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VARIANCE ANALYSIS AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN NIGERIA

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ABSTRACT

This study examined the effect of variance analysis on financial performance of manufacturing companies in Nigeria. It specifically examined the effect of overhead cost variance, labour cost as well as material cost variance on asset return of listed consumer goods firms in Nigeria. The study adopted an ex-post-facto research design and secondary data was gathered to analyze the relationship between the variables. The population of the study consisted on twenty-eight (28) consumer goods listed on the Nigeria Exchange Group, however, only five (5) samples were selected from the population. The data was collected from the annual financial reports of the five (5) consumer goods companies sampled for the investigation for the periods 2010-2020. The measures of variance analysis were proxied with overhead cost variance, labour cost variance and material cost variance. Panel data was used which consists of 100 observations analyzed using multiple regression model. Robust regression model was employed to test the effect of variance analysis. The findings of the result revealed that overhead cost variance has positive and significant effect on return on asset with a coefficient of 1.0016 which is significant at 5% (p=0.001). material cost variance has positive effect on return on asset with a coefficient of 0.0014 which is significance at 5% (p=0.025) while labour cost variance has negative effect on return on asset with a coefficient of -0.0051 which is significant at 5% (p=0.66) of listed consumer goods firms in Nigeria Exchange . The study concluded that variance analysis has a significant statistical link with the financial performance of listed consumer goods firms in Nigeria. Inference statistics were used to corroborate the presence of a significant impact at a p-value of less than 5%, lending credence to this position.

KEY WORDS: Variance Analysis, Overhead cost Variance, Material Cost Variance

INTRODUCTION

Most businesses aim to improve their net worth and generate a profit by investing in new projects (Akinsulire, 2017). The majority of interested parties favor profit maximization, with the argument that only profitable businesses can continue to operate in the face of intense competition and have access to further capital (Adeniji, 2017). For a business, having a healthy profit margin is essential for being able to both pay back its investors and reinvest its earnings to grow (Oyerogba, Solomon, Olaleye, & Adesina, 2014). To maximize profits, a company needs careful planning that lets its executives see into the future (Adeniji, 2017). Business planning emphasizes forethought and thoroughness in order to head off any snags and accomplish intended objectives. Further, it facilitates examination of variation and performance to refocus management efforts (Aremu & Adeyemi, 2011; Okpala, Adegbola, & Afolabi, 2018). A company's management choices and bottom line may take a hit if its planners did their jobs poorly (Lucey, 2003; Abdullahi, 2015). According to Oyerogba et al. (2014), one link in the chain of poor planning's effects is the setting of an incorrect target, which in turn causes an unfavorable gap between planned and actual activity and ultimately a failure to reach the desired financial outcome. This means that effective planning necessitates the use of suitable financial and management models, such as the variance analysis approach.

A product's costs, sales volume, and profit margin may all be better understood with the use of the variance analysis model, which managers can use to make informed decisions. Management choices based on variance analysis may lead to the accomplishment of the targeted level of profit and the determination of the margin of operational safety in a company (Abdullahi, Suleiman, Mukhtar & Musa, 2017). (Jhigan & Stephen, 2007). However, Ihemeje, Okereafor, and Ogungbangbe (2015) pointed out that managerial ineptitude was the main issue manufacturing organizations faced when attempting to employ management accounting models for planning and decision making. A large proportion of Nigerian businesses fail during the first five years of operation, and

many more close between the sixth and tenth years of operation, as reported by Aremu and Adeyemi (2011). Only approximately 5–10% of companies make it to maturity.

Failure to produce sufficient income to pay its operational expenses and earn a sustainable profit is often cited as the leading cause of a company's untimely demise (Abdullahi et al., 2017). Companies' financial performance is hampered by a number of problems, including a lack of capital to run and compete favorably, a shortage of skilled workers, and the absence or insufficient implementation of management accounting tools to improve decision making. Additional challenges were a lack of access to cutting-edge manufacturing tools, an outdated support system, and a drop in consumer demand. As a result of all these problems, the items made by these factories are less competitive against international competitors, which has further hampered the firms' ability to make a profit (Agwu, 2014; Abdullahi, 2015; Ihemeje et al., 2015; Abdullahi et al., 2017). Adesina et al (2015) state that the lack of management accounting procedures, as well as staff and management ineptitude, has been the primary hindrance to profit-making in the manufacturing sector. According to Abdullahi et al. (2017), the difficulties encountered by the manufacturing sector may be traced back to the incapacity of certain management accountants to apply suitable tools.

The low profits, high rates of company failure, and severe negative effects on economies in developing countries prompted researchers to focus on these manufacturers. Second, the subsector's significance in helping countries with low levels of industrial activity achieve government macroeconomic goals. This research will fill in the blanks where others have failed. Findings would aid factory managers in strategic planning, maximizing profits, and fending off rivals, all of which are central to the study's stated goal. The information would also be useful for investors and researchers looking to go more into the topic.

The financial performance of publicly listed Nigerian companies producing consumer products has not been studied in reference to the variance analysis model. As a result, we don't know how strong of a connection there really is between the factors since no studies have been conducted in this area. Therefore, further study is required to fill the void in Nigeria's industrial sector.

In light of the above, this investigation sought to address the following issues in the context of manufacturing firms:

i. What is the effect of overhead cost variance on asset return of listed consumer goods firms in Nigeria? ii. What is the influence of labour cost variance on asset return of listed consumer goods firms in Nigeria? iii. What is the effect of material cost variance on asset return of listed consumer goods firms in Nigeria?

The primary objective of this study is to examine the effect of variance analysis on financial performance of listed manufacturing companies on Nigeria Exchange Group.

The specific objectives are to:

i. Determine the effect of overhead cost variance on asset return of listed consumer goods firms in Nigeria;
ii. ascertain the significant influence of labour cost variance on asset return of listed consumers goods firms in Nigeria; iii. examine the effect of material cost variance on asset return of listed consumer goods firms in Nigeria

The following null hypothesis was developed for the purpose of this study in order to address the research question:

H_{01}: overhead cost variance has no significant effect on asset return of listed consumer goods firms in Nigeria.

$H_{02:}$ labour cost variance has no significant influence on asset return of listed consumer goods firms in Nigeria

H_{03}: material cost variance has no significant effect on asset return of listed consumer goods firms in Nigeria

The primary justification for this research was to provide practical evidence on the effect of variance analysis on financial performance as a means of resolving the profitability problem in manufacturing companies

LITERATURE REVIEW Review of Concepts

Variance Analysis

The goal of a variance analysis is to determine the reasons for any discrepancies between expected and actual expenses. Analysis of variance is the process of breaking down large amounts of variation into smaller chunks so that management may place blame for below-par results. The difference may either be beneficial or detrimental (Alnasser et al,2014). It is considered favorable if the actual costs are fewer than the expected costs, and likewise if the actual profits or sales are higher than expected. The situation is negative if the real costs are more than expected and the actual profits or sales are lower than expected. Variances are calculated for each component of a manufacturer's expenses, including raw materials, labor, variable and fixed overhead. The overall manufacturing variance is the gap between actual costs and the flexible budget expenses for each manufacturing phase (the standard costs that should have been incurred for the actual level of production) (Anocie et al,2015). The unit cost of goods produced is calculated by multiplying the unit price by the amount actually produced. The total allowable in a flexible budget is just the standard cost multiplied by the standard allowable quantity. The maximum allowable amount equals the standard quantity per

unit of the item produced. The overall discrepancy is broken down into component parts based on the production cost (e.g., price and quantity). It doesn't matter whether the differences are good or bad, they all exist. It's good news if the real price or quantity is lower than the average. An unfavorable result might be a price or quantity that exceeds expectations. (Chand,2015)

Financial Performance

A company's efficiency may be gauged by looking at how well it executes certain activities that lead to the intended results. The standard of performance is based on the nature of the business and its goals. One way to qualitatively evaluate a company's success is to examine how efficiently it generates income using its primary source of capital. It's a monetary representation of how strict an organization is with its policies and processes.(Alsha et al,2015)

The profitability, revenue, or profit of a business is a reflection of its financial performance. How to evaluate a business' ability to generate revenue, with a focus on financial services providers. The accounting records will show this to be true. A company's financial performance is its monetary return on investment (ROI) as a consequence of its plans, policies, and operations. The ROI and ROA of the company both reflect these outcomes. Revenues from operations, operating income, cash flow from operations, or overall digging into financial records and looking for margin expansion rates or any reducing debt are all measures of financial success (Leah, 2008). lt is well-documented in the management literature, investor reports, and academic papers that company performance is a key topic of interest for those in the field.(Asikhia, 2016)

Consequently, when comparing financial success to business performance and organizational efficiency, the former is the more trustworthy metric. Malik (2011) offered a number of indicators of fiscal health. He lists the following as examples: ROA, ROE,

revenues, operating income, EBIT, net income, EPS, ROI, return on sales, return on investment, and return on sales (ROS).(Eniola & Ektebang, 2014)

Return on equity, return on capital, and return on assets are all ways that a business might gauge its profitability (ROA). Studies of financial institutions often focus on ROC and ROA or ROE as indicators of profitability (Atemnkeng and Joseph, 2006). Given that ROA allows for the comparison of a bank's output to its total assets, Smirlock (1985) noted that it is this metric, rather than ROE, that has supplied the greatest evidence on the association between firm-specific characteristics and profitability in banking. Since organizations' revenue and cost components are more directly tied to assets, Keeton and Matsunaga (1985) argued that ROA is particularly effective for analyzing changes in bank performance over time. Overall, return on assets (ROA) is the gold standard for evaluating financial institution success. Firms' pre-tax profit as a percentage of their total assets is the definition. As Flamini et al, (2009) point out, a study of ROE ignores financial leverage and the accompanying dangers, hence ROA is preferred as a proxy for profitability. ROA has been criticized for being skewed by off-balance-sheet operations, however it is generally accepted that the risk posed by such activities is small in developing countries when compared to the risk posed by leverage. Given that return on asset is often regarded as one of the primary indicators of an investor's interest in a company, it makes sense for this research to utilize it as the metric of financial performance. (Eniola & Ektebang, 2014)

Variance Analysis and Financial Performance

Variances are calculated for each component of a manufacturer's expenses, including raw materials, labor, variable and fixed overhead. The overall manufacturing variance is the gap between actual costs and the flexible budget expenses for each manufacturing phase (the standard costs that should have been incurred for the actual level of production) (Clancy & Madison, 1997).The final price paid is the product of the price per unit multiplied by the number of units purchased. The goal of any variance strategy or

approach is to take advantage of situations that reduce production costs, such as those involving materials, labor, overhead, and so on. The Institute of Cost and Management Accountants of London defines variance analysis as the process by which the unit costs of produced items are reduced without compromising their fitness for the intended purpose. When the profit margin has to be improved without a corresponding increase in sales turnover—that is, when the cost per unit of output must be decreased while maintaining the same level of output variance becomes necessary (Ebiringa, 2011) . As a result, fostering cost awareness primarily entails minimizing costs across the board and emphasizing the roles and responsibilities of every employee in every department (lawal, 2017). Standard costing is one of the methods that aids in the accomplishment of variance analysis since it establishes the individual costs of materials, labor, and overhead in advance of production. This has the added benefit of minimizing
manufacturing waste and maximizing output at the lowest possible price. Materials costs may be reduced in two ways: by reducing the amount of goods used in manufacturing, or by purchasing materials in bulk and taking advantage of price breaks offered by suppliers. It is possible to lower labor costs by doing away with overtime, cutting down on (or doing away with) idle time, and supervising and motivating employees more closely. The bottom line of a manufacturing firm always seems to reflect the success of a variance analysis. (Ebiringa, 2011)

Theoretical Underpinning

Frictional Theory of Profits:

The normal rate of profit concept states that company owners should be rewarded with a return on their investments rather than spending all of their money at once. In the long term, if there are no surprises in either demand or cost, companies will be generating just the standard rate of return from their expenditures in infrastructure and human resources. Companies would suffer financial losses as a result. According to the frictional

profit hypothesis, economic instability and the generation of shocks or disruptions may result from unanticipated fluctuations in product demand or cost situations. These instances of economic disequilibrium may have both good and negative effects on the profitability of some companies. Frictional theory predicts that economic advantages will last for some time despite the introduction of novel conditions since the system takes time to adapt. Numerous Indian export companies saw their fortunes fall in the 2000s as demand for Indian commodities to the United States and other countries dwindled. Long-term economic profitability depends on the absence of new entrants into a market, and if there are any gains in the short term, then means those profits will eventually disappear (that is, firms will be making only normal return or profits on their capital investment). But when companies are losing money (having negative profits), some of them may leave the market. The resulting rise in the cost of the commodity will wipe out any losses and leave the still-operating firms with just satisfactory margins. For example, "even if all entrepreneurs are similar for disequilibrium," enterprises in a competitive industry may gain from a situation of disequilibrium. If prices are higher than anticipated or if expenditures are lower than planned, business owners may make a profit beyond what they might have achieved by employing their resources in another manner. (Glautier, et al ,2011)

Empirical Review

Using a quantitative approach, Adu-Gyamfi et al, (2020) studied the impact of management accounting on the productivity of Ghanaian manufacturing enterprises. The SPSS-assisted regression analysis found that "costing system, budgeting system, performance evaluation system, strategic management and information for decision making" were the most often implemented management accounting methods among Ghanaian manufacturing enterprises. Management accounting methods such budgeting, strategic management, information systems, cost analysis, and performance assessment were shown to have a favorable and statistically significant effect on the financial standing

of Ghanaian public companies. has a constructive effect on the success of Ghana's industrial sector. It was hypothesized by Adu-Gyamfi et al. (2020) that if Ghanaian businesses adhered strictly to certain management accounting principles, their results would increase.

Business success, according to Morgan (2012), depends on two factors: how well the company does in the market and how well it does financially. The actions of consumers have a direct impact on the success of a market. Market performance is assessed in terms of indicators like sales growth, customer happiness, customer loyalty, and market share expansion, whereas financial success is analyzed in terms of accounting metrics. For the purposes of this analysis, a company's success is defined as meeting or exceeding predetermined targets for net income, sales volume, market share, return on investment, and expansion and maintenance of operations.

Profitability in the manufacturing sector was examined in a research by Siyanbola and Raji (2013). Cost management was examined from a strategic viewpoint, with a focus on West African Portland Cement Plc (WAPCO). Using a Pearson correlation model, we found that cost reduction had a significant influence on business profitability. The results of this study show that implementing cost-controlling methods, such as responsibility accounting, data gathering, and data reporting, may have a significant influence on a company's bottom line.

Standard costing and cost control were both studied by Cletus and ThankGod (2015) in the Nigerian oil and gas sector. Getting here required looking through existing material and coming up with some assumptions. Participants were PMCs from the 2012 Factbook of the Nigerian Stock Exchange.. As our research has shown, there is a strong connection between standard costing and cost management. Standard costing has been shown to improve material, labor, and overhead efficiency in businesses. In light of these results, we propose that Nigerian oil and gas companies implement standard costing into their

accounting procedures to better use available resources and maintain tighter cost controls.

The impact of standard costing on the bottom lines of telecom firms was investigated by Sadiq, et al,(2016). This research uses a descriptive survey approach and bases its findings on a case study at MTN Company, Kano. The chi-square test was used to examine the data gathering tool. In light of what has been uncovered, it is clear that accounting records are maintained and serve a crucial purpose in the administration of the business. That standard costing is used in the production of the company's goods, and that choices are based on that data. The company's management receives and acts upon timely accounting reports. The company's bottom line will improve if standard costing is used effectively. That the adoption of standard costing will provide substantial benefits for the business, most notably a boost to profitability. Standard costing was found to be extensively employed in Nigerian telecommunications firms, and it was shown to improve the company's capacity for strategic planning, operational efficiency,
and sound decision making. Communication providers may benefit from standard costing in three ways: by getting rid of unproductive goods, by having access to accurate pricing data, and by being able to better manage their expenses.

Lawal (2017) sets out to do just that by reviewing the budget as a useful instrument for cost management and reduction, as well as analyzing the impact these practices have on organizational performance. The researchers opted for a descriptive survey approach. In all, 50 questionnaires were distributed and utilized in the analysis. Applying the right statistical methods, we analyzed the data we had acquired. The hypothesis was examined by regression analysis performed in SPSS. Both cost control and the management style were shown to have a good effect on organizational performance.

Gap in Literature

Following an examination of related empirical studies, it is clear that most of the studies conducted in Nigeria only looked at few measures of standard costing in manufacturing companies in board sense ignoring the importance of variance analysis in the discourse of performance of manufacturing firms in Nigeria

Given the scant nature of this existing literature, it is on this purpose this research wants to examine the link between variance analysis and financial performance among Nigerian consumer goods firms. This study aims to fill in these research gaps by first looking at the variances that exist in the labour cost, overhead cost, materials cost and how it affects the financial performance measured in term of return on asset of the listed consumer goods companies. This research is distinct from others since it covers a longer period from 2010 to 2020, Furthermore, the study looked at 11 years of data from selected listed firms and used the Generalized Method of Moments (GMM) estimator to analyze the data.

METHODOLOGY

Population of the study: The word "population" is used to describe the whole group of people that are the subject of the research. In other words, it covers everything and everything that has the trait in question. The enterprises producing consumer products and listed on the Nigeria Exchange Group constitute the population for this study. Twenty eight companies producing consumer goods listed on the Nigeria Stock Exchange as at 2022 which are (7up),Cadbury Nigeria Plc, Champion Breweries Plc (Champion),Dangote Flour Mills Plc ,Dangote Sugar Refinery Plc, Dn Tyre & Rubber Plc (Dunlop),Flour Mills Nigeria Plc (Flourmill),Golden Guinea Breweries Plc ,Guinness Nigeria Plc (Guinness),Honeywell Flour Mill Plc ,International Breweries Plc ,Jos International Breweries Plc, McNichols Plc ,Multi-Trex Integrated Foods Plc, Nigeria Flour Mills Plc (Nnfm),Nascon Allied Industries Plc, Nestle Nigeria Plc (Nestle),Nigerian Breweries Plc (Nb),Nigerian Enamelware Plc, Premier Breweries Plc ,Ps Mandrides Plc ,Pz

Cussons Nigeria Plc (Pz),Rokana Industries Plc ,Unilever Nigeria Plc ,Union Dicon Salt Plc ,Utc Nigeria Plc (Utc),Vita foam Nigeria Plc and Vono Products Plc

Sample Size: A sample is a selection from a larger population from which generalizations may be drawn. Purposive judgmental sampling was used to choose five (5) listed consumer-goods firms at random. This is a non-probabilistic sampling procedure. Selecting these five businesses was justified by the quantity and quality of information that was readily available. The chosen businesses, which include Cadbury Nigeria Plc, Dangote Sugar Refinery Plc, Flour Mills Nigeria Plc, Guinness Nigeria Plc, and Nestle Nigeria Plc, are the country's leading manufacturers of staple foods and beverages.

Research Design: Secondary data was extracted from the 2010-2020 annual reports and financial statements of participating firms. Articles, newsletters, and journals published by the corporations also served as sources of data.

Method of Data Collection and Analysis: This study made use of a survey's worth of secondary data. The annual reports and financial statements of the corporations were studied extensively. Data from yearly reports was used to calculate the study's variables, and from those reports, financial statements for the study's three case firms (OC, LC, and MC) were extracted. Expenditures for variance analysis and return on asset as a proxy for financial performance (Dependent) from 2010 to 2020 are among the retrieved data. Other relevant ratios that are crucial to any given variable were also included.

Model Specification

Empirical data was used to modify a regression model similar to as used in Abdullahi et al, (2017). This model was instrumental in confirming or refuting the study's hypotheses accomplishing its goals.. The model's functional specification is written as follows:

ROA = f (DRM+DRL+ DEXP)

The econometric specification is as follows:

$(ROA)it = b0 + b1(DRM)\ it + b2(DRL)\ it + b3(DEXP)\ it + \varepsilon it$

Where:

ROA = Return on Assets (proxy for Financial Performance), DRM =Direct Materials, DRL=Direct Labour ,DEXP=Direct Expenses (proxy for Overhead Cost Variance, Labour Cost Variance and Materials Cost Variance respectively) b0 = Intercept for X variable of company b1– b9 = Coefficients for firms' explanatory variables, indicating the nature of their relationship with the dependent variable (or parameters), e = Error term i = cross sectional variable t = Time series variable

The research employed both descriptive and inferential statistics to analyze data from 2010 to 2020. This study made use of inferential statistics, namely correlation and regression analysis. Pearson correlation was used to determine the strength of the links between the factors of interest, and the panel data regression method was used to examine the hypothesized connection between explanatory variables and return on asset.

PRESENTATION OF RESULTS Descriptive Statistics

Table 1: Descriptive Statistics

	ROA	DRM	DRL	DEXP
Mean	2.49e+07	1.03e+07	30.648	3.140000
Std. Dev.	1.23e+07	1.53e+07	15.89913	1.557355
Skewness	.5089001	2.131953	.6058148	.5053929
Kurtosis	2.178984	6.399892	2.134283	2.181834
Variance	1.52e+14	2.34e+14	252.7823	2.2.4253
Observations	100	100	100	100

Authors'Compilation(2022)

According to Table 1, DRL has the largest standard deviation and is hence the most volatile asset. ROA had a mean value of 2.49 and an SD of 1.23. Distances from the mean were quantified using the standard deviation. Positive skewness of 0.51 indicates the series was

not normally distributed around the mean. As a result, most of the variance analyses that have an effect on ROA have a lengthy right tail, and so does ROA itself. The DRM, DRL, and DEXP are all types of variance analysis that may be performed. Moreover, ROA was more skewed than what would be anticipated for a normally

distributed series of data, with a Kurtosis of 2.17, indicating that the distribution of ROA was not flat. The standard deviations (SD) for the mean responses to the DRM, DRL, and EXP questions were 1.53, 15.8, and 1.56. Differences in DRL value were large amongst the firms in the sample, as shown by the very high SD of 30.6. Comparing the largest and smallest values reveals that the firms under consideration are rather comparable. Except for the DRM value, which is positively skewed but not normally distributed, all other variables have a large right tail and are thus positively skewed. The kurtosis values in the table demonstrate that ROA, DRL, and DEXP are all platykurtic, whereas DRM is leptokurtic with a value of 6.40 > 3. Therefore, after calculating the natural logarithms of each variable to limit impacts on the data, it is assumed that the data is normally distributed for model fitting.

Normality Test

Table 2: Shapiro Wilk Test for Normality on the Original Data

Variable	Obs	W	V	z	Prob>z
ROA	100	0.92420	1.168	0.271	0.39331
DRM	100	0.65781	5.273	3.458	0.00027
DRL	100	0.91492	1.311	0.477	0.31651
DEXP	100	0.92475	1.160	0.258	0.39824

Authors Computation (2022)

Hypothesis Statement

H_{01}: overhead cost variance has no significant effect on asset return of listed consumer goods firms in Nigeria.

$H_{02:}$ labour cost variance has no significant influence on asset return of listed consumer goods firms in Nigeria

H_{03}: material cost variance has no significant effect on asset return of listed consumer goods firms in Nigeria

Significant level $\propto$=0.05

Decision: reject H_0 if the Prob W value<α level otherwise do not reject

Conclusion: Since the probability of W values (0.00027) is less than the critical value (0.05), we may infer that DRM is not normally distributed, although ROA, DRL, and DEXP are. Any inference drawn from the aforementioned information has the risk of generating a spurious regression..

Table 3: Shapiro Wilk Test for Normality on the Transformation Data

Variable	Obs	W	V	z	Prob>z
ROA	100	0.95138	0.749	-0.481	0.68487
DRM	100	0.97907	0.322	-1.751	0.96002
DRL	100	0.96495	0.540	-0.996	0.84046
DEXP	100	0.95072	0.759	-0.459	0.67700

Authors Computation (2022)

Taking a logarithmic adjustment on the original data, as shown in Table 3, revealed that the probability of W values in all the variables is > (0.05). Therefore, after calculating the

natural logarithms of each variable to limit impacts on the data, it is assumed that the data is normally distributed for model fitting.

Table 4: Model-Regression Results

Variable	Coefficient	Standard Error	t-Statistic	P-Value
ROA	15.88056	.0232622	682.68	0.000
DRM	.0014374	.0004863	2.96	0.025
DRL	-.005137*	.0112674	-0.46	0.664
DEXP	1.00163	0112921	88.70	0.001
R-squared = .98234	Adjusted R-squared=.98143	Durbin Watson=1.45731		
F-statistic =3084.88	P-value=0.000000			

Authors Computation (2022)

Substituting the coefficients to the OLS model of the functional relationship as given in eq (2);

$$\ln(\text{ROA}) = 15.88056 + .0014374\ln(DRM) - .005137\ln(DRL) + 1.00163\ln(DEXP) + \mu$$

4.3

The model equations were shown in Table 4. The calculated F statistics values of 3084.88 with P-values of 0.000 (below 0.05) corroborate to the model's overall goodness of fit, and a unit increase in the three explanatory variables (DRM, DRL, and DEXP) leads to reasonable financial performance estimates. DRM and DEXP were shown to have a positive and statistically significant effect on financial performance with estimates of _1=.0014374 and _3=1.00163 0.05, respectively. The estimated positive effects of DRL,

DRM, and DEXP on financial performance are consistent with the predictive measure of performance's findings. Throughout the duration of the research,
the dependent variable (ROA) is linked favorably to both DRM and DEXP, two explanatory factors. Financial results were also somewhat negatively affected by DRL (-.005137), although this was not statistically significant.

A high level of determination (R2 =.98234) indicates that the model adequately explains the observed variance in the dependent variable (a measure of financial performance) (DRM, DRL and DEXP). Durbin Watson value of 1.45731 (range: -2,2) was also found in the table. This indicated that the model specifications were adequate. According to Carlin and Finch (2010), organizations provide financial data to help stakeholders make informed investment choices. We reject the null hypothesis and accept the alternative hypothesis because there is strong evidence of a correlation between the independent variables (DRM, DRL, DEXP) and the dependent variable (ROA).

Correlation Analysis

In order to examine the relationship between the nine explanatory factors and the return on asset (dependent variable), as well as between the explanatory variables, we constructed the correlation matrix shown in Table 5.

Table : Correlation Matrix of all variables (2010 -2020)

	ROA	**DRM**	**DRL**	**EXP**
ROA	1.000			
DRM	0.0767	1.0000		
DRL	0.0953	-0.0523	1.0000	
EXP	0.3868	0.1203	0.4718	1.0000

Source: Author's Computation, 2022

The correlation coefficients for the explanatory variables are in a range from -0.0523% to 386.8%, suggesting the linear relationship strength between the variables. According to Gujarati (2004), multicollinearity becomes an issue when the correlation between any two regressors is more than 0.80. A quick glance at Table 3 reveals that the bulk of cross-correlation terms for the explanatory factors are small, suggesting that multicolinearity among these variables is not a significant cause for alarm.

Multicollinearity Test

For the panel least square estimate technique to work, it is assumed that the exogenous variables are not completely or highly correlated with one another. To say that the explanatory variables are "orthogonal" implies that they do not correlate with one another in any way. Table 6 displays the correlation between the independent variables through the variance inflation factor (VIF). There is no cause for worry about multicollinearity amongst the variables since their VIFs are all under 10. Similar to how the average VIF is under 10,

Table 6: Variance Inflation Factor

Variable	VIF	1/VIF
ROA	1.19	0.8410
DRM	1.46	0.6832
DRL	1.84	0.5435
EXP	1.14	0.8799
Mean VIF	1.33	

Source: Author's Computations 2022.

Heteroskedasticity Tests

Additionally, the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity was used to look for evidence that the assumption of homoscedasticity (constant variance) of disturbances had been broken, and the chi result of 1.14 with a p-value of 0.8799 verified the constant variance of the data set.

DISCUSSION OF RESULTS

Management must place more emphasis on variance analysis as shown by the positive and substantial relationship between the variables in hypothesis 1. With this finding, I agreed with Georgiev (2014), who found a strong link between CVP data and firm profitability. Results from testing H2 revealed that labor cost fluctuation significantly affects ROA in manufacturing decision making that leads to better planning. That's consistent with what we've learned from previous studies. Cost volume profit analysis, as stated by Dabor et al. (2013), equips managers with the facts they need to make educated decisions. Manufacturing businesses may benefit from the labor cost variance analysis technique, as determined by Adesina et al. (2015), Ihemeje et al. (2015), and Kavitha (2018). Thirdly, the findings supported the idea that top material cost fluctuation is positively and significantly related to manufacturing ROI. This finding demonstrated that when manufacturing companies' upper management backs the

material cost variance report, the report's efficacy is prioritized, and the necessary facilities are made available, proper implementation of the report is undertaken to plan and attain goals ((Abdullahi, 2015;. Chand,2015; Cletus & Thankgod,2015). This finding agrees with those of Kavitha et al. (2015); Dabor et al. (2013); Alnasser et al. (2014); Adesina et al. (2015); Ihemeje et al. (2015); (2018).The outcomes from this research developed a decision pattern for the management of manufacturing businesses in Nigeria. Here is a quick rundown of the study's most important conclusions:

- In order to improve their bottom lines, manufacturing organizations should increase their use of a few key tools: • First, cost variance analysis

- A significant portion of manufacturing company staff turnover may be prevented if proper management is not used. and the decision-making process should will not be simplified for effectiveness.

- Top-level executives in manufacturing organizations must back the variance analysis model for it to be effectively put to use in profit planning, safety-margin estimation, and actual bottom-line realization.

CONCLUSION, CONTRIBUTIONS TO KNOWLEDGE AND RECOMMENDATIONS

In spite of the significance of variance analysis, it has been overlooked in a number of studies on the variables influencing financial success in Nigeria. This research set out to do just that by analyzing the connection between variance analysis and the financial health of Nigerian consumer goods companies. From the data collected and analyzed throughout this study, many conclusions may be made.

As a result, the research concludes that variance analysis has a significant statistical link with the financial performance of listed consumer goods firms in Nigeria. Inference statistics were used to corroborate the presence of a significant impact at a p-value of less than 5%, lending credence to this position.

The study contributed conceptually by proposing a new conceptual framework, which confirmed that there is a relationship between the application of variance analysis and financial performance in manufacturing companies. The theoretical contribution of this research is the confirmation of the relevance of the frictional theory of profits. Lastly, the study also contributed empirically by producing a practical result, which indicates that the relationship between the independent and the dependent variables is not only positive but significant.

The research suggests that while making the decision to distribute dividends, the management of listed consumer products businesses in Nigeria should take into account the variation in overhead costs, labor costs, and material costs.

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