Strategic Management of Growth in Manufacturing Companies in Sub-Saharan Africa: A Case Study of Nigeria

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Authors' contributions

This work was carried out in collaboration between author SAA and RIA. Author SAA designed the study, wrote the protocol, and wrote the first draft of the manuscript and managed the literature searches, analyses of the study. Author RIA read through the manuscript, do more work on literature searches and made correction and suggestions to improve the quality of the research. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Our paper aims at assessing the relationship between sustainable growth rate and growth indices in manufacturing companies in sub-saharan Africa with special reference to Dangote group of companies in Nigeria between 2008-2012. The general objective of the study is to investigate the determinants/components of sustainable growth rate. R^2 measured as the proportion of the variation in the dependent variable (GRO) that was explained by variations in the independent variables (ROA, CST, TAT, DPR and CFR). We carried out correlation analysis to show the relationship among the variables as well as regression analysis to show the impact and effect of independent variables; ROA, CST,TAT, DPR and CFR on dependent variable; GRO. The result

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showed that 1% increase in ROA and CFR is expected to lead to 67.1 % and 18.5% in GRO respectively. In addition, 1% increase in CST, TAT and DPR led to 1%, 2.3% and 58.1% in GRO respectively. The result of the correlation showed that null hypotheses 1, 4 and 5 were rejected while hypotheses 2 and 3 were accepted. ANOVA method was used to assess the overall significance of the model. The outcome revealed that the model is significant with F- value of 30.684 and P- value of .000. The result indicated that the model is significant as shown in the value of F-value of 30.684 and a P-value of .000 which is less than 0.05. The effect of the growth components on growth was assessed through regression analysis. The result showed that there was positive relationship between GRO and ROA and CFR. Similarly, there were inverse relationship between GRO and CST, TAT and DPR. It was concluded that the overall sustainable growth rate is enhanced if 'target variables' are well managed.

1. INTRODUCTION

In financial management literature, sustainable growth rate is the realistically attainable growth rate that a company could maintain without running into problems [1]. The rapid growth of a company is likely to cause or bring about difficulty in funding the growth. The other side of the coin is that a business that grows too slowly or not at all may stagnate. Consequently, a sustainable growth rate is the maximum growth rate that a company can sustain without having to increase financial leverage. Sustainable growth models assume that the business wants to maintain a target capital structure without issuance of new equity, maintain a target dividend payment ratio and increase sales as rapidly as market conditions allow [2].

Therefore, sustainable growth is best referred to as how fast a firm can grow while at the same time striking a balance between its sources and uses of funds. That is the rate at which a firm can grow hitting an equilibrium between the source and uses of fund. It describes how far a company can grow with its present profit margin, asset efficiency, retained earnings and leverage. In other words sustainable growth is the rate of growth that is most realistic estimate of the growth in a company's earnings with the assumption that the company maintains its capital structure [3].

Creation of sustainable growth is pre-occupation of small business owners as well as that of big corporate executives. Evidently, achieving this goal is not an easy task, in the face of rapidly changing political, economic, competitive and consumer trend.   Each of these tendencies presents unparalleled difficult tasks to business leaders looking for the ways of maintaining sustainable growth rate. Customer expectations have changed considerably over the last few generations. Similarly, competition is keen in nearly all industries, which have seen unprecedented breakdowns in the barriers that formerly separated them.

The sustainable growth model highlights conflicts among a firm's competing objectives. A higher asset turnover ratio (greater asset efficiency) means a higher sustainable growth rate. A lower dividend payout ratio means higher growth rate, as well as a higher profit margin. A higher leverage ratio (assets to equity) also means a higher sustainable growth rate. If a firm decides to grow at a rate above its sustainable rate, the firm may have higher debt (the firm borrows to increase its assets to equity ratio) more retain earnings (the firm lowers its dividend payout ratio), a higher profit margin (the firm cut costs), or fewer assets (the firm makes more efficient use of its assets. The opposite is the case if a firm decides to grow at a rate below its sustainable grow rate. The sustainable growth rate is a measure that firms uses for different purposes, such as to evaluate the credit worthiness of companies. If the actual growth rate in the sales of a company is greater than the sustainable growth model rate, financial institutions are prepared to advance loans to the company or to assist in the issue of shares in order to provide the capital needed. If on the other hand actual growth rate of sales is consistently lower than the sustainable growth rate, the cumulative cash surpluses would need to be invested and the financial institution may offer investment products to the company.

The main thrust of this paper is to find out relationship between sustainable growth rate and grow indices. This is specifically tested by examining the extent of relationship between sustainable growth rate and profitability, finding

out the relationship between sustainable growth rate and capital structure, investigate relationship between sustainable growth rate and asset utilization, determining the relationship between sustainable growth rate and cash generated from operation and finally assess the relationship between sustainable growth rate and dividend payout.

1.1 Research Objectives

The general proposition of this study is to examine the association between sustainable growth rate and growth indices

Specifically, the study is set to achieve the following objectives:

- To assess the relationship between sustainable growth rate and profitability;
- To determine the extent of the relationship between sustainable growth rate and capital structure;
- To evaluate the relationship between sustainable growth rate and asset utilization;
- To examine the relationship between sustainable growth rate dividend payout; and
- To ascertain the relationship between sustainable growth rate and cash generated from operation.

1.2 Research Questions

- To achieve the above stated objectives, the following are the pertinent questions:
- To what extent is the relationship between sustainable growth rate and profitability?
- What is the relationship between sustainable growth rate and capital structure?
- What is the extent of the relationship between sustainable growth rate and asset utilization?
- What has been the relationship between sustainable growth rate and dividend payout?
- To what extent is the relationship between sustainable growth rate and cash generated from operation?

1.3 Research Hypotheses

To provide answers to the above research questions, the following are the research hypotheses formulated in null form:

$H_0 1$. There is no significant relationship between sustainable growth rate and profitability.

$H_0 2$. There is no significant relationship between sustainable growth rate and capital structure.

$H_0 3$. There is no significant relationship between sustainable growth rate and asset utilization.

$H_0 4$. There is no significant relationship between sustainable growth rate and dividend payout.

$H_0 5$. There is no significant relationship between sustainable growth rate and cash generated from operation.

1.4 Conceptualization of Variables

Sustainable growth is a function of profitability, capital structure, assets utilization, dividend payout and cash generated from operation. This relationship is shown below:

$$Y = f(X)$$

Where:

Y= Sustainable growth rate measured as a product of the return on equity and earnings retention (GRO).

$$X = f(x_1, x_2, x_3, x_4, x_5)$$

x_1 =Profitability measured as return on capital employed (ROA) = EBT/ASSETS (PRO).

x_2 =Capital structure measured as Debt/Equity(CST).

x_3 =Assets Utilization measured as Sales/Total Assets (TAT).

x_4 =Dividend payout measured as Dividend paid/Earnings available to equity holders(DPR)

x_5 =Cash generated from operation measured as Fund generated from operation/ Total Sources of fund (CFR).

The relation is as follows:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \varepsilon$$

where:

β_0 is the intercept of the model. It is the level of sustainable growth the companies can sustain when profitability, capital structure, assets utilization, dividend payout ratio and cash generated from operation are considered

irrelevant. β_i (i = 1, 2,3, 4, 5,) are the coefficients of the respective components of sustainable growth by the companies. ϵ is the stochastic variable introduced into the model to accommodate the influences of other variables that may shape sustainable growth rate of the companies but which are not explicitly included in the model.

1.5 History of Dangote Group of Companies

The Dangote Group is a diversified conglomerate, with headquarter in Lagos, Nigeria with business interests across a range of sectors in Africa. Initially, current interests include cement, sugar, flour, salt, pasta, beverages and real estate, with new projects in development in the oil and Natural gas, telecommunications, fertilizer and steel. The main focus of the group is on provision of local, value-added products and services that meet the needs of the African population. Dangote cement the largest cement production company in Africa, with a market capitalization of almost US$14 billion on the Nigeria Stock Exchange has subsidiaries in Benin, Cameroon, Ghana, Nigeria, South Africa and Zambia. In December 2010, the group signed an agreement with the Government of Zambia to construct a US$400 million cement plant in Zambia. If the plant is completed in June 2013, as planned, the new plant is expected to have an annual output of 1.5 million metric tonnes of cement.

1.6 Literature Review

This section is considered under two headings namely; conceptual and theoretical frame work

1.6.1 Conceptual frame work

The concept of sustainable growth model that was well known is that of the Boston Consulting Group (BCG Model) [4]. This was followed by [5] He demonstrated that the financial policies of many companies might be at variance with their growth objective. Other authors like [6,7,8] contributed to concept of sustainable growth.

The sustainable growth of any company is determined by the following factors: (1) profit margin, (2) asset utilization, (3) financial policy, (4) dividend policy [7,8,9]. Another important factor is cash generated from operation.

1. 6. 2 Theoretical frame work

1.6.2.1 Sustainable growth model rate

Over the years, a number of authors had developed models on sustainable growth. These models can be grouped into two areas: traditional (debt/equity) determined and cash flow- determined models. The traditional growth rate model use the debt: equity or debt: total assets (as determined in the balance sheet). The grow rate of capital intensive companies are best determined with traditional model [8] in [10].

Five models have been described in this study according to the dates the model was developed:

1.6.2.2 Zakon model

A well known model is that of the Boston Consulting Group's Model (BCG)

$$SG=[D/E.(R-i).p]+R.p$$

Where: SG=sustainable growth rate; D/E=debt/equity ratio; R = ROA; i = interest rate (1-taxation rate); and P =retention ratio.

The above sustainable growth is based on the assumption of additional debt but no additional equity issues [11].

1.6.2.3 Higgen's model

$$SGR=(P)(1-R)(1+L)/A-(P)(1-R)(1+L)$$

Where: P=Profit margin on Sales After Taxes; R=Percent of Profit Returned to Owners; L=Debt to Equity Ratio

$$SGR=b(NP/S)(1+D/Eq)/(A/S)-b(NP/S)(1+D/Eq)$$

Where: A/S =rate of total assets and sales; NP/S=net profit rate; b=retained profit; D/Eq= ratio of debt and equity; and S=sales in the recent year [12].

1.6.2.4 Van horne's model

In the words of Van Horne [6], sustainable growth rate is the maximum annual percentage increase in sales attainable based on target operating, debt and dividend-payout ratios. In agreement with this definition, it is possible for a company to detect of its forecasted sales are deemed to be an accurate goal. This model developed by Van Horne is the quantitative descriptive of the sustainable growth rate which

is the variance of the sales income, i.e. SGR or $\frac{\Delta S}{S}$

SGR=b(NP/S)(1+D/Eq)/(A/S)-b(NP/S)(1+D/Eq).

Where profits, A/S is the rate of the total assets and the sales, NP/S is the net profit rate, b is the retained profits (1-b) the dividend ratio, D/Eq is the ratio of the debt and equity, S is the sales in the recent year, and ΔS is absolute variance of *the sales in the recent year* [12]

The idea is that an increase in assets (a use of funds) must equal in liabilities and shareholders' equity (a source of fund. The assumption is based on steady state as there would be changes in the model if the underlying variables change.

1.6.2.5 Ross, westerfield and jordan model

The following formula to calculate sustainable growth rate was developed on the assumption that the firm is operating at full capacity, balance sheet items and net profit margin change over time proportionally with change in sales and variable liability is not a source of internal financing and, and at the same time, it is not a part of debt.

$$SGR = \frac{ROE \times b}{1 - ROE \times b} \times 100$$

Where: SGR= Sustainable growth rate; ROE= Return on Equity; and b= Retention ratio.

This formula adopted the Percentage of Sales Approach (POSA). Another problem of this version of sustainable growth rate formulation is that if the effect of Debt/Equity ratio is to be examined return on equity (ROE) will have to be calculated with new set of data. This model is based on the following assumptions: (ii) the firm is operating at full capacity; (ii) balance sheet items and net profit margin change overtime proportionately in sales and (iii) variable liability is not a source of internal financing and at the same time is not a part of debt.

1.6.2.6 Simple growth model

The simple model for calculation of sustainable growth is:

g= ROE×RR

Where;

G =Sustainable growth rate;

ROE =Return on Equity and
RR = Retention Rate

Sustainable growth can be associated with fundamental factors of the corporate performance and financial condition using the Du Pont break down. In the Du Pont analysis of the return on equity, it is discovered that return on equity is the product of the net profit margin, the total asset turnover and equity multiplier.

[13], addresses the nature and magnitude of errors generated in calculating sustainable and internal growth rates by mismatching return on assets (ROA) or return on equity (ROE) with a model dependent upon the method used to calculate return on assets or return on equity. In the study conducted by [8] sustainable growth rate and firm performance; the study revealed that the deviation of actual growth rate from sustainable growth rate is having relationship with return on asset, price to book ratio and liquidity ratio. A comparative analysis of sustainable growth pattern was conducted by [14]. In this study four existing sustainable growth models were compared. The study revealed the advantages and limitations of the four existing sustainable growth models in logic and practice respectively. In the same vien, [15] carried out a study to analyze whether there is a significant difference among widely used Higgins model and affected by variations in the Van Horne model and whether these two competing sustainable growth models estimate divergences in ways that are systematically related to variations in common financial characteristics. It was discovered that Higgin's sustainable growth rate when it was used as continuous and dichotomous variables is more affected by variations in financial characteristics than Van Horne's model. The study therefore confirmed that Higgins and Van Horne's models are qualitatively and approximately the same in relation to most common financial characteristics of a firm. [16] concluded that the concept of a sustainable growth rate addresses the strategically important question of whether or not the firm's proposed plans can be funded within its existing financial parameters.

[17,18], used different models without adequate explanations as to why and obtaining the same result. [19] conducted a comparative analysis of two growth models which derived from [5] model. The conclusion was that sustainable growth rate models work consistently and there is no significant difference. However, he used a simple

and "fictitious classroom kind of illustration" and his figures were also hypothetical. Hence, it may be inadequate for broad scientific explanations. [16] offered a brief discussion on various sustainable growth rate models that existed in the literature. In his study, he failed however, to explain any difference among the models and when and where managers can apply these models for the computation of a firm's sustainable growth model.

2. METHODOLOGY

[6,20] pointed out that variables used in a sustainable growth rate model (SGR) are called "target variables" which are considered as accounting ratios. The calculated SGR therefore provides snapshot of a company's financial situation. Target ratios are industry specific and more care was taken not to compare the SGR of firms in different industry. From the foregoing, industry in the consumer goods with companies belonging to Dangote companies under this sector was selected for this study. Hence, a property- disposition relationship research design was adopted due to the characteristics of both the dependent variable and independent variables.

The data utilized in this study is secondary extracted from the financial statements of the selected companies [21,22,23]. The methodical reasons for using secondary data are as follows: Secondary data, if reliable and accurate, provides opportunity for replication. The availability of data over time enables the researcher to employ longitudinal research designs. It improves measurement by expanding the scope of independent variables employed in the operationalization of concepts. Finally, secondary data can be used for triangulation, that is increasing the validity of research findings

obtained with primary data [24]. On economic reason, it is cheaper to use existing data rather than to collect new data.

3. DATA ANALYSIS

3.1 Model Summary

Table 1 is the model summary. The proportion of the variation in the dependent variable (GRO) that was explained by variations in the independent variables (ROA, CST, TAT, DPR and CFR) was measured by R-Square. In this investigation, 96.6% of the variation was explained while 3.4% was unexplained. In like manner, the proportion of the variance in the dependent variable (GRO) that was explained by variations in the independent variables (ROA, CST, TAT, DPR and CFR) was measured by Adjusted R- Square. In this situation, it was revealed that 88.7% of the variance was explained while 11.3% was unexplained. Durbin-Watson test was used to find out whether or not there was autocorrelation in the residuals. Durbin- Watson have an upper limit of four and lower limit of zero. If the value is equal to two, then there is no autocorrelation. In this case the value of Durbin-Watson was 2.084 which showed that there was no auto correlation in the residuals [25].

3.2 Overall Significance of the Model

The overall significance of the model was assessed by the ANOVA table as shown in Table 2. The F –value is
30.684 and p – value is 0.000 which is less than 0.05; indicating that there is significant relationship between stainable growth sustainable growth rate and growth indices.

Table 1. Model summary[b]

Model	R	R square	Adjusted R square	Std. Error of the estimate	Durbin-watson
1	.957[a]	.916	.887	.12209	2.084

a. Predictors: (Constant), CFR, CST, ROA, DPR, TAT
b. Dependent Variable: GRO

Table 2. ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.287	5	.457	30.684	.000[b]
	Residual	.209	14	.015		
	Total	2.495	19			

3.3 Correlation Analysis

It is imperative to check the correlation between different variables on which the analysis was built. Correlation expounds how two variables respond to each other. Therefore, to investigate the relationship between different variables, Pearson Correlation Moment was used. Table 3 showed that GRO has positive relationship with ROA at 5% significant level and CST but negative relationship with TAT, DPR and CFR at 5% significant level respectively.

The results of the overall correlation implied that hypotheses 1, 4 and 5 were rejected. This revealed that there significant relationship between SGR and ROA, DPR as well as CFR. On the other hand, hypotheses 2 and 3 were accepted on the ground that there was no existence of significant relationship between GRO and ROA as well as CST. From Table 3, the absolute value of the correlation is low; having the maximum value of 0.403. This was interpreted to be absence of multi-collinearity among variables while value higher than 0.80 was considered as indicator of multi-collinearity.

3.4 Regression Analysis

The main drawback of Pearson Correlation is that it is very difficult if not impossible to differentiate causes from consequences. Hence, to overcome this weakness regression analysis was used investigating the impact of ROA, CST, TAT, DPR and CFR on GRO. The results were presented in Table 4. For the sake of emphasis, the relation connecting dependent variable and explanatory variables is shown below::

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \varepsilon.$$

The Unstandardized Beta Coefficients of the variables in Table 4 showed that all the explanatory variables contributed to the variation in the dependent variable, but at varying degree as indicated below:

GRO= -.217 +.671ROA - .001CST - .023TAT - .581DPR + .185CFR +ε

The result as shown above indicated that in the absence of profitability, no capital injected into the company, assets are not utilized, no cash flow and no dividend is paid, there would be negative growth, that is no growth which is normal expectation.

The effect of profitability (ROA) on growth is positive at P-value equals .000. This means that as profitability increases there will be increase in growth, all other things being equal. There is inverse relationship between GRO and CST although it is not significant. This means that the manner and the way a company is financed has effect on the growth of the company. There is negative relationship between GRO and TAT which is not significant. The implication is that assets utilization has bearing on the growth of the company. If the assets are utilized judiciously, the better for the company, this eventually will culminate into growth of the company. Similarly, there is inverse relationship between GRO and DPR which is significant while in the case of GRO and CFR there is positive relationship which is not significant.

3.5 Hypotheses Testing

The information in Table 4 above was used to test the hypotheses formulated above.

The decision rule is that Null hypothesis is rejected if P- value is less than .05.

The result of the hypotheses disclosed that the P- values for ROA and DPR is .000 and .001 respectively. Since this is less than .05 therefore, hypothesis 1 and 4 were rejected. This means that there is significant relationship between GRO and ROA; and DPR. Furthermore, the result showed that the P- values for CST, TAT and CFR are .992, .685 and .526 respectively which is greater than .05, indicating acceptance of hypotheses 2,3 and 5. It therefore means that there is no significant relationship between GRO and CST, TAT and CFR.

The result of the hypotheses as shown in Table 5 showed that sustainable growth model involves considerations of growth, investment and financing. The means of ascertaining the growth potential of a company giving the current financial conditions is to evaluate the impact among the four financial policy goals is expressed as ratios of: (i) target sales growth; (ii) target return on investment; (iii) target dividend payout and (iv) target debt-equity, that is capital structure.

Table 3. Pearson correlation moment

	GRO	ROA	CST	TAT	DPR	CFR
GRO Pearson correlation	1					
Sig. (2-tailed)						
ROA Pearson correlation	.376*	1				
Sig. (2-tailed	.000					
CST Pearson correlation	.191	.064	1			
Sig. (2-tailed)	.420	.789				
TAT Pearson correlation	-.386	-.240	-.355	1		
Sig. (2-tailed)	.093	.309	.011			
DPR Pearson correlation	-.409*	-.277	-.300	.349*	1	
Sig. (2-tailed)	.004	.237	.198	.047		
CFR Pearson correlation	-.486*	-.423	.060	.403	.200	1
Sig. (2-tailed)	.030	.063	.802	.708	.025	

correlation is significant at the 0.05 level (2-tailed)

Table 4. Coefficients[a]

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	-.217	.118		1.836	.088
	ROA	.671	.074	.781	9.107	.000
	CST	-.001	.108	-.001	-.010	.992
	TAT	-.023	.056	-.044	-.414	.685
	DPR	-.581	.137	-.405	-4.245	.001
	CFR	.185	.284	.065	.651	.526

Source: Researchers' Computation

Table 5. Hypotheses testing

Model	Coefficient	t-statistics	Sig. Level	Hypotheses	Decision
ROA	.671	9.107	.000	H_01	Rejected
CST	-.001	-.010	.992	H_02	Accepted
TAT	-.023	-.414	.685	H_03	Accepted
DPR	-.581	-4.245	.001	H_04	Rejected
CFR	.185	.651	.526	H_05	Accepted

Source: Table 4

4. CONCLUSION

The cardinality of strategic growth management cannot be over emphasized. This is because the research work showed that the overall sustainable growth in Dangote companies is enhanced by 'target variables' that is profitability, capital structure, total asset turnover, dividend payout and cash flow. The result of the study showed that there is significant relationship between sustainable growth and profitability in one hand and significant relationship between sustainable growth and dividend payout on the other hand. In addition the study showed that there is no significant relationship between sustainable growth and capital structure, total

asset turnover and cash flow. Sustainable growth rate is a practically applicable concept in the modern financial management context which can be used as a strategic planning and controlling indices of a firm.

Achieving sustainable growth as argued by the economists and business researchers is not feasible without attention being paid to growth strategy and grow capability. Hence, companies that ignore either of the two are bound to fail in their endeavour to establish practices of sustainable growth.

Therefore, there is need for management to formulate strategy on policies to be pursued as it

affects all the variables that are connected in one way or the other with sustainable growth rate vis-a- vis profitability, capital structure, asset utilization, dividend policy and management of cash flow. Further research should be conducted taking into consideration more financial ratios and can as well be directed towards other industry in the Nigerian Stock Exchange.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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