

## Leverage Analysis and Corporate Earnings: A Study of Food and Beverage Firms in Nigeria

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### **Abstract**

*This study examined the impact of leverage on earnings of manufacturing firms in Nigeria. Using multiple regression analysis, 500 firm year observations were analysed. Leverage was measured using Degree of Financial Leverage (DFL), Degree of Operating Leverage (DOL) and Degree of Combined Leverage (DCL) and two control variables were added namely Size and Age while Earnings was measured Earnings per Share (EPS). The findings of the study showed that there is a positive relationship between EPS and the independent variables (degree of financial leverage, degree of operating leverage, degree of combined leverage and size), while an inverse relationship exists between EPS and age. Therefore, we recommend that the firms under study should maintain their current leverage positions as they are appropriate. Also, firms should strive for increase in size and avoid organisational rigidity to maintain profitability.*

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**Keywords:** *Financial Leverage, Operating Leverage, Combined Leverage, Corporate Earnings*

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### **1. Introduction**

Effective utilization of assets towards the improvement of earnings is a crucial managerial decision in corporate organisations (Syamsudin, 2001). Leverage is one of the key determinants of the amount of financial resources needed to consider the financing mix that focus on increasing profits. Both operating leverage and financial leverage constitutes risk to a firm. While operating leverage demonstrate the use of fixed operating costs by the company regardless of company investment activities, financial leverage shows the use of funds obtained from debt or issue preferred stock. The returns due to debt holders as interest on annual basis constitute part of the firms' running fixed costs which if it outweighed its benefits might cause bankruptcy challenge. However, if properly managed, it usually leads to greater revenue and as observed by Aries (2015) leverage can be used to increase the value of the company.

Operating leverage of the firm is strongly influenced by its cost structure, the higher the fixed cost of operation, the greater the operating leverage. The effect of operating leverage on earnings is just in the short –run when fixed cost of operation can be ascertained, fixed costs are unaffected costs irrespective of the change in the volume of overall production (Brigham and Louis, 2007). In the long run, all cost incurred by the firm are categorized as variable cost thus mitigate the effect of operating leverage on earnings (Goddess, 2007). This study sets to empirically review the effect of leverage on corporate earnings using Earnings Per Share (EPS) in the food and beverage firms in Nigeria. The firms involved in food and beverage production on a large scale have been observed to require a lot of capital-intensive

infrastructure and facilities for the production and storage of their products (Olatunji and Adegbite, 2014). These are fixed costs which could cause high operating leverage as well as their business risk depending on the total cost structure of each firm. This encourages the firms to take on loans which increase their financial leverage as well as their financial risk depending on their capital structure and as such the reason for their selection as a case of the research. To a great extent, past experience and research have identified that financial constraints have been a major factor affecting the performance of corporate firms in developing countries especially Nigeria where most of the corporate bodies are unwilling to dabble into debt finances thus majorly capitalized by equity (Lawal, Edwin, Monica and Adisa, 2014; KPMG, 2013).

Although, debt financing is riskier compared to equity but it's one of the crucial means of sourcing for fund in executing viable investments in a firm thus enhancing the earnings. Also, the tax shield on debt interest tends to reduce the tax expenses that leads to increase in the after tax returns. Firms need to strike a balance between their financing mix in such a way to attain their wealth maximization objective (Dare and Sola, 2010), as such the need for this study. The remainder of this paper is arranged as follows: section 2 discusses literature related to the subject matter; section 3 gave the methodology of this study; section 4 shows the data analysis and interpretation; section 5 concludes the study.

## **2. Review of literature**

The decision for financing is one of the most significant decisions taken by any organisation. The Chief financial officer of the firm has to analyse the pros and cons of the various sources of funds into the firm before choosing the best one keeping mix that will optimize or reduce the capital cost. Therefore, the leverage or capital structure decision is a continuous process that has to be made whenever the firm needs to source for funds (Chadha & Sharma, 2015). The search/determination for the optimal financing mix (i.e. the mix that will maximize the market value of the firm) has been a regular subject matter in literature. The influence or relationship between leverage and the value of the firm through any of the various surrogates of firm value has been the subject of significant discuss theoretically and empirically (Ramadan, 2015). Leverage generally refers to the debt-equity ratio which states the relationship between the borrowed funds and owner's funds in the capital structure of a firm (Chadha & Sharma, 2016). The borrowed funds are referred to as debt, while equity is raised by issuing common and preferred shares to those that can and meet the requirements. Equity holders are the owners of the firm and they have long-term interest with the firm in the trust that it will keep growing to the nearest future. The debt holders on the other hand are the creditors of the firm and they do not have any long-term interest with the firm because all they are interested in is the repayment of their resources

There have been indications in prior research that prove the direct association between firm's performance and their optimal or leverage level: in Sharma (2006), Goyal (2013) and Mireku, Mensah & Ogoe (2014), there were evidences of positive correlation between leverage performance. However, in Olokoyo (2013), Pouraghajan and Malekian (2012), and Sheikh & Wang (2013), a negative and significant effect of leverage was detected on firm's performance, just as Tian and Zeitun (2007) also found that Leverage have a negative significant effect on the firm's performance using accounting and market measures for performance.

Akinlo and Asaolu (2012) examined the profits of non-financial firms listed on the Nigerian Stock Exchange and analysed the impact of leverage on profitability. Financial leverage was used as proxy for leverage. The results showed that the aggregate profit level for the firms

decreased by 0.02 percent yearly over the study period of 1999 to 2007. However, when broken down into sectors, some firms showed an increased profit level. The results showed that firm size has a significant positive effect on profitability, while leverage has negative effect. The paper suggests that expansion, increased sales and low debt ratios enhance firm profitability.

Although Kalpana (2014) examined the impact of financial leverage, operating leverage and combined leverage on Earnings per Share among three firms listed on the Bombay Stock Exchange covering a period of ten years from 2003 to 2012; also, Kumar (2014) carried out an empirical study on leverage and its relationship with profitability in Bata India Limited; and Gweyi & Karanja (2014) investigated the effect of financial leverage on financial performance of Deposit Taking Savings and Credit Co-operatives in Kenya, the results showed perfect positive correlation between debt equity ratio and return on equity as well as with profit after tax at 99% confidence interval and a weak positive correlation between debt equity ratio with return on assets and income growth, this present study empirically investigates the effect of leverage measured by financial leverage, operating leverage, and combined leverage on Earnings per Share (EPS) of food and beverage firms of Nigeria for the period of 2005 to 2014.

## **2.1 Theoretical development of Hypotheses**

Agency cost theory, provides the platform on which the hypothesis of this paper is developed. The Agency cost theory initially developed by Berlet and Means in 1932 argued that there is an increase in the gap between ownership and control of large organizations' arising from a decrease in equity ownership. This particular situation provides a platform for managers to pursue their own interest instead of maximizing returns to the shareholders. In theory, shareholders of a company are the real owners of the business; and the duty of top management should be solely to ensure that shareholders' interests is met. In other words, the duty of top managers is to manage the company in such a way that returns to shareholders are maximized thereby increasing the profit figures and cash flows (Elliot, 2002).

However, Jensen and Mackling (1976) explained further in the agency theory that managers do not always run the firm to maximize returns to the shareholders. Hence the agency theory was developed from the view that principal-agent problem should be taken into consideration as a key factor to determine the performance of the firm. The problem as earlier stated is that the interest of managers and shareholders is not always the same and in this case, the manager who is responsible of running the firm tends to achieve his personal goals rather than maximizing returns to the shareholders. (Jensen & Ruback, 1983; Jensen, 1986).

Pinegar and Wilbricht in 1989 pinpoint that one of the ways to deal with the principal-agent problem is through the capital structure by increasing the leverage level and without necessarily increasing the agency costs disproportionately. Similarly, Lubatkin and Chatterjee (1994) argue that increasing the debt to equity ratio will help firms ensure that managers are running the business more efficiently by investing in project with positive NPV since the managers will have to make sure that the debt obligations of the firm are repaid. This implies that, with an increase in debt level, the lenders and shareholders become the main parties in the corporate governance structure. This mean that leverages firms are better for shareholders as debt level can be used for monitoring the managers.

According to the static trade-off theory view, since a company's debt payments are tax deductible and there is less risk involved in taking out debt over equity, debt financing is initially cheaper than equity financing by a firm lowering its weighted average cost of capital

(WACC) through a capital structure with debt over equity. Nevertheless, increasing the amount of debt also increases the risk to a company. Although the decision lays on the managers to decide the tradeoff between the tax benefit of debt and the costs of financial distress (Tower, 2015).

Hence, from the static trade-off theory, we postulate that the more debt a firm has, the greater the financial leverage. Shareholders start to benefit from financial leverage at the point where the return on borrowings exceeds the cost of debt financing which makes their EPS rise (Soin and Sang-Bum, 2014). However, if the cost of financing the debt exceeds the return on borrowings, the firm runs the risk of defaulting on interest payment of the loan if its retained earnings are inadequate for it to fall back on. When this occurs, the EPS will reduce and the firm may go bankrupt. For example, during the Great Recession, many firms learned the dangers of heavy reliance on long-term debt. Also, stricter regulations have been imposed to prevent businesses from falling victim to economic volatility (Shaikh, 2012).

Titman & Wassels (1988) found negative relationship between financial leverage and profitability. Negi, Sankpal, Mathur, Vaswani (2012) found that financial leverage has no impact on price-earnings ratio and EPS of either highly levered firms or lowly levered firms. Ruland and Zhou (2005) and Robb and Robinson (2009) and Chandrakumarmangalam and Govindasamy (2010) found out that leverage is positively related to profitability and shareholders wealth is maximized when firms take on more debt. We hypothesized that:

**H<sub>01</sub>:** The degree of financial leverage has no significant effect on Earnings per Share of the Food and Beverages subsectors of Nigeria.

Furthermore, Since Operating leverage is concerned with a firm's cost structure and deals with the effect of sales on operating profit. The higher the amount of fixed cost in the operating cost structure of a given firm, *ceteris paribus*, the higher the causative effect of a change in sales on operating profit (Sandip, 2012). If the degree of operating leverage figure exceeds 1, this shows that the firm has operating leverage. Based on the fact that sales and earnings tend to move in the same direction, we can say that an operating leverage figure of 2 indicates that a 2% increase or decrease in sales will cause a 2% increase or decrease in earnings respectively (Bodie and Marcus, 2009). The operating leverage raises the rate of changes in operating profits due to changes in sales and thus Earnings per Share (Soin and Sang-Bum, 2014). Kumar (2014) and Kalpana (2014) found that degree of operating leverage has a significant and positive correlation with Return on Investment and EPS respectively. Hence we hypothesized that:

**H<sub>02</sub>:** The degree of operating leverage has no significant impact earnings per share of the Food and Beverages subsectors of Nigeria.

Also, a balanced combined leverage is favourable and may increase the earnings on equity of the shareholder as it gives room for an increase in EPS when it is optimal (Kalpana, 2014). Kalpana, (2014); Kumar, (2014) and Ajmera, (2012) found significant correlation between combined leverage and EPS. We further hypothesized that:

**H<sub>03</sub>:** The degree of combined leverage has no significant effect on earnings per share of the Food and Beverages subsectors of Nigeria.

### 3. Methodology

The ex post facto research design was adopted in this study. As such, secondary data were extracted from the annual reports and accounts of ten (10) companies for a period of 10 years (2005-2014). Purposive sampling method was used to select the sampled firms from the total population of one hundred and eighty-six (186) firms listed on the Nigerian Stock Exchange (NSE, 2014). The Hausman test was first estimated to determine whether fixed or random effect is suitable for the model. From the test, Fixed Effect was used to run the regression.

### Model Specification

$$EPS_{it} = \alpha_0 + \beta_1 DFL_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \mu \dots \dots \dots \text{model I}$$

$$EPS_{it} = \alpha_1 + \beta_4 DOL_{it} + \beta_5 SIZE_{it} + \beta_6 AGE_{it} + \mu \dots \dots \dots \text{model II}$$

$$EPS_{it} = \alpha_2 + \beta_7 DCL_{it} + \beta_8 SIZE_{it} + \beta_9 AGE_{it} + \mu \dots \dots \dots \text{model III}$$

Where:

$$DFL = \text{Degree of Financial Leverage measured by } DFL = \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

$$DOL = \text{Degree of Operating Leverage, measured by } DOL = \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$$

$$DCL = \text{Degree of Combined Leverage, measured by } DCL = DOL \times DFL ,$$

SIZE = Size of the firm determined by the natural logarithm of total asset,

AGE = Age of the firm determined from the date of incorporation to the years under study,  $\alpha_{0,2}$  represents the constant (intercept),  $\beta_{1,9}$  represents the coefficient of the independent and control variable which shows the effect of each variable on the Earnings per Share,  $\mu$  represents the stochastic term. It is used to explain any other variable(s) that could affect the Earnings per Share but not in the model stated above.

### Control Variables

We also considered age and size of the firm to control for the variability of the firm characteristic. We also agreed that the larger a firm is, the less risky it is presumed to be (Ben-Zion and Shalit, 1975; Hillier et al. 2010). A major reason for this is that the probability of going bankrupt is lowered as a firm increases in size as a large size is proof of growth which is a proof of a good past performance. As large firms are considered less risky, they are able to obtain loans at lower costs than small firms. This encourages large firms to take loans more than smaller firms (Dogan, 2013; Bayyurt, 2007; Jonsson, 2007; Fiegenbaum & Karnani, 1991; Marsh, 1982).

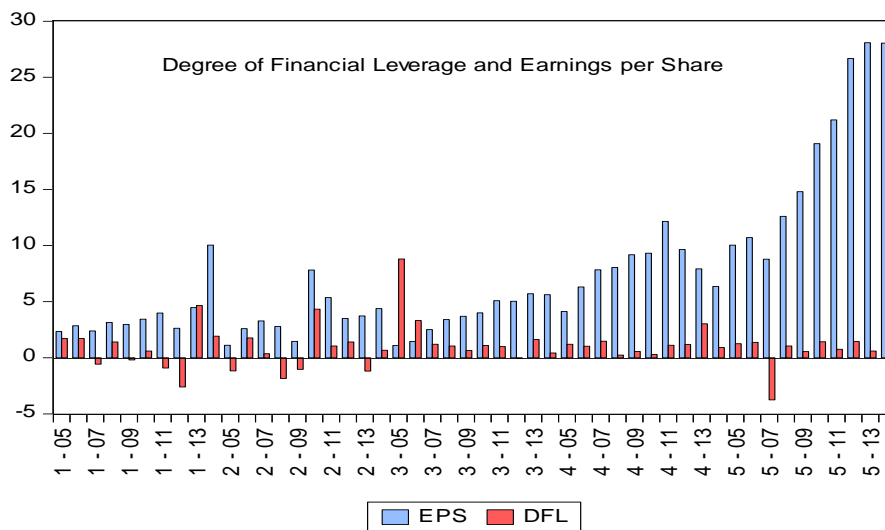
Also, it has been established in financial and accounting literatures that experience grows with age. Since experience stabilizes a company growth and performance. Although Davidsson (2002), Almus and Nerlinger (2000), Wijewardena and Tibbits (1999) and Glancey (1998) found an inverse relationship between firm age and growth showing that age lowers the growth rate of firms. Firms, as they get older, become more focused on their core competencies which limit their activities. We still posit that age give an evidence of the stability of an establishment and investors have no plight in taking risk in such firms. Hence,

it is as the difference between the year when the firm was established and the current year. (Chan-Jane, Tawei & Chao-Jung, 2015).

#### 4. Data Analysis and discussion of findings

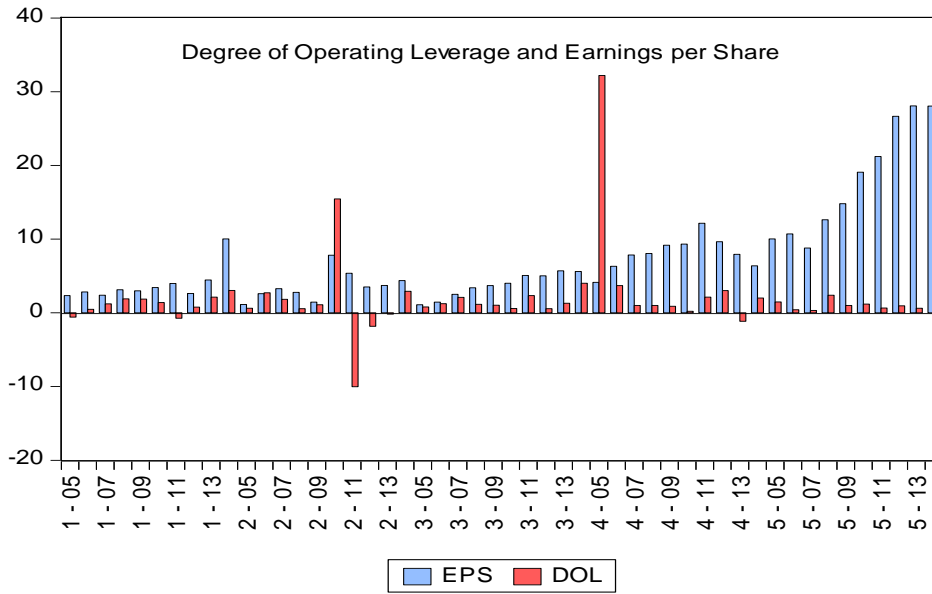
This section shows the analysis of data obtained through descriptive and inferential statistics. Figure 1 shows that Degree of Financial Leverage (DFL) moves in the same direction with Earnings per Share (EPS) except in a few cases which are considered as exceptions to the rule. As shown, in majority of the years under study, an increase in Degree of Financial Leverage causes an even greater rise in Earnings per Share. This implies a positive relationship between Degree of Financial Leverage and Earnings per Share. Also, Figure 2 shows that Degree of Operating Leverage moves in the same direction with Earnings per Share except in a few cases which are considered as exceptions to the rule. As shown, in majority of the years under study, an increase in Degree of Operating Leverage causes an even greater rise in Earnings per Share. This implies a positive relationship between Degree of Operating Leverage and Earnings per Share.

Furthermore, figure 3 shows that Degree of Combined Leverage moves in the same direction with Earnings per Share except in a few cases which are considered as exceptions to the rule. As shown, in majority of the years under study, an increase in Degree of Combined Leverage causes an even greater rise in Earnings per Share. This implies a positive relationship between Degree of Combined Leverage and Earnings per Share.



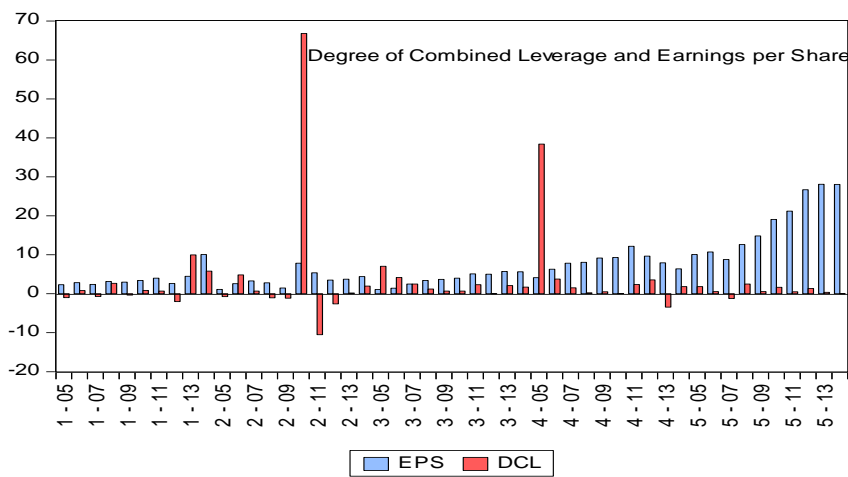
**Figure 1: EPS and DFL**

**Source: Field Survey, 2016**



**Figure 2: EPS and DOL**

Source: Field Survey, 2016



**Figure 3: EPS and DCL**

Source: Field Survey, 2016

**Table 1: Regression estimates of Leverage Analysis and Corporate Earnings**

Variables (H3)	Model I (H1)		Model I (H2)		Model I
	Coeff. P-value	P-value	Coeff.	P-value	
Intercept 0.009**	-235.4423	0.0002***	-224.8267	0.0006***	-217.501
DFL	0.444	0.0445**			
DOL	-		0.002522	0.9753	
DCL 0.07619	- 0.4618*				
SIZE 24.378	26.662 0.0050**	0.0014**	25.469	0.0035**	
AGE 0.773 0.832	-0.905 0.177 *	0.0945* Adjusted R <sup>2</sup> 0.846	-0.853	0.1382* 0.830	-
F-Statistics 35.73399 (0.0000)***	39.40006 (0.0000)***		35.19398 (0.0000)***		

□ Statistically significant at less than 0.10 level.  
 □ □ Statistically significant at less than 0.05 level.  
 □ □ □ Statistically significant at less than 0.01 level.

0.10 level. □ □ Statistically significant at less than 0.05 level. □ □ □ Statistically significant at less than 0.01 level.

Source: Field Survey, 2016



## Discussion

Table 1 shows the regression estimates of the three models of the study. In model I, the multiple regression estimate showed that the degree of Financial leverage (DFL) and size have positive effect on corporate earnings measured by EPS while age has a negative effect on EPS. This is indicated by their coefficients of +0.444104, +26.662 and -0.905. Also, Model II reveals that the degree of operating leverage (DOL) and size have positive effect on EPS while age has negative effect on EPS. This is indicated by their coefficients of +0.0025, +25.469 and -0.852. Lastly, in Model III the study examined the relationship between the degree of combined leverage (DCL) and earnings per share (EPS) and finds a positive relationship between DCL and EPS, the findings from the analysis also suggest that while Size has positive relationship with EPS, Age of the firm has a negative effect on EPS. This is indicated by their coefficients that is +0.002522, +24.39854 and -0.772.

Furthermore, Model 1 shows that the degree of financial leverage will bring a positive change to earnings per share. Precisely, the size of the independent coefficient that is degree of financial leverage explains further that one unit change in the degree of financial leverage will bring about 0.444 unit change in earning per share of corporate firms in Nigeria. The coefficient is significant as indicated by the p-value in table one (0.0445). This implies that within the context of this study, the more debt a firm employs, the higher its Earnings per Share. This shows that the degrees of financial leverage of the firms under study are at appropriate levels. Also, the overall goodness of the model as shown by the coefficient of determination is 0.845, implying that 84.5% variation experienced in EPS for the period being investigated can be attributed to changes in DFL and the attendant control variables while the remaining variations are caused by other factors not included in the model specification. To an extent, this is a strong explanatory power of the model. Hence, the F-statistic which measures the joint statistical influence of the explanatory variable explaining the dependent variable was found to be statistically significance at 0.05% level. The F-statistics Figure of 39.40006 (0.0000) meaning the explanatory variables are important determinant of EPS. Thus, the null hypothesis in model I that degree of leverage has no significant effect on EPS may not be accepted. Our result align with the study of Ajmera (2012), Akinmulegun (2012) Obradovich and Gill (2013), Gweyi, Minoo and Luyali (2013) and Gweyi and Karanja (2014) where they found out that leverage has a positive correlation with EPS. However, this result is not consistent with the works of Akinlo and Asaolu (2012) and Kaplana (2014) who found a negative correlation between leverage and profitability.

Also, Model 2 shows that the degree of operating leverage will bring a positive change to earnings per share. Precisely, the size of the independent coefficient that is degree of operating leverage explains further that one unit change in the degree of operating leverage will bring about 0.002 unit change in earning per share of corporate firms in Nigeria. The overall goodness of the model as shown by the coefficient of determination is 0.83007. This implies that 83% variation experienced in EPS for the period being investigated can be attributed to changes in Degree of operating leverage and the attendant control variables while the remaining variations are caused by other factors not included in the model specification. This result means that model II has a strong explanatory power of the model. Also, the P-value of the overall F-statistic stood at 0% which is less than the acceptable 5% level of significance, thus the model is statistically significant. Hence, the null hypothesis that degree of operating leverage has no significant effect on EPS may not be accepted. This also implies that within the context of this study, the more

fixed costs a firm employs, the higher its Earnings per Share. This is so because the firms under study recorded high profits all through the period of the study meaning they surpassed break-even point at all times by far. At this stage, a greater percentage of fixed costs in their cost structure will be beneficial to them as less variable costs will ensure higher increase in profits due to increased sales. We can exert that, a high sales with reasonable variable cost will increase earning of corporate firms. The study of Kumar (2014) found that Degree of Operating Leverage has a positive correlation with Return on Investment that is statistically significant. Ajmera (2012) found a strong correlation between Degree of Operating Leverage and EPS as well which are all consistent with our findings. However, Kalpana (2014) found a negative correlation between Degree of Operating Leverage and EPS.

The result of model III shows that the degree of combined leverage will bring a positive change to earnings per share. Precisely, the size of the independent coefficient that is degree of combined leverage explains further that one unit change in the degree of combined leverage will bring about 0.0276 unit change in earning per share of corporate firms in Nigeria. The adjusted R-square shows that 83% variation in EPS for the period being investigated can be attributed to changes in Degree of combined leverage and the attendant control variables while the remaining variations are caused by other factors not included in the model specification. This result means that the model has a strong explanatory power and the p-value of the F-statistics of 0% further confirms that the model is statistically significant. Hence, the null hypothesis that degree of combined leverage has no significant effect on EPS. This implies that within the context of this model, the more debt and fixed costs a firm employs in a balanced manner, the higher its Earnings per Share. Though Kalpana (2014) found a negative correlation between Degree of Combined Leverage and EPS which contradicts the result of this current study, the result of Ajmera (2012) are in line with that of this study.

Also results of this current study reveal that Size has a significant positive relationship with Earnings per Share. This implies that as firms increase in size, their EPS tends to increase. This is due to the fact that larger firms enjoy economies of scale and scope. This lowers their production costs and increases their operating profit. The results of Firas (2015) and Vlachvei and Notta (2008) are in line with the result of this current study. The results of this study also show that there is a negative relationship between Age and Earnings per Share. This implies that as firms get older, their EPS tends to reduce. This is because as firms get older, they figure out their core competencies and focus on them. This makes them rigid and unwilling to change when need be due to changes in the economy which would eventually make them unable to compete with the younger firms with more innovative minds. When firms lose their competitive edge, their earnings tend to decline which lowers their EPS. This result conforms to the Life Cycle Theory of Firms which states that firms' earnings appreciate, stabilise then, and depreciate as they grow older till they are swallowed by competitors. This is in line with the findings of Loderer and Waelchli (2009) who found that performance deteriorates as firms grow older and performance does not rebound with very old age. The effect of advancement in age is not much but steady and accumulates over time.

## 5. Conclusion and Recommendation

This study investigated the effect of Leverage on Earnings of corporate firms in Nigeria. The findings show that Earnings per Share can be increased if Financial Leverage, Operating Leverage and Combined Leverage are increased within certain limits as deemed fit by the Financial Manager of the firm. However, to achieve this consistently, Financial and Operating Leverage should be balanced in line with the Trade-Off hypothesis. This will keep the Combined Leverage at an appropriate level. Also, firms should watch out for the old age syndrome and strive to be innovative even with age as evidence was shown in this present study that age has a negative effect on Earnings of the food and beverage industry.

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