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**COMPARATIVE FINANCIAL PERFORMANCE ANALYSIS OF BERGER PAINT NIGERIA PLC USING
DUPONT ANALYSIS AND CASH FLOW RATIOS**

ALAYEMI, SUNDAY ADEBAYO PhD.

**Department of Accounting, Faculty of Business and Social Sciences,
Adeleke University, Ede Osun State
Nigeria.**

AND

ADEOYE, EBUNOLUWA TOKUNBOH PhD.

**Department of Accounting, Faculty of Business and Social Sciences,
Adeleke University, Ede Osun State
Nigeria.**

Abstract

The study examined comparative analysis of financial performance of Berger Paint Nigeria Plc. using DuPont analysis and cash flow ratios. The primary objective of the study is to assess the micro approach in analyzing performance of Berger Paints Nigeria Plc. using DuPont analysis method of appraising financial performance and cash flow ratios bringing the superiority of cash ratios over earnings which is the main assumption of DuPont. The scope of the study covered a period of ten years (2010-2019) of Berger Paints Nigeria Plc. because the company was the first paint manufacturer to be established in Nigeria and a leading company among the paint manufacturer in the country. The data for the study were obtained from the financial statements of the company as published by the company through Nigeria Stock Exchange. Basically, the results of DuPont analysis was compared with that of cash flow ratios by examining the mean (M) and compound annual growth (CAGR) as well as correlation between the dependent variable and explanatory variables. The results revealed that a complete appraisal of cash is possible instead of income/earnings. Cash is the life blood of any organization. An entity may experience growth in earnings but may not be liquid after all. Hence profitability is not the same thing with liquidity. **Keywords: Financial performance, Profitability Ratios, DuPont Analysis, Cash flow Ratios.**

Introduction

The company, Berger Paints Nigeria Plc. was incorporated in Nigeria as a private limited liability company on 9th January, 1959. It was converted to a public limited liability company in 1973. In March 14, 1974 the shares of the company were quoted on the Nigerian Stock Exchange. In October 22, 2013 its subsidiary, Lewis Berger Paints Ghana limited was incorporated.

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The principal activities of the company remained the manufacturing and marketing of paints and allied products. As at the moment, the company; Berger Paints Nigeria Plc. has become a leader in the coating and allied industry in Nigeria. For several decades, the company has been a front liner in the provision of quality paints and allied coatings that meet the aspiration of various sectors of the economy. The Company is reputed to be the first in setting standards in the paint industry in Nigeria. Its scorecard includes the following:

- First paint manufacturer to be established in Nigeria.
- First Paint Company to be quoted on the Nigerian Stock Exchange.
- First paint researcher to introduce textured coating named Texcote to the Nigeria market.
- First to develop, manufacture and supply coil-coating paint to aluminum factories in Nigeria.
- First paint Company to win the Nigerian Stock Exchange Merit Award.
- First to develop and supply Thermo Setting Acrylic paints to local industries.
- First paint manufacturer to win NIS Award from SON for premium and market quality decorative products.
- First to win the National Merit award for local raw materials utilization in the paints industry.
- First to develop tropicalised and environment friendly paint products to the Nigerian market.
- First to introduce full process tamper-proof colour paint containers to the Nigerian market.

Berger Paints Nigeria Plc. (BPN) is known for pioneering new products and setting the pace in the paints and allied coating sector.

One of such specialty products is Berger Fire Retardant Texcote, a textured finish which has been very successful in capturing the imagination of many consumers. Berger Fire Retardant Texcote has now been adopted as the generic term for textured paint in Nigeria. Berger Rufhide, wall putty with superior adhesive strength and capability over conventional Plaster of Paris and other screeding materials, is the first of its kind in the Nigerian market.

Aims of the Study

The study is based on the micro approach to analyze performance of Berger Paints Nigeria Plc. using DuPont analysis and cash flow ratios.

Specifically the objectives of the study are:

1. To analyze the financial performance of Berger Paint Nigeria Plc., using DuPont and Cash ratios.
2. To determine the Return on Equity (ROE), Cash Return on Equity (CRE) and also to study the correlation of various performance indicators which are the determinants of Berger Paints Nigeria Plc. performance?

Literature review

DuPont model as a financial analysis had been employed by many researchers to assess the financial performance of entities in finance and non-finance sector of the economy. The

DuPont model a derivative of an analysis of return on equity sequesters or separates performance into three components: Operating efficiency ratio which is measured by profit margin, asset use efficiency which is measured by total asset turnover, and financial leverage which is measured by the equity multiplier as elucidated in the work of Ahmad 2016, and Srilakshmi and Satyanarayana, 2019.

The idea regarding the development of DuPont model to evaluate the profitability of a business dated back to early 1900s (Sheela and Karthikeyan, 2012). From the available literatures, the model had been reworked or revamped two times after its initial conception. The origin of DuPont method of financial ratio analysis dated back to 1918 when it was conceptualized and developed by F. Donaldson Brown, an engineer at DuPont who was in charge of understanding the finances of a company that DuPont was taking over. He made a discovery of a mathematical relationship between profitability and return on equity (ROE) and return on assets (ROA) as a determinant.

From available literatures, it was stated that original DuPont model was firstly employed in internal efficiency report in 1912 which was the product of profit margin (a measure of profitability) and asset turnover (a measure of efficiency). The formula of original DuPont model as conceptualized by its initiator is illustrated below:

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets Turnover}} = \frac{\text{Net Income}}{\text{Assets Turnover}} \quad (1)$$

$$\text{Return on Equity (ROE)} = \text{ROA} \times \frac{\text{Total Assets}}{\text{Shareholder Equity}} \quad (2)$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Shareholders Equity}} \quad (3)$$

Critical analysis of return on assets revealed that it has impact on both profitability and efficiency, operating decisions of a firm vis-a-vis planning and control, thereby focusing on maximization of ROA as the main goal before 1970s. However, after 1970s the goal maximization of ROA was shifted to ROE resulting in the first modification of the DuPont model; by shifted the focus from ROA to ROE, debt or leverage as a third area of attention was incorporated.

This adjustment made the DuPont model potency and strong tool for strategic decision making within an entity to increase ROE (Collier, McGowan and Muhammad, 2006). The latest alteration to the DuPont model incorporates a fusion of five ratios to determine ROE. With the concentration of attention on annual reports and accounts from a managerial perspective to determine a firm's financial performance, the significance of operating decisions (profitability and efficiency) and financing decisions (leverage) upon ROE continues to be critical, and recent facts or observations have shown that.

This adjusted DuPont approach can be employed to establish the causes of financial difficulties within manufacturing companies as opined by Liesz and Maranville, 2008. Similarly, in the work of Little et al, (2009) and Rogova (2014), DuPont analysis effectively showed factors of efficiency which had, in turn, impacted on the investment appeal of Russian oil-extracting companies. It was found that a strong advantage of ROE was the possibility of its division or braking up into constituent parts into different profitability ratios, with ROE indicating profitability and efficiency from the point of view of shareholders.

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Yet another modification was introduced by Hawawini and Viallet (1999) to the DuPont model. The actually adjusted DuPont model comprised of five ratios that merge to make up the ROE. The actually adjusted DuPont model is explained below in equation 4 and 5

$$\frac{\text{Net Income}}{\text{Average Shareholder Equity}} = \frac{\text{Net Income}}{\text{EBIT}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Avg.Total Assets}} \times \frac{\text{Average Total Assets}}{\text{Average Shareholder Equity}} \quad (4)$$

Where:

EBIT = Earnings before interest and tax

EBT = Earnings before taxes

ROE = Tax burden × Interest burden × EBIT margin × Total Assets turnover × Leverage (5)

In the work of Liesz 2002, this actually modified model still maintains the importance of the impact of operating decisions (i.e. profitability and efficiency) and financing decisions (leverage) upon ROE, but uses five ratios in total to reveal drivers of ROE and give insight to how to enhance this crucial ratio. Looking at the right-hand side of equation 5; the first item is called Tax burden which measures the effect of taxes on ROE. It is a measure how much of company's pretax profit is kept. The second item is called interest burden which measures the effect of interest on ROE. The higher the borrowing costs the lower ROE. The third item measures the impact of operating profitability on ROE.

The fourth item is the asset turnover which measures how effective the company is in utilization of its assets to produce revenue. The fifth item is financial leverage which is the total amount of company's assets relative to its equity capital. The disaggregation is a useful method for market participants as it shows a company's ROE as a function of its tax rate, interest burden, operating profitability, efficiency and leverage. Modified DuPont model can be used by market participants to determine what factors that drive company's ROE.

The DuPont system of financial analysis is based on return on equity, with the components of this ratio being the net profit margin, the total asset turnover and the equity multiplier (McGowan and Stambaugh, 2012). DuPont analysis is a favoured method to appraise the market value of a firm, indicating the leverage of a company to enhance future profitability through more efficient utilization of its assets which will, in turn, better the return to shareholders – higher leverage being favoured for would be or potential investors.

Demmer (2015) reported documentation in prior literature on the usefulness of DuPont disaggregation for predicting a firm's future profitability, operating income, and stock market returns and concluded that changes in profit margin provide important and relevant information on future return on assets. His findings also imply that DuPont components are partially influenced by the quality of the firms' expected earnings. He pointed to recent financial statement analysis (FSA) research which had shown the usefulness of change in profit margin for predicting year-ahead changes in RNOA (Demmer, 2015).

According to Dechow et al. (2010), the quality of earnings is recognized as higher when in the event of provision of more information about the features of a firm's financial performance for making decision, which, in turn, is a function of the specific situation. It has

also been stated in prior literature that the accounting system has influence both future profitability and market reactions of a firm (Demmer, 2015). Investment decisions affect the operating leverage of a firm, and financing decisions have impact on the degree of financial leverage of a firm. These, in turn, ascertain the future cash flows of the firm (Collier, McGowan and Muhammed, 2006).

According to Soliman (2008), changes in asset turnover is positively related to future changes in earnings, and he goes on to discuss the extent to which competitive forces differently affect the profitability of a firm, noting that large profit margins draw new entrants into the market place or result in existing rivals imitating the new ideas. However, he found that competition may be less threatening to an efficient deployment of assets. If production processes are efficient, it makes it difficult to imitate another firm's idea due to the large cost factors involved. Soliman's findings contributed to literature on the sell-side analyst use of accounting information. He argued that if DuPont components map into equity value, analysts could use this information when creating forecasts and reviewing prior literature about the future profitability of the firm (Soliman, 2008).

Blessing and Onoja (2015) agreed that profitability; assets, liabilities and equities are significant ways of appraising performance reports of entities and for making investment decisions. However, they noted that published financial statements failure in their responsibility for the provision of credible and reliable information for investors and other users of financial statements.

Methodology / Result

Ratio analysis has been one of the most important methods adopted by analysts to carry out evaluation of the financial performance of an entity organization. This work was designed for appraising the performance of Berger Paint Nigeria Plc. using DuPont method analysis cum cash ratios to bring out which of the two methods of appraisal is superior when it comes to performance of an entity. Numbers of the most popular ratios had been adopted for measuring the performance of Berger Paint Nigeria Plc.

In this study. The researcher computed these ratios using secondary data Net Profit Margin, Assets Turnover, Equity Multiplier and Return on Equity (from DuPont point of view) and cash generating power, cash flow coverage, capital expenditure coverage and cash return on equity (from cash ratios point of view) . These computed ratios were further analyzed by computing averages (Mean), compound annual growth (CAGR) and correlation. The study of the financial performance of Berger Paints Nigeria Plc. has been restricted for a period of 10 years from 2010-2019.

The data used for the analysis is compiled from the secondary data collected and collated from the annual reports of Berger Paints Nigeria Plc. as published in the annual report and account and information from Nigeria Stock Exchange, and data base of Nigeria Bureau of Statistics.

Table 1: Result of DuPont Analysis of Berger Paint

Year	Net Profit Margin	Asset Turn over	Equity Multiplier	Return on Equity
	A	B	C	D= AxBxC

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	%	Times	%	%
2010	0.17	1.13	1.50	0.27
2011	0.09	0.96	1.55	0.13
2012	0.07	0.86	1.64	0.10
2013	0.10	0.93	1.67	0.09
2014	0.05	0.85	1.48	0.06
2015	0.11	0.78	1.51	0.13
2016	0.00	0.63	1.58	0.09
2017	0.08	0.72	1.63	0.09
2018	0.10	0.74	1.61	0.11
2019	0.13	0.71	1.65	0.15
Mean	0.09	.83	1.57	.12
CAGR %	-2.65	-5.54	1.51	5.71

Source: Calculated and compiled from the data collected from all the financial report, 2010-2019

Table 2: Result of Cash flows Analysis of Berger Paint

Year	Cash generating power times	Cash flow coverage times	Capital expenditure coverage times	Cash returns on equity %
2010	5.74	0.52	4.93	0.22
2011	2.48	0.29	4.40	0.28
2012	3.23	0.25	2.26	0.24
2013	(0.07)	0.34	(0.23)	(0.01)
2014	(4.78)	0.33	(3.49)	(0.16)
2015	5.62	0.45	2.19	0.15
2016	0.82	0.20	0.82	0.31
2017	0.79	0.27	1.03	0.19
2018	0.82	0.21	1.11	0.16
2019	5.33	0.27	1.64	0.13
Mean	2.00	.31	1.47	.15
CAGR%	-.74	-6.34	-10.42	-5.12

Source: Calculated and compiled from the data collected from all the financial report, 2010-2019

Discussion of Findings

The Table 1 showed that from 2010, the ROE of Berger Paints Nigeria Plc. which was 17 % in 2010 had decrease to 15 % for the decade with CAGR of 5.71 %. The average for the decade was 12% with the lowest of 6% in 2014 and highest in the year 2010 at 27%. It was shown that Return on Equity (ROE) was at the lowest, when equity multiplier was at the lower of 1.48. The average of equity multiplier for the decade was 1.57 and was highest in the year 2013 at 1.67. The CAGR of the equity multiplier was found to be 1.1% an indication that leverage depends on borrowings has been decreasing for the decade.

The Table 2 showed that from 2010, the cash return on equity (CRE) of Berger Paints Nigeria Plc which was 22 % in 2010 had decrease to 13 % for the decade with CAGR of --5.12 %. The average for the decade was 15% with the lowest of -16% in 2014 and highest in the

year 2016 at 31%. It was shown that Cash Return on Equity (CRE) was at the lowest, when capital expenditure coverage was at the lowest of -3.49. The average of capital expenditure coverage for the decade was 1.47 and was highest in the year 2010 at 4.93. The CAGR of the capital expenditure coverage was found to be -10.42% which is an indication that capital expenditure coverage depends on cash generating power has been decreasing for the decade.

Correlation Analysis of the Determinants of ROE of Berger Paint Nigeria Plc.

Table 3: Correlation Analysis

ROE	Net Profit	Assets Turnover	Equity Multiplier
Correlation	0.79*	0.62*	-0.45*

Table 3 presents the correlation analysis of ROE with its three determinants namely; Net Profit, Assets Turnover and Equity Multiplier. From the Table it was observed that while Net Profit and Assets Turnover are positively correlated with ROE, Equity Multiplier is negatively correlated with ROE. Equally important, highest correlation is between net profit and assets turnover. 79% and 62% respectively. The result empirically showed that that leverage many times may not be the most contributing factor for the performance of an entity as in the case of Berger Paint Nigeria Plc.

Table 4: Correlation Analysis

CRE	Cash generating power	Cash-flow coverage	Cash expenditure coverage
Correlation	0.60*	-0.18	0.11

Table 4 above represents the correlation analysis of Cash Return on Equity (CRE) with other three determinants such as; cash generating power, cash flow coverage and cash expenditure coverage.

The Table showed that cash generating power and cash expenditure coverage are positively correlated with CRE while cash flow coverage is inversely correlated with CRE. It was observed that the highest correlation is between cash generating power and CRE. This clearly showed that cash generating power of an entity is very crucial as a determinant of cash return on equity.

Conclusion

Finally comparison should be made the various earnings ratios with those that use cash flow instead of earnings. The cash return on equity is a good example. This ratio was computed by dividing net cash from operations by stockholders' equity: The interpretation of this ratio is the same as for the ROE, but cash flow was being examined instead of income/earnings. Corollary, cash return on assets or a cash margin can be computed. Thus, a complete analysis is possible with cash instead of income/earnings. The question that should come to mind is: Why examining cash flow in addition to income/earnings? It is cash flow that keeps a company afloat. A company pays its creditors and employees in cash.

Shareholders that expect dividends are generally paid in cash. Cash is the basis for most transactions and is necessary for a business survival. It is possible for a company to have

positive income, but negative cash flow from operations. Therefore, monitoring cash along with income is appropriate.

In the final analysis, incentive systems within the entity for key managers should be examined. If pay is tied closely to corporate earnings, then, there are incentives created to inflate current corporate earnings.

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