were not conducted in Nigeria. Some studies (Moghaddam and Abbaspour, 2017) looked at the impact of liquidity and leverage on company profitability, but none focused on Nigerian consumer goods firms. The current study attempted to address the gaps by investigating the impact of liquidity and leverage on the performance of 17 publicly listed traded consumer goods firms in Nigeria. The study's secondary objectives are separated into two categories. The goals are to (1) determine the impact of liquidity on profitability and (2) determine the impact of leverage on profitability. This paper is structured in to five sections namely, the introduction which covered in the section one, the review of literature is covered in section two, the methodology is covered in section three, the results and discussion are covered in section four, and section five is presents conclusion and recommendation.

2. Literature Review
2.1 Conceptual Review
Leverage, liquidity management, and profitability are the three key issues explored in this research. Liquidity monitors the relationship between current assets and current obligations, while leverage reflects the proportion of fixed interest capital in an organization's financial structure. Profitability refers to an organization's management's capacity to

effectively employ resources to earn sufficient revenue. Leverage is quantified using three constructs in this study: Degree of Operating Leverage (DOL), Degree of Financial Leverage (DFL), and Degree of Combined Leverage (DCL), whereas liquidity is measured using two constructs: Current Ratio (CR) and Quick Ratio (QR). The Earnings per Share (EPS) of a company is used to determine its profitability (EPS).

2.2 Definition of terms
Degree of Operating Leverage (DOL): The degree of operating leverage (DOL) is a measure used to evaluate how a company's operating income changes after a percentage change in its sales. A company's operating leverage involves assessing fixed costs and variable costs against sales.

Degree of Financial Leverage (DFL): A degree of financial leverage (DFL) is a leverage ratio that measures the sensitivity of a company's earnings per share (EPS) to fluctuations in its operating income, as a result of changes in its capital structure.

Degree of Combined Leverage (DCL): A degree of combined leverage (DCL) is a leverage ratio that summarizes the combined effect that the degree of operating leverage (DOL) and the degree of financial leverage has on earnings per share (EPS), given a particular change in sales.

Current Ratio (CR): The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year.

Quick Ratio (QR): The quick ratio, also known as the acid-test ratio is a type of liquidity ratio, which measures the ability of a company to use its near cash or quick assets to extinguish or retire its current liabilities immediately.

Discussions on leverage and liquidity in the past were based on several ideas offered by various experts. This research is based on three key theories, each of which is presented briefly. According to Myers

and Majluf's (2008) pecking order hypothesis, businesses prefer internal finance when it is available, but resort to external financing when it is not. Long-term borrowing, short-term borrowing, and equity as a last option are the external sources of choice in order of cost. A new Pecking order hypothesis (Reverse Pecking Order) has been proposed for developing countries, which is defined by a review of the financing preference, which comprises retained earnings, equity, long-term debt, and lastly short-term borrowing. Businesses discover their optimal financial structure by finding a balance between the costs of taking on additional debt (bankruptcy) and the benefits of doing so, according to trade-off theory (tax deductibility of interest). Agency theory describes the relationship between principals (shareholders) and agents (managers), in which the agents are expected to act in the principals' best interests. However, for personal reasons, the agents choose to operate against the interests of the business owners. The cost of monitoring to keep an eye on the agents' behaviour is expected to be borne by the business owners (Jensen & Meckling, 1976).

2.3 Related Empirical Studies

In Kenya, Oduol (2011) investigated the impact of liquidity on listed businesses' leverage. During the period of 2006 - 2010, the study focused on thirty publicly traded companies. Multivariate regression analysis was used to analyze secondary data. Liquidity and leverage have an indirect and minor relationship, according to the findings. Organizations should implement strong working capital management practices as well as short cash conversion cycles, according to the experts. Bei and Wijewardana (2012) tried to figure out if financial leverage has an impact on a company's growth. From 2000 to 2009, the study looked at sixty-two Sri Lankan businesses. Financial leverage is directly associated to business growth and

financial soundness of Sri Lankan firms, according to the findings. From 1999 to 2007, Akinlo and Asaolu (2012) studied the profit profile of Nigerian enterprises and the impact of leverage on profitability of sixty-six Nigerian listed non-financial firms. Chi-square and pooled Ordinary Least Squares were used to analyze the data (OLS). The data revealed that leverage was associated to profitability in an indirect way.

From 2001 to 2012, Enekwe, Agu, and Eziedo (2014) investigated the impact of financial leverage on the financial performance of three publicly traded Nigerian pharmaceutical companies. Financial leverage has an indirect association with financial performance, according to the study. From 2000 to 2005, Kaya (2014) investigated the impact of debt on the profitability and liquidity of US enterprises. According to the findings, highly leveraged retail and wholesale trade firms are more likely to experience liquidity issues, whereas highly leveraged retail enterprises are more likely to experience profitability issues. The results for heavily leveraged wholesale enterprises, on the other hand, are varied. Above all, it was stated that drastically decreased equity prices resulted in greater return on equity for highly leveraged wholesale enterprises.

Onofrei, Tudose, Durdureanu, and Anton (2015) studied the determinants of enterprises' leverage in 385 micro and small businesses in Romania from 2008 to 2010. Liquidity is believed to have a negative relationship with leverage. Gombola, Ho, and Huang (2016) studied the influence of leverage and liquidity on profitability and capital management at US commercial banks between 1999 and 2003. According to the study's findings, aggressive profits management behavior morphed into aggressive leverage and liquidity strategies when all other parameters were equal.

Hiadlovsky, Rybovicova, and Vinczeova (2016) looked at the relationship between liquidity and profitability in 188 tourism-related enterprises in Slovakia between 2011 and 2014. The data revealed a tenuous relationship between profit and liquidity management. Nabeel and Hussain (2017) looked at the influence of liquidity management (current, quick, cash, interest coverage, and capital adequacy indicators) on bank profitability in ten Pakistani banks between 2006 and 2015. The researchers employed both correlation and regression approaches to test their hypothesis. Interest coverage, capital adequacy, and quick ratios have a direct association with bank profitability proxies, according to the study, whereas cash and current ratios have an indirect relationship with bank profitability proxies (ROA, ROE, and EPS).

Edem (2017) examined the impact of liquidity management on the performance (Return on Equity) of twenty-four Nigerian commercial banks from 1986 to 2011. The regression results revealed a strong relationship between liquidity management strategies and return on equity of (DMBs) in Nigeria. Oyedokun, Job-Olatunji, and Sanyaolu (2018) studied the impact of capital structure on the financial performance of ten Nigerian listed manufacturing businesses between 2007 and 2016. There is no statistically meaningful link between capital structure and performance, according to the research.

Hypotheses
The following hypotheses are formulated and tested:
Ho1: Degree of operating leverage has no significant effect on profitability of firms.
Ho2: Degree of financial leverage has no significant effect on profitability of firms.
Ho3: Degree of combined leverage has no significant effect on profitability of firms.
Ho4: Current ratio has no significant effect on profitability of firms.

Ho5: Quick asset ratio has no significant effect on profitability of firms.

3. Methodology
The study used an ex-post facto research design because the data was easily available and retrieved from the sampled firms published annual reports and accounts of the Nigerian Stock Exchange Fact Book.

Population, Sample and Sampling Technique
The population of the study is made up of 28 consumer goods firms that are listed on the Nigerian Stock Exchange's floor as of December 31, 2018. 17 companies were chosen as a sample for the study from 2012 to 2017 using a purposive sampling technique. Appendix 1 has a list of the companies.

Data Analytical Technique
The pooled Ordinary Least Square (OLS) was used in conjunction with the multiple regression method. This is in line with previous research of (Akinlo and Asaolu, 2012; Ibe, 2013; Adenugba et al., 2016; Ghasemi and Ab Razak, 2016).

Variable Descriptions
Dependent variable
The dependent variable used in the study is earnings per share (EPS). It is one of the methods for determining how effective management is at generating and maximizing shareholder wealth using ordinary share capital. It has previously been used as a proxy for profitability in the literature by (Patel, 2014; Raheel and Shah, 2015; Kwarbai, Olayinka, Ajibade, Ogundajo and Omeka, 2016; Nabeel and Hussain, 2017).

Independent variables
Two surrogates for liquidity and three for leverage were employed as proxies for the independent variable in this study. The current ratio and quick ratio are the two variables examined for liquidity, whereas DOL, DFL, and DCL are used as proxies for leverage (Patel, 2014; Raheel and Shah, 2015).

Control variable

In order to make the result of the model robust, firm size has been introduced as control variable. It is suggested that larger firms may attract more profits than smaller firms (Titman and Wessels, 1988; Bevan and Danbolt, 2002; Lipunga, 2014; Kajola, 2015; Djalilov and Piesse, 2016).

Model specification

The specific model used for the study was a modified form of Patel (2014) and Raheel and Shah (2015) models and is provided in equation 3.1.

$$EPS_{it} = \beta_0 + \beta_1 DOL_{it} + \beta_2 DFL_{it} + \beta_3 DCL_{it} + \beta_4 CR_{it} + \beta_5 QR_{it} + \beta_6 SZE_{it} + e_{it} \dots \quad (3.1)$$

Where;

EPS_{it} = Earnings per share of firm in period t

DOL_{it} = Degree of operating leverage of firm in period t

DFL_{it} = Degree of financial leverage of firm in period t

DCL_{it} = Degree of combined leverage of firm in period t

CR_{it} = Current ratio of firm i in period t

QR_{it} = Quick ratio of firm i in period t

SZE_{it} = Size of firm i in period t

e_{it} = Stochastic error term

Measurement

The study measure variables as shown in the following Table 1.

Table 1. Measurement of the Study's Variables

Variable	Acronym	Measure	Expected signal
Dependent variables			
Earnings per share	EPS	Profit before interest and tax (PBIT) Number of equity shares	
Independent variables			
Degree of operating leverage	DOL	Percentage change in PBIT Percentage change in Turnover	+
Degree of financial leverage	DFL	Percentage change in EPS Percentage change in PBIT	+
Degree of combined leverage	DOL	DOL x DFL	+
Current ratio	CR	Current assets Current liabilities	-
Quick ratio	QR	Current assets - inventory Current liabilities	+
Firm size	SZE	Natural log of firms' total assets	+

Source: Authors' compilation, 2022

4. Results and Discussion
Descriptive Statistics

Table 2 presents the descriptive statistics. It shows that the average EPS is 3.7% with corresponding minimum values of -2.51% and maximum value of 42.5%. The average degree of operating leverage (DOL) is 20% with minimum of -109.2% and maximum 1293.1%. Degree of financial leverage (DFL) is averaged 65.9% and ranges between -147.8% and 3886.4%. Also, degree of combined leverage shows an average value of 37.9% and ranges from -109% to 770%. Current ratio is averaged 1.16:1 with minimum of 0.07:1 and maximum of 2.88:1 Quick ratio has a mean value of 0.82:1 with a minimum of 0.05:1 and corresponding maximum of 2.20:1. Finally, log of firm size has a mean of 17.6 and ranges between 14.27 and 22.40. The variable with the greatest variability from mean is DFL with standard deviation of 407.15 and the one with the least variability is QR with standard deviation of 0.474.

Table 2. Summary of Descriptive Statistics

	EPS	DOL	DFL	DCL	CR	QR	SZE
Mean	3.7098	20.0358	65.8699	37.9352	1.1571	0.8194	17.6009
Maximum	42.5000	1293.1010	3886.3710	769.9610	2.8808	2.2017	22.3965
Minimum	-2.5100	-109.2188	-147.7980	-109.0000	0.0740	0.0517	14.2666
Std. Dev.	6.9613	138.1748	407.1527	117.5940	0.5640	0.4737	1.5758
Skewness	3.2339	8.1914	8.4014	4.1441	0.7971	0.8021	-0.1930
Kurtosis	14.9482	73.5214	77.9106	22.1193	3.54162	3.4023	2.7768
Observations	102	102	102	102	102	102	102

Source: Stata output 2022

Correlation

Table 3 shows the correlation matrix of the variables. The degree of operating leverage, current ratio, and quick ratio are all negative indicators of EPS, but the degree of financial leverage, combined leverage, and company size are all favourable indicators. This means that higher DFL, DCL, and company size lead to higher earnings, whereas higher degree of operating leverage and the two liquidity surrogates lead to lower profits.

Table 3. Correlation Matrix

Variables	EPS	DOL	DFL	DCL	CR	QR	SZE
EPS	1.000						
DOL	-0.100	1.000					
DFL	0.154	-0.024	1.000				
DCL	0.378	0.212	0.014	1.000			
CR	-0.167	0.057	0.036	-0.215	1.000		
QR	-0.026	0.062	0.089	-0.185	0.830	1.000	
LSIZE	0.396	0.009	0.111	0.152	-0.203	0.007	1.000

Source: Stata output 2022

Firm size was also found to be positively related to earnings per share, implying that larger firms are attracting higher profits.

Multicollinearity Test

The Variance Inflation Factor (VIF) approach was used to determine whether

independent variables were multicollinear. According to Gujarati and Sangeetha (2008), the main advantage of VIF is its capacity to filter out variables that may alter the regression result from the model. The outcome of the multicollinearity test is shown in Table 4. According to Gujarati (2003), Rumsey (2007), Gujarati and Porter (2009), and Wooldridge (2009), the maximum VIF value of any explanatory variable is 10, as any figure above this indicates the presence of multicollinearity, which can affect the inferences to be drawn from the research.

As shown in Table 4, none of the independent variables has VIF of 10 and above. This confirms absence of multicollinearity issue among explanatory variables.

Table 4. Collinearity Test Result

Variable	VIF	1/VIF
DOL	1.048	.954
DFL	1.001	.999
DCL	1.048	.954
CR	1.243	.945
QR	1.056	.934
Average	**1.079**	**.959**

Source: Stata output 2022

Regression Results

Regression results using pooled Ordinary Least Squares (OLS) technique for the model is presented in Table 5.

The F-statistic for the model is 7.1109 and is significant at 1% level (prob value = 0.000). It depicts the fitness of the model. Durbin-Watson value is 1.104 and is within the acceptable threshold of 1 to 3 (Gujarati, 2003, Asaeed, 2005 and Gujarati and Porter, 2009), indicates that the model does not suffer from problem of serial autocorrelation. Adjusted R^2 is 0.2683, suggesting that 26.8% of the variation in profitability (EPS) can only be explained by the liquidity and leverage proxies used in the study, while 73.2% is due to other factors that are exogenous to the model.

Table 5. Pooled OLS Results

Variables	Coefficient	t-stat	Prob
C	-19.5577	-2.5641**	0.0119
DOL	-0.0090	-2.0181**	0.0464
DFL	0.0017	1.1758	0.2427
DCL	0.0217	4.0347***	0.0001
CR	-2.2529	-1.0890	0.2789
QR	2.7852	1.1665	0.2464
SZE	1.2973	3.1325***	0.0023
Adj. R^2	0.2683		
F – statistic	7.1109***		
Prob. (F – statistic)	0.0000		
Durbin – Watson	1.1043		
Observations	102		

*, **, *** indicate significant at 10%, 5% and 1% level, respectively Source: Stata output 2022

Discussions of Findings

The OLS regression result shows that DOL has an inverse influence on profitability (EPS) at % level, according to the analysis in Table 5. As a result, the lower the profit, the larger the operating leverage. This result is consistent with the study's expectations. The conclusion has the implication that when organizations incur more fixed costs, their profitability suffers. As a result, null hypothesis 1 is rejected. The amount of operating leverage has a big impact on profitability. The findings back up earlier research by Raheel and Shah (2015) and Onofrei et al., respectively (2015). Patel (2014), on the other hand, claimed that leverage had a direct but negligible effect on EPS, contrary to the conclusions of the study.

Financial leverage has a direct and insignificant relationship with EPS. This shows that having a large amount of debt in a company's overall capital structure has a beneficial impact on profitability, which can be linked to the tax benefits, cheap cost of issuing debt capital, and ease of obtaining debt rather than equity. Financial leverage, on the other hand, has a statistically significant negative influence on profitability, in accordance with previous findings of Ahmad et al., (2015). The null hypothesis 2 is therefore rejected. The conclusion that one of the surrogates for leverage is the degree of combined leverage demonstrates that DCL has a large direct effect on profitability (EPS). This result is consistent with the study's a priori signal. The findings imply that financial leverage is a key driver of profitability in Nigerian listed consumer goods firms. In their investigation, Raheel and Shah (2015) found that DCL has no significant connection with EPS. However, this could be a result of the sector and/or economy in question. The null hypothesis 3 is thus debunked.

The current ratio, as one of the proxies for liquidity, was found to have an indirect and minor effect on EPS, contrary to the study's expectations. As a result of this, the null hypothesis 4 is not rejected. Perhaps this is a sign that when businesses get more liquid, their profitability suffers, especially if resources are not widely deployed and prioritized. This conclusion can be justified by the fact that most of the Nigerian consumer goods companies studied are overstocked, which increases their current assets and hence their current ratio. As a result, as more stocks are stocked, profitability suffers since unsold stockpiles generate no revenue. Furthermore, organizations that overinvest in inventory may find it difficult to finance daily operations and pay short-term obligations because of their cash position. This eventually causes operations to change and profits to drop. Our findings have been validated by Nabeel and Hussain (2017) and Ahmad (2016).

The quick ratio has a positive effect on profitability, but it is not considerable. This contradicts the a priori signal of the study. This conclusion can be justified by the fact that inventory, which is considered to earn no return if not sold, is deducted from the current ratio before it is divided by current liability, and as a result, businesses are expected to keep more receivables, income received in arrears, prepaid expenses, and cash. These are more liquid than inventories, and as a result, they may be easily released to improve liquidity position performance and, as a result, contribute to successful operations and greater profitability. The effect of size on the control variable was found to be positive but insignificant. Bjarni (2007), Kolapo, Ayeni, and Oke (2012), Samad (2015), and Kajola, Adedeji, Olabisi, and Babatolu (2007) all corroborate the conclusion (2018).

5. Conclusion and Recommendations

The study looked at the influence of debt and liquidity on profitability of 17 publicly traded consumer products companies in Nigeria from 2012 to 2017. The study's findings, which used the pooled Ordinary

Least Squares (OLS) technique as an analytical tool, revealed that leverage has a significant impact on profitability, whereas liquidity has none. The degree of operating leverage has a substantial indirect impact on profitability; the degree of financial leverage has a moderate direct impact on profitability; and the degree of combined leverage has a significant and beneficial impact on profitability. The fast ratio had a marginally beneficial effect on profitability, but the current ratio had a marginally negative effect. The associated low cost of issuing debt compared to stock is one of the reasons why debt financing can have a significant beneficial effect on profitability. Companies should take advantage of debts' tax shelter from interest in their financial structure, as well as implement a robust liquidity management framework that includes effective inventory monitoring and control, as well as short-term securities (treasury bills and certificates) investment whenever excess liquidity arises, according to the findings of this study. To improve the study's robustness, future research could use a larger sample size and a longer study period. Similar studies can be conducted in a variety of industries.

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Appendix

List of Sample Firms

S/N	Name of firm	Year of Incorporation
1	Nigerian Breweries Plc	1946
2	Guinness Nigeria Plc	1962
3	7up Bottling Company Plc	1959
4	Nigeria Enamelware Plc	1960
5	Flour Mills of Nigeria Plc	1960
6	Vita foam Nigeria Plc	1962
7	PZ Cussons Nigeria Plc	1948
8	NASCON Plc	1973
9	Honeywell Flour Mills Plc	1983
10	Dangote Sugar Plc	2005
11	Dangote Flour Mills	2006
12	Cadbury Nigeria Plc	1965
13	Unilever Nigeria Plc	1923
14	Nestle Nigeria Plc	1961
15	Northern Nigeria Flour Mills Plc	1971
16	Champion Brewery Plc	1974
17	MC Nicos Nigeria Plc	2000

Source: Nigerian Stock Exchange Fact Book 2020.