AN EXAMINATION OF THE FACTORS THAT DETERMINE THE PROFITABILITY OF THE NIGERIAN BEER BREWERY FIRMS

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ABSTRACT

This paper examines the internal factors that determine the profitability of the beer brewery firms in Nigeria. An OLS in the form of multiple regressions were applied to annual data generated from the annual statements and accounts of the sampled beer brewery firms covering a period of 2000 to 2011. The correlation and regression results identified the ratios of inventory to cost of goods sold; account receivables to sales; and sales and general administrative expenses to sales to have statistically significant impact on gross profit margin. The paper concludes that the above identified independent variables are the internal factors that determine the profitability of beer brewery firms in Nigeria.

INTRODUCTION

Performance 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

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established benchmark (performance measurement) and second, determining how the money manager achieved the calculated return. Performance evaluation is carried out through two major measures: Financial measures and non-financial measures. Hansen and Mowen (1999) opine that financial measures focus mainly on figures which may not tell the whole story of the company. Nevertheless, financial measures are commonly used to evaluate performance. The most commonly used financial measure for performance evaluation is profitability measures. This is because most business concerns function to earn enough profit in order to remain as a going business concern. To determine firm's profitability, one of the most frequently used tools is financial ratio analyses which include profitability ratios. Profitability ratios show firm's overall efficiency and measure both the profit margin that the firm is able to generate as well as the return it provides on the physical facilities and fund it employs.

For any firm to continue to be in business, it should be able to generate enough revenue to cover its operating cost and make enough profit as a compensation to the providers of capital. The Nigerian brewery industry has contributed much to the growth and development of Nigerian economy. Ola(2001) in Okwo and Ugwunta (2012) noted that this sector contributes about 28 percent of Manufactured Value Added (MVA) and provides direct employment for over 30,000 person and indirect employment close to 300,000 persons including the firms producing ancillary services. Because of the enormous contribution of the brewing firms in Nigeria, the constant shut down of brewing factories in Nigeria due to rising cost of inputs which invariably affect the profit margin should be of great concern to Nigerians. This research is therefore necessary to examine the determinants of profit in the brewing firms in Nigeria.

This study is organized as follows: Section two reviews the literature as relevant determinants of profitability. Section three presents the methodological framework which includes sample, model and the variables. Section four presents tables and discusses the empirical analyses as well as the statistical results and findings while section five presents the conclusion.

REVIEW OF RELATED LITERATURE

According to Horngren, Datar and Foster (2006), 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 balanced scorecard focuses on both financial and non-financial measures of performance. The balanced scorecard measures an organization's performance from four perspectives.
(1)   Financial Perspective – stock price, net income, return on sales, return on investment, economic value added.

(2)   Customer perspective – market share in different geographic locations, customer satisfaction, average number of repeat visits.

(3)   Internal-business-process perspective.

(4)   Learning and growth perspective - employee education and skill levels, employee satisfaction, employee turnover, hours of employee training and information system availability.

To facilitate the measurement of managerial performance, responsibility accounting system is used. Managers are assigned responsibility for certain cost, profit or investment centers. Edmonds, Edmonds and Tsay (2000) state that managerial performance can be measured by comparing the operating results of the assigned responsibility centre with established standards or with the results of the assigned responsibility centres with the organization.

One means of evaluating managerial performance is to compare standard amount with actual results. The flexible budget can be used for planning and performance evaluation. For instance managers may be able to evaluate the adequacy of the company's cash position by assuming different levels of activity. Similarly the number of employees the amounts of materials, and the necessary equipment and storage facilities can be evaluated for a variety of different potential activity level (Edmonds and Tsay, 2000).

In the same vein, Hansen and Mowen (1999) state that financial measures focus mainly on figures which may not tell the whole story of the company. In addition lower-level managers and employees may feel helpless to affect net income or investment. As a result, non-financial operating measures have been developed. Multiple measures include both financial and non-financial. They added that Balanced Scorecard was developed to measure a firm's performance in multiple areas.

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. Their interpretation is that the success of market share building strategies depends critically on specific industry conditions. 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 shows 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 has been satisfactory. However, the increase in net turnover, operating profit before foreign exchange losses declined from 6.97 billion in 2000 to 02.94 billion in 2001; but improved significantly to 06.3 billion in 2002 as a result of the $5 million deposit against shares paid by Heineken in December 2002.

During the same period, Adjei (2010) carried out a research on the evaluation of the financial position of Accra Brewery limited. The study was designed to evaluate the financial position and the profitability position of Accra Brewery Limited - a public traded company listed on Ghana Stock Exchange - over seven year period from 2000 – 2006. The study assesses Accra Brewery Ltd (ABL) risk of bankruptcy using bankruptcy prediction model called Allman's Z-score. It reveals 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.

Leah (2004) used several measures of profitability to examine the determinants of profitability for the liquor industry. Following Leahy (1998), Leah (2004) tested the proposition that profitability is related to the functions performed and risks assumed by a company. Specifically, three measures of profitability are examined and related to proxies for the functions performed and/or risks assumed by those manufacturers. The results vary according to the measure of profitability employed, i.e., the significance of the independent variables may depend on the profitability measure employed. Leah (2004) findings support those of Leahy (1998), who found that the results did not vary systematically according to estimation method.

METHODOLOGY

Following Leahy (2004), this paper tests the proposition that profitability is related to the functions performed and risks assumed by a company. Specifically, profitability is examined and related to proxies for the functions performed and/or risks assumed by those beer brewers in Nigeria.

Using 1999 - 2011 data for all active beer brewery firms in Nigeria for which all data were available from the annual reports and accounts of the firms traded on the Nigerian stock exchange and include Nigerian Brewery Plc, Guiness Nigeria Plc, Champion Brewery Plc and International Brewery Plc, predictive association for profitability and the independent variables were tested using multiple linear regressions. The basic model estimated is as follows: PM = b0 + b1SGA/SALES +b2INV/COGS + b3AR/SALES +b4AP/COGS + b5 DEP/SALES + e (1)

Where:

PM = profitability measure, i.e., gross profit margin (GPM).

SGA/SALES = selling and general administrative expenses / net sales

INV/COGS = inventory / cost of goods sold

AR/SALES = accounts receivable /net sales

AP/COGS = accounts payable / cost of goods sold

DEP/SALES = depreciation / net sales

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

The profitability measures used is defined as follows:- gross margin (GM) = gross profit / sales. The gross margin relates a company's gross income to its sales. Gross income reflects in part the value added by a manufacturer (Leah, 2004).

The SGA/SALES variable is designed to capture the effect of a company's operating expenses on profitability. A manufacturer 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 (Leah, 2004).

The INV/COGS variable measures the impact of inventory levels with respect to cost of goods sold on profitability. This impact includes the risk associated with taking title and carrying inventory. The sign of the coefficient of this variable cannot be predicted in advance. On the one hand, higher inventory levels are a drain on profitability. On the other hand, a brewer with higher inventory levels is also providing a valuable function and undertaking a risk that should enhance profitability. We cannot tell in advance which of these forces is more important (Leah, 2004).

The AR/SALES variable 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. Otherwise, there would be no reason for the company to provide this function (Leah, 2004).

The AP/COGS variable 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 on 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 less than the cost of borrowing. We cannot tell in advance which of these forces is more important (Leah, 2004).

The 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 manufacturer 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 costs of the company and therefore, 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 (Leah, 2004).

DISCUSSION OF FINDINGS

The table below reveals the relationships between the variables, as well as the strengths and weaknesses of the relationship.

Table-1. Correlation Matrix.

		GPM	RInv./CGS	RAR/Sales	RAP/CGS	RDep/Sales	RSGAE/Sales
Pearson Correlation	GPM	1.000	.435	.229	.285	-.372	.130
	RInv/CGS		1.000	.193	.778	.118	.335
	RAR/Sales			1.000	.173	.527	.381
	RAPCGS				1.000	.178	.576
	RDep/Sales					1.000	.522
	RSGAE/Ssales						1.000

Source: Authors' SPSS Analysis.

The signs of the relationships are positive with respect to the dependent variable GPM, indicating positive relationships except for ratio of depreciation to sales that shows a negative relationship. These results support the findings of Leah (2004) who found positive relationships between GPM and SGA/SALES (selling and general administrative expenses / net sales); INV/COGS (inventory /

cost of goods sold); AR/SALES (accounts receivable /net sales) AP/COGS (accounts payable / cost of goods sold). The degrees of the strength of the positive related variables vary among the variables with "RInv/CGS and RAR/Sales" (0.435 and 0.229, which are 43.5% and 22.9% respectively); "RAP/CGS and RSGAE/Sales" (0.285 and 0.130, which are 28.5% & 13.0% respectively). However, (RDep/Sales) ratio of Depreciation/ Sales shows a negative relationship with GPM at -0.372 or -37.2%indicating a weak negative relationship with GPM. This result is not in consonance with the findings of Leah (2004) who found a positive relationship between (RDep/Sales) ratio of Depreciation/ Sales with GPM.

Some of the independent variables relationship with profitability is positive though not so strong; the unbiased result of the regressions suggests that some of them are statistically significant considering its effect on GPM as revealed in the table below.

Table-2. Regression Coefficients.

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.148	.053		2.803	.008
	RInv/CGS	.146	.045	.533	**3.230**	**.003**
	RAR/Sales	2.776	.708	.470	**3.922**	**.000**
	RAP/CGS	-.044	.031	-.271	-1.416	.165
	RDep/Sales	-1.566	.248	-.821	-6.309	.000
	RSGAE/Sales	.497	.207	.357	**2.405**	**.021**

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

From the table above, we discovered from the multiple linear regressions that the ratios of inventory to cost of goods sold; account receivables to sales; sales and general administrative expenses to sales had statistically significant effect on GPM at3.230, 3.922 and 2.405 respectively >2.000. This implies that these factors are significant determinants of the Nigerian brewery sector profitability therefore supporting the findings of Leah (2004). Also the +ve sign indicate a direct relationship between ratios of inventory to cost of goods sold; account receivables to sales; sales and general administrative expenses to sales to gross profit margin. These findings strengthen the correlation matrix results in table one above. The results suggest that the expected return associated with undertaking additional functions and risk outweighs the costs associated with higher levels of selling and general administrative expenses; that the effect of the greater risk associated with the inventory function performed by the brewer outweighs the drain on profitability associated with higher inventory levels. These suggestions are in line with the notable finding of Leah (2004).

The ratio of account receivables to sales which is a significant determinant of profitability suggests that the effect of greater risk associated with credit granting function performed by the beer brewers which results in accounts receivable outweighs the risk of some of the accounts turning into bad and doubtful debts and it's drain on profitability. This result is not in consonance with the findings of Leah (2004).

The ratios of depreciation to sales and accounts receivable to cost of goods sold at -1.416 and -6.309 < 2.00 are not statistically significant and therefore do not impact on brewers gross profit margin. The multiple regression models are thus written as: GPM = 0.148 + 0.146*RInv/CGS + 2.776*RAR/Sales - 0.44*RAP/CGS −1.566*RDep/Sales + 0.497*RSGAE/Sales.

Table-3. Model Summary.

| Model | R | R^2 | Adjusted R^2 | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.784[a]	.614	.565	.16768	.614	12.418	5	39	.000	1.034

a. Predictors: (Constant), RSGAE/Sales, RInv/CGS, RAR/Sales, RDep/Sales, RAP/CGS

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

The R^2, the coefficient of multiple determinations indicate how much of the variation in the dependent variable Gross Profit Margin can be explained by the independent variables and in this finding is .614. This indicates that 61.4% of the variation in the dependent variable (GPM) can be explained by the predictor or independent variables while the remaining 38.60% could be explained by other factors such as the size of a brewer and probably other macroeconomic factors. A more conservative way of assessing the coefficient of multiple determinations, the adjusted R^2 is at .565 or 56.5% > 50%. This strengthens the result of the R^2 as it is > 50%. The significance change of .000 <.05 shows that the model fits and is significant.

Table-4. ANOVA.

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			

a. Predictors: (Constant), RSGAESALES, RINVCGS, RARSALES, RDEPSALES, RAPCGS. b. Dependent Variable: GPM.
Source: Authors' SPSS computation.

The result of the ANOVA presented in the table above strengthens 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 12.418, our model at p = .000 < 0.05is significant.

CONCLUSION

The objective of this paper is to examine the factors that determine the profitability of beer brewery firms in Nigeria. This objective has been achieved thus far. The correlation and regression results of the study suggests that the ratios of inventory to cost of goods sold; account receivables to sales; and sales and general administrative expenses to sales are statistically significant on gross profit margin. The implication of these suggestions are that the ratios of inventory to cost of goods sold; account receivables to sales; and sales and general administrative expenses to sales are determinants of the brewery sector profitability in Nigeria. Also, since there exist a positive sign to their relationships, the implication of the positivity is a direct relationship between ratios of inventory to cost of goods sold; account receivables to sales; and sales and general administrative expenses to sales.

Conclusively, the ratios of inventory to cost of goods sold; account receivables to sales; sales and general administrative expenses to sales are significant determinants of beer brewers' profitability in Nigeria.

REFERENCES

Adjei, K. (2010)."An Evaluation of the Financial Position of Accra Brewery Limited" (online: http://hdl-handle.net /123456789/1465). Retrieved on 5th January, 2010.

Edmonds, T. P. Edmonds C. D. and Tsay, B. (2000)."Fundamental Management Accounting Concepts", North America: McGraw-Hill Companies, pp. 625.

Cynthia, A. M and Birger, W., (1999)"Sources of Supervisor Performance: Market Share Versus Industry Effects in the U.S Brewery Industry" Management Sciences Vol.37, No.2, pp. 954-959.

Farlex (2010)"Profit Margin" (On –Line// www. Answer. Com, Small Business Encyclopedia) Retrieved on 13th November, 2010.

Hansen D. R and M. M Mowen (2000)"Cost Management. Accounting And Control". U.S.A: South Western College Publishing a division of Thompson learning pp 925.

Horngren, C.T, Datar, S. M and Foster, G (2006)"Cost Accounting. A managerial Emphasis" New Jersey: Pearson Education Inc pp 868.

International Federation of Scholarly Association of Management VIIIth IFSAM World Congress. (2006) "Enhancing Managerial Responsiveness to Global Challenges". Trackly14 International Corporate Finance. Sept 28 – 30 (On-line: www.freepatentsonline.con/.../management-international. Retrieved on 13th November, 2010.

Leahy, A. S. (2004)"The Determinants of Profitability in the Liquor Industry" Briefing Notes in Economics – Issue No. 61 pp 1-12.

Okwo, I. M. and Ugwunta, D. O. (2012) "Impact of Firm's Input Costs on Profitability: Evaluation of the Nigerian Brewery Industry" Research Journal of Finance and Accounting. Vol 3, No 6, pp. 78-89.

Owusu, D. (2010) "Evaluation of the Financial Performance of Ghana Breweries Limited after Merger and Enlistment on the Ghana Stock Exchange" (on-line: http//hdl.handle.net/123456789/1296). Retrieved on 13th November, 2010.