Impact of Firm's Input Costs on Firm Profitability: Evaluation of the Nigerian Brewery Industry.

Okwo, Ifeoma MaryPh.D[1] and Ugwunta, David Okelue[2]*

1. Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria.

2. Department of Banking and Finance, Renaissance University Ugbawka, Enugu State, Nigeria.

* E-mail of the corresponding author: davidugwunta@gmail.com

Abstract

A major problem facing brewery companies is the growing trend of input costs which erodes business profit and as such leads to constant shut down of brewery factories in Nigeria. Given the important contributions of the brewery sector to the Nigerian economy, this research deems it necessary to evaluate the effect of input costs on the profitability of brewing firms in Nigeria. A cross sectional data was gathered for the analysis from the annual reports of the sampled brewery firms for a period of 1999 to 2010. Measures of profitability are examined and related to proxies for the inputs cost assumed by brewers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the focal variable RSGAE (Ratio of Selling and General Administrative Expenses) designed to capture the effect of a company's operating expenses on profitability is statistically positive and impacts on profitability of the brewery firms in Nigeria. Therefore, cost of sale is a major factor to be contained with by Nigerian brewers in enhancing or boosting their profitability.

Keywords: Brewery firms; gross profit margin; selling expenses; general administrative expenses; turnover, cost of sale.

1. Introduction.

A major problem facing manufacturing companies in Nigeria is the growing trend of input costs which erodes business profit and leads to constant shut down of factory (Ogbadu, 2000). This has led to a lot of brewery firms in Nigeria closing down manufacturing. For instance, the number of breweries in Nigeria in 1990 was about thirty three with total capacity of 20 million hectoliters but at present only about four of these Breweries are still operational. In the early 1980's production in this all important sector grew rapidly. However, production fell marginally in 1987 and 1988 due to restriction on the import of barley malt and problems associated with the use of locally produced substitute. During this period capacity utilization fell to about 30% (Equity Research Report, 2006).

The brewery industry has contributed much to the growth and development of Nigerian economy. Ola (2001:18) noted that this sector contributes about 28 percent of Manufactured Value Added (MVA) and provides direct employment for over 30,000 persons. The indirect employment associated with the industry is close to 300,000 including the firms producing ancillary services. The banning of the importation of barley by the federal government of Nigeria in 1987 and 1988 encouraged local farmers and agricultural research institutes in the country to massively produce substitute grains like sorghum, maize etc to satisfy the needs of the breweries industry. This indeed enhanced the economic power of farmers, and further increased employment.

The above economic benefit of the Brewery industry can only be sustained when the brewery firms make profit which ensures their remaining in business. The continuous shutting down of brewery firms because of high cost of inputs hinders the economic growth and development of the nation. Equity Research Report (2006:4) opined that the main threats to the firms in the industry include rising cost of petroleum products and cost of raw materials such as barley (imported with high excise costs). The ban on the importation of barley and the replacement of barley malt with local substitutes have further increased the input cost of beer production. Packaging rates are higher, storage and transportation costs have increased drastically. Yin Xia (2003:1) noted that wage rate rose relative to both capital and material prices until 1980. Thereafter, wages fell relative to capital but continued to rise relative to material prices.

Given the important contributions of the brewery sector to the economy, this research therefore deems it necessary to evaluate the effect of input costs on the performance of brewing firms in Nigeria. This paper aims at determining the relationship between input costs and the profitability of the brewery firms in Nigeria. The rest of the paper is divided

into four sections. Section 2 highlights the theoretical and empirical review of related literature. Methodological issues are the concern of section 3. Section 4 is devoted to presentation of the data and results. We present conclusion in section 5.

2. Review of Related Literature.

Commercial production of Beer in Nigeria started in 1949 when the Nigerian Breweries Ltd established its first brewing plant at Igunlu in Lagos State. Nigeria Breweries Ltd continued to be the only company that produces beer until in the early 1960s when Golden Guinea in 1962, Guiness in 1963, West African Breweries in 1964 and the North Breweries in 1970 emerged. A phenomenal growth in the number of breweries occurred in the second half of the 1970's; this was induced partly by government's decision to ban the importation of beer into Nigeria in 1978. Kayode, Oyejide and Soyode (2002) pointed out that in 1972 there were only four brewers producing a total of 1.65 million hectoliters per annum but a decade later there was a dramatic growth such that in 1982 there was 22 brewing firms in Nigeria with a total installed capacity of 11.5 million hectoliters per annum. By 1990 eight years later, a total of 33 brewing plants existed in Nigeria with total installed capacity of approximately 20 million hectoliters. But while installed capacity grew up till the early 1990s, many of the brewers had ceased to be operational. Thus by 1994, only about eleven breweries remained in operation; capacity utilization had fallen substantially in many cases and several of the plants had been taken over by the industry leaders.   In terms of structure, the brewing industry in Nigeria was always concentrated. Measurement of market structure and concentration can provide reliable inferences regarding the extent of competition or conduct in an industry and thus the extent of competition affects the price that consumers pay for the industry services, which determines the level of profits and performance for the industry (Ugwunta, Ani, Ugwuanyi and Ugwu, 2012). Concentration was reduced briefly in the mid-1970s with the increase in the number of new breweries. However, the exit of many breweries over the past ten years or so has returned the industry to its earlier degree of concentration. Thus, by the early 1990s, two industry leaders, Nigerian Breweries Plc and Guiness Nigeria Plc accounted for 33% of the installed brewing capacity in Nigeria while the Nigerian Breweries Ltd claims 48 percent of actual beer production in 1994 (Femi, Ademola and Afolabi, 2002).

The Brewery industry is beset by the vagaries of the Nigerian economy which has culminated in a situation where the number of operational breweries has reduced from over 30 in the early 1980s to about 10 as of 2006. Increased operational costs and increased cost of imported raw materials led to the demise of smaller breweries leaving only the breweries with greater capital bases, advertising, retailing, and distribution links. At present, there are seven breweries quoted on the Nigerian Stock Exchange. However there exists a large difference between the giants like Nigerian Breweries Plc, and Guiness Nigeria Plc and their rivals such as Jos International Breweries, Champion Breweries and International Breweries of Ilesha.   The two big Breweries (Guiness and Nigerian Breweries) out-match their smaller rivals in every sense. They have much greater turnover, profitability, market capitalization and distribution channels. While the other breweries are specifically state government owned or initiated, the big two have links with International Breweries establishments such as Heineken B.V (Nigerian Breweries) and Guiness (Guiness Nigeria Plc). The real rivalry lies between Guiness and Nigerian Breweries thereby segmenting the Nigerian Market into a highly concentrated duopolistic structure.

Evaluation is the cumulative consideration of factors that may be representative indicators or appraisal of an individual or entity's activity, or performance in reference to some standards over a period of time. It considers the degree of goal attainment, how items are measured, and what standards are to be applied. Farlex (2010) defines Performance evaluation as the assessment of a manager's results, which involves, first, determining whether the money manager added value by out-performing the established benchmark (performance measurement) and second, determining how the money manager achieved the calculated return. Horngren, Datar and Foster (2006) notes that many organizations are increasingly presenting financial and non-financial performance measures for their subunits in a single report called Balanced Scorecard. Different organizations stress different measures in their scorecards, but the measures are always derived from a company's strategy. The balance scorecard focuses on both financial and non-financial measures of performance.

Cynthia and Birger (1991) carried out a research on sources of superior Performance: Market Share Versus Industry effects in the U.S Brewing Industry. They used financial measures of performance to investigate the sources of value creation in the U.S Brewing industry between 1969 and 1979. They found out that market share gains in the industry

at that time are not correlated with changes in value and that the performance of individual leading firms is highly correlated. They concluded that the absence of fundamental shifts in the relative resource positions of industry firms, share gains may come at too high a price. In addition, the research shows that intra-industry correlations in returns may result from excessive competition rather than collusion.

International Federation of Scholarly Association of Management (2006) carried out a study on Internationalization and financial performance – Empirical Evidence from Multinational Brewing Groups. The study shed some empirical light on (1) the degree to which 18 major breweries have internationalized their businesses since the late 1990s and (2) the relationship between degree of internationalization and financial performance for the sample. Furthermore, it shows that the leading brewing groups around the globe have undergone rapid international expansion in the 1999 – 2004 periods but that there were still larger variation between the brewers in the degree of internationalization achieved by 2004. The research highlights some large variations between various breweries around the globe in their international involvement and corporate success.

Owusu (2010) examined the financial performance of Ghana Breweries limited after merger and enlistment on the Ghana Stock Exchange. The study aimed at assessing the profitability level of Ghana Brewery Ltd (GBL), its solvency and liquidity position; the effectiveness and efficiency of the use of owners and creditors fund and the appropriateness of mix of debt and owner's equity in financing its operations. The finding showed that despite the severe attack from cheaper brands on its products and the unfavorable economic environment that followed the merger, the company's performance over the period under study was satisfactory.

During the same period, Adjeii (2010) carried out a research on the evaluation of the financial position of Accra Brewery limited (ABL). The study was designed to evaluate the financial position and the profitability position of Accra Brewery Limited a public company whose stock is listed and traded on the Ghana Stock Exchange over seven year period from 2000 – 2006. The study assesses Accra Brewery Ltd (ABL) risk of bankruptcy using bankruptcy prediction model the Altman's Z-score. It revealed that ABL's risk situation was more threatening in 2000 and 2006. The study again used traditional ratios analysis in appraising the financial performance of ABL focusing on the assessment of liquidity, solvency and financial profitability. Based on the ratios analysis, the study revealed trends of ABL's financial ratio and the results showed both an impressive and unimpressive performance.

The Equity Research Report (2006) carried out a comparative analysis of the performance of selected Breweries in Nigeria. These Breweries are Nigerian Breweries Plc, Guiness Nigeria Plc, Champion Breweries Plc and Jos International Breweries Plc. The criteria for the comparison are based on market share by turnover, profit after tax, latest stock price, price earning ratio, profit sales ratio, twelve months trading earning per share, market capitalization, share outstanding, Return on Equity, Return on Asset, Net asset per share, profit margin, shareholders fund, Beta, Dividend yield, and 5-year Dividend yield Average percentage, derived from 2005 financial reports of the Breweries. The analysis yielded varying degree of performance for the studied firms.

The importance of cost of input in a manufacturing company especially the brewery industry cannot be over emphasized. Input in form of materials, labour, investments in fixed asset, taxes, interest rate, changes in foreign exchange rate in one way or the other have an effect on the performance of the industry. Manfred, Pierre and Bo (2011) while listing cost of input included exchange rate as one. Drury (2008) defined direct cost as those cost that can be specifically and exclusively identified with a particular cost object. Horngren etal (2006) described direct cost as those cost that are related to the particular cost object and can be traced to it in an economically feasible (cost-effective) way. According to Okwo (2008) direct costs are costs that can be traced to a particular product. They can be identified with a product, job or service. In addition to that, Glen (2008) identified transportation costs as one of the factors that affect Brewers performance. Direct labour cost can be specifically traced to or identified with a particular product. The wages paid to operatives engaged in the production process is an example of direct wages (Drury 2008). Okwo (2008) described direct expenses as those expenses that are incurred in the production of a particular product or service. Example includes charges for plant or tool hire.

Alex (2008) commented on the effect of scarcity of the major ingredients of beer- barley and hops. The input price on barley and hops hit small breweries the hardest… which recently raised the price of its pints from $2 to $6. He further explained that the beer industry is experiencing cost increases in raw materials. This is just one of the many factors that contribute to beer costs. The opinion of Yinxia (2003) is that prices and cost of alcoholic beverages had been unstable. For instance that wage rates rose relative to both capital and material prices until 1980. Thereafter,

wages fell relative to capital and continued to rise relative to material prices. He however concludes that the substantial narrowing of output-input price margin in the alcoholic beverage sector suggests that the sector has become more cost efficient through technical change, scale economies, improved utilization rates and other means. Booze (2009) explored the impact of inflation of the inputs costs on the gross margins of brewers in the liquor industry. He found out that the inflation in prices of barley and aluminum led to steep rises in the input costs of the alcohol brewers. He reported that in the last two years brewer's gross margin fell by 350 billion pounds due to inflation in input costs.

3. Methodology.

A cross sectional data was gathered for the analysis from the annual reports of the sampled brewery firms for a period of twelve years (1999 to 2010). The sample constitutes of four brewery firms out of the seven brewery firms quoted on the Nigerian Stock Exchange. The inclusion of the selected four brewery firms in the analysis is based on the availability of data for the studied sample period. The brewery firms that constitute the sample are: Nigerian Breweries Plc, Guinness Nigeria Plc, International Breweries Plc, and Champion Breweries Plc.

The statistic tool employed in the analysis is the Ordinary Least Squares (OLS) stated in the form of a multiple regression model. Firm profitability is inherently noisy and therefore it is not possible to produce totally accurate predictions, but multiple a regression allows us to identify a set of predictor variables which together provide a useful estimate of parameters that likely score on a criterion variable. Following Leahy (2012, 2004 and 1998), this paper tests the hypothesis that the inputs cost does not significantly impact on the profitability of brewery firms in Nigeria. The model is in consonance with the model of (Leahy, 2012) and provides the basis for the analysis. Measures of profitability are examined and related to proxies for the inputs cost assumed by brewers. The basic model estimated is stated thus:

$$PM = b_0 + b_1 SGA/Sales + b_2 Inv/COGS + b_3 AR/Sales + b_4 AP/COGS + b_5 Dep/Sales + e \qquad (1)$$

Where

PM = profitability measure as proxied by the Gross Profit Margin

SGAE/NS = Selling and General Administrative expenses / Net Sales

INV/COGS = Inventory / cost of goods sold

AR/NS = accounts receivable / net sales

AP/COGS = accounts payable / cost of goods sold

DEP/NS = depreciation / net sales

e = an error term with mean zero and constant variance.

The profitability measure used is the gross profit margin. The gross profit margin relates a company's gross income to its sales. Gross income reflects in part the value added by a manufacturer. (Leahy, 2012). The Gross Profit Margin is calculated as Gross Profit

Sales ……………..……………(2).

The SGA/Sales ratio is designed to capture the effect of a company's operating expenses on profitability (Leahy, 2012). A brewer with a high ratio of operating expenses to sales expends more effort per sales naira and is expected to earn higher profits as a result. This ratio also provides a measure of the risk assumed from the manufacturer's contractual obligations (Leahy, 2012 citing Leahy, 2004). This variable is the focal variable in this study and is calculated as Selling and General Administrative expenses

Net Sales/ Turnover ……………..(3)

Other control variables:

INV/COGS ratio measures the impact of inventory levels with respect to cost of goods sold on profitability. The sign of the coefficient of this variable cannot be predicted in advance. Higher inventory levels are a drain on profitability

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while, a manufacturer with higher inventory levels is also providing a valuable function and undertaking a risk that should enhance profitability (Leahy, 2012). INV/COGS variable = Inventory

Cost of Goods Sold...……..(4).

AR/NS ratio measures the impact of a company's credit function on profitability. This impact includes the risk associated with extending credit. It is expected that the higher the ratio of accounts receivable to sales, the greater the manufacturer's profitability (Leahy, 2012). This ratio is calculated as Accounts Receivable

Net Sales/ Turnover …………………………………………………………..……….(5).

The AP/COGS ratio is designed to capture the effect of borrowing on the profitability of a company. It also measures the manufacturer's ability to negotiate the terms of purchases. The impact of this variable on profitability depends upon how the business is financed. If the manufacturer has to borrow to make up for accounts payable, then the higher the ratio of accounts payable to cost of goods sold, the lower the expected profitability. If, on the other hand, the business is financed through retained earnings, then the higher the ratio of accounts payable to cost of goods sold, the higher the expected profitability if the cost of using retained earnings is > the cost of borrowing (Leahy, 2012). The AP/COGS variable is calculated as

Accounts payable

Cost of Goods Sold …………………………………….…………………………… (6).

DEP/Sales variable measures the extent of depreciation with respect to sales, which the company carries. It measures the effect of differences in the costs and risks associated with the technology employed by the brewer on profitability. As with the INV/COGS and AP/COGS variables, the sign of the coefficient of this variable cannot be predicted in advance. The higher the level of depreciation, the higher is the cost of the company and the lower is the expected profitability. On the other hand, the greater the depreciation, the greater the risk associated with the functions performed by the manufacturer and the higher the expected profitability (Leahy, 2012). This ratio is calculated as Depreciation

Net Sales …..……………..….…………..………………..……………..……….(7).

4. Findings

<Insert Table 1. Gross Profit Margin of Guiness Nig. Plc and Nigeria Breweries Plc.>

A look at table one reveals the profitability performance of Nigerian Breweries and Guinness Plcs' for the period under review. The two firms are the dominant firms in the Nigerian brewery industry as their various brands compete side by side in the market. Beer production in the country grew by an average of 15% between 2005 and 2010. The industry is further expected to grow at an average rate of 10% in terms of its turnover for the next four years (GTBAM Research, 2010). Guinnes Nigeria Plc recorded the highest profit as shown by the Gross Profit Margin in 2004 with 62% and the recorded the least margin of 35.75% in 2000. The average gross profit margin is 49.57% and Guinness Nigeria Plc performed above this average in years 1999, 2002, 2003 and 2004. This implies that the profit of Guinnes Nigeria Plc have been dwindling after 2004 as the ratio stood at 44.51% in 2010. Nigeria Breweries Plc owned by the famous Dutch brewer Heineken controls a market share of over 50% in an industry that generates over N350 billion in annual turnover (GTBAM Research, 2010). Nigerian Breweries Plc recorded the highest margin of 86.01% in 1999 and the lowest margin of 45.96% in 2009. The average margin for the firm stood at 56.26% and the firm performed above average in years 1999, 2000, 2001 and 2002. This also implies that the earnings of the firm dwindled steadily from year 1999.

One significant observation from the profit performance of the two firms is that their earnings declined steadily from 2007 to the end of the period in 2010. This can be viewed at a glance in the graphical representation that follows. In the graph, points 1, 2, 3………..12 represent years 1999, 2000, 2001……….2010 respectively.

<Insert Fig. 1. Graphical Representation of the GPM of Guinness and Nigeria Brewery Plcs'>.

<Insert Table 2: Correlations between variables>

This table gives details of the correlation between each pair of variables. The table reveals that all the predictor variables except the ratio of depreciation to sales have a positive relationship with the criterion or the predicted variable. There are also positive relationships between each pair of the predictor variables.

<Insert Table 3. Model Summary>.

Multiple regressions simply measures the naturally occurring scores on a number of predictor variables and try to establish which set of the observed variables gives rise to the best prediction of the dependent variable. Table 3 provides the R and R^2 value. The R value is 0.784, which represents the simple correlation and, therefore, indicates a good degree of correlation. The R^2 value indicates how much of the dependent variable, profit, can be explained by the independent variables. In this case, 56.5% of the variation in the dependent variable can be explained by the predictor variables, and this is large. The Adjusted R^2 value tells us that our model accounts for 56.5% of variance in the profitability of brewery firms in Nigeria.

<Insert Table 4. ANOVA>.

Table 4 reports an ANOVA, which assesses the overall significance of our model. As can be observed from the table, at a sum of squares of 2.842, degree of freedom of 44 (n − 1) and an F statistics of 12.42, our model is significant at p = .000 < 0.05. Our model is therefore significant.

<Insert Table 5. Coefficients>.

The t and Sig (p) values give a rough indication of the impact of each predictor variable. An absolute t value > 2 and p value < 0.05 suggests that a predictor variable is having a large impact on the criterion or dependent variable.

The table therefore shows that RICCGS = Ratio of Inventory or Stock to Cost of Goods Sold, RARS = Ratio of Accounts Payable to Cost of Goods Sold and RSGAES = Ratio of Selling Expenditure and General Administrative Expenses to Sales have a positive relationship with GPM (Gross Profit Margin) and as such have a large impact on the profitability of the brewery firms. This result is confirmed by the predictor variables t = 3.230, 3.922 and 2.405 > 2 for RICCGS, RARS and RSGAES respectively which are all statistically significant. This result is further strengthened by their (p-value) sig < 0.05. While, RAPCGS = Ratio of Accounts Payable to Cost of Goods sold is not statistically significant as RAPCGS t = -1.416 < 2 and the p-value of .165 > 0.05. Therefore, RAPCGS have no positive relationship with GPM. RDS = Ratio of Depreciation to Sales is statistically significant with t = -6.309 and also significant as p-value < 0.05 but RDS has a negative relationship with the gross profit margin. The Coefficients in table 5 provides us with information on each predictor variable. This provides us with the information necessary to predict profit from independent variables. The regression relationship is thus stated: GPM = .148 + .146$_{RICCGS}$ + 2.776$_{RARS}$ - .004$_{RAPCGS}$ - 1.566$_{RDS}$ + .497$_{RSGAES}$.

5. Conclusion.

This paper measured the effects of input costs on firm performance in the Nigerian brewery sector. So far, there is no econometric study to our knowledge that has examined this all important issue for any Nigerian sector in recent times. A cross sectional industry dataset of brewery firms in Nigeria during the period of 1999 to 2010 provided the basis for the econometric analysis. The industry has maintained its status as a pioneer in the manufacturing industry in Nigeria led by Nigeria Breweries Ltd and Guinness Nigeria Plc; the two heavy weight companies that drive the country's beer market. The other fringe players in the breweries industry are: Associated Breweries, Champion Breweries, Consolidated Breweries, Sona Breweries etc, while these fringe players are not national players but they have firm control in their local areas.

Findings from this study reveal that the focal variable RSGAE (Ratio of Selling and General Administrative Expenses) designed to capture the effect of a company's operating expenses on profitability is statistically positive and impacts on profitability of the brewery firms in Nigeria. This conforms to the result in Leahy (2004) for liquor manufacturers which showed the coefficient of the SGA/SALES variable to have a positive and significant sign.

Alex (2008) recognized the input price of barley and hops as one of the factors that contribute to the increase in price of beer. This finding also agrees with the finding of Yinxia (2003); Booze (2009) and Begian (2009) who in their individual studies discovered that profit is affected by inflame in input costs. Other studies that agree with our findings include Song-yi and Louis (2007); Zeprep (2009); Agiomirgianakis et al (2006); Ajayi et al (2009);   Mirko, et al   (2006); Kayode et al (2006). These authors' findings show that a firm's profitability is significantly affected by the increase in cost of input viz - material and labor.

This result suggests that the expected return associated with undertaking additional functions and risk outweighs the costs associated with higher levels of selling and general administrative expenses. From the results of the study, cost of sale is the major variable that has significant positive relationship with the profitability of the brewery firms in NIgeria. Cost of sale is therefore an important factor to be considered in enhancing or boosting the performance of Breweries in Nigeria. It is therefore necessary that the internal components of cost of sale such as material cost, labour cost and factory overhead should be reduced to the barest minimum. This can be achieved by encouraging large scale mechanized production of the major raw material - sorghum in Nigeria and training and re-training of staff from time to time to update their knowledge and skills in modern brewing techniques.

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Table 1. Gross Profit Margin of Guiness Nig. Plc and Nigeria Breweries Plc.

Source: Authors' Ratio Calculation from Brewery Firms Annual Report.

Year	Gross Profit ₦		Turnover ₦		Gross Profit Margin		Gross Profit Margin %	
	Guiness	NB	Guiness	NB	Guiness	NB	Guiness	NB
1999	NA	10,350,039	11,854,023	12,033,111	0.496853	0.86013	49.68535	86.01299
2000	7,380,273	12,285,937	14,854,023	17,679,355	0.357592	0.694931	35.75918	69.49313
2001	8,428,441	18,059,701	23,570,005	29,738,414	0.482678	0.607285	48.26781	60.72853
2002	12,286,285	25,406,835	25,454,410	42,855,103	0.601192	0.592854	60.11921	59.28544
2003	22,907,282	31,220,603	38,103,096	56,508,797	0.605286	0.552491	60.52855	55.2491
2004	28,672,009	35,992,429	47,369,394	73,594,134	0.620667	0.489067	62.06674	48.90665
2005	29,084,073	39,837,540	46,859,356	80,430,968	0.481013	0.495301	48.10129	49.5301
2006	25,807,201	44,332,071	53,651,781	86,322,075	0.458711	0.513566	45.87111	51.35659
2007	28,561,836	59,190,084	62,265,413	111,748,297	0.485188	0.529673	48.5188	52.96733
2008	33,561,836	70,899,817	69,172,852	145,461,762	0.478289	0.487412	47.8289	48.74121
2009	42,638,611	75,472,408	89,148,207	164,206,848	0.4361	0.459618	43.60999	45.96179
2010	47,694,924	87,167,925	109,366,975	185,862,785	0.445109	0.468991	44.51093	46.89907

Fig. 1. Graphical Representation of the GPM of Guinness and Nigeria Brewery Plcs'.
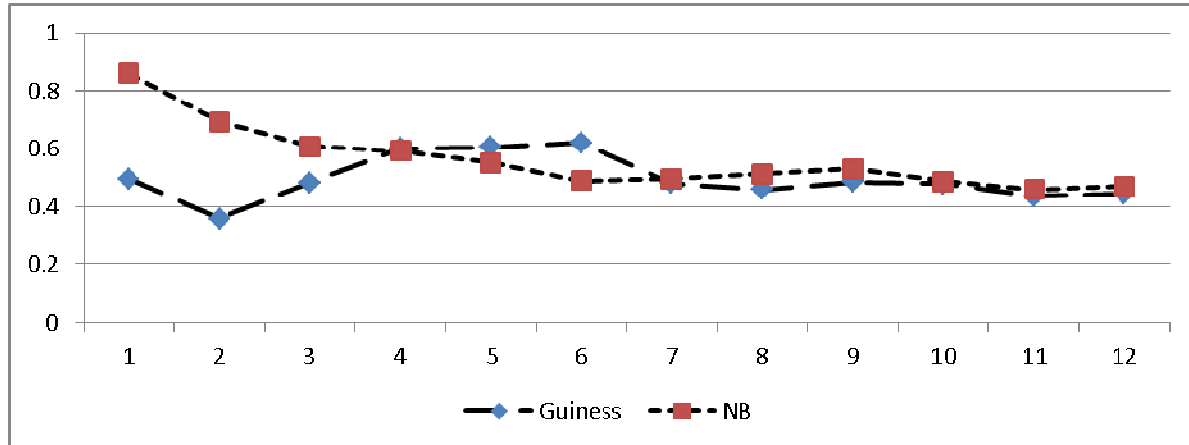
Source: Table One.

Table 2: Correlations

		GPM	RICGS	RARS	RAPCGS	RDS	RSGAES
Pearson Correlation	GPM	1.000	.435	.229	.285	-.372	.130
	RICGS		1.000	.193	.778	.118	.335
	RARS			1.000	.173	.527	.381
	RAPCGS				1.000	.178	.576
	RDS					1.000	.522
	RSGAES						1.000

Source: Authors' SPSS computation.

Where: GPM = Gross Profit Margin; RICCGS = Ratio of Inventory or Stock to Cost of Goods Sold; RARS = Ratio of Accounts Payable to Cost of Goods Sold; RAPCGS = Ratio of Accounts Payable to Cost of Goods sold; RDS = Ratio of Depreciation to Sales; RSGAES = Ratio of Selling Expenditure and General Administrative Expenses to Sales.

Table 3. Model Summary[b]

Model	R	R^2	Adj. R^2	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R^2 Change	F Change	df1	df2	Sig. F Change	
1	.784[a]	.614	.565	.16768	.614	12.418	5	39	.000	.908

Source: Authors' SPSS computation.

a. Predictors: (Constant), RSGAES, RICGS, RARS, RDS, RAPCGS. b. Dependent Variable: GPM

Table 4. ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.746	5	.349	12.418	.000[a]
	Residual	1.097	39	.028		
	Total	2.842	44			

Source: Authors' SPSS computation.

a. Predictors: (Constant), RSGAES, RICGS, RARS, RDS, RAPCGS b. Dependent Variable: GPM

Table **5.** Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.148	.053		2.803	.008
	RICGS	.146	.045	.533	3.230	.003
	RARS	2.776	.708	.470	3.922	.000
	RAPCGS	-.044	.031	-.271	-1.416	.165
	RDS	-1.566	.248	-.821	-6.309	.000
	RSGAES	.497	.207	.357	2.405	.021

Source: Authors' SPSS computation.   Dependent Variable: GPM.