"Investment in tangible non-current assets and financial performance of food manufacturing firms in Nigeria"

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BUSINESS PERSPECTIVES

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INVESTMENT IN TANGIBLE NON-CURRENT ASSETS AND FINANCIAL PERFORMANCE OF FOOD MANUFACTURING FIRMS IN NIGERIA

Abstract

Nigeria has a serious food crisis, which can be attributed to poor management of tangible non-current assets by food manufacturing companies, which leads to low productivity, product wastages, and ineffective processing and distribution of products culminating in low return on assets. Therefore, this study examined the effects of changes in tangible non-current assets on return on assets of food manufacturing firms in Nigeria. The study employed an ex-post facto research approach with data obtained from top food manufacturing companies quoted on the Nigerian Stock Exchange from 2008 to 2020. The finding revealed that tangible non-current assets play a very important role in the return on assets of food manufacturing companies in Nigeria. Specifically, the study revealed that changes in investment in land and buildings, plants and machineries and motor vehicles have a statistically significant influence on return on assets (ROA) of quoted food manufacturing companies (FMCs). It was concluded that an increase in tangible non-current assets enhances the return of assets of food manufacturing companies. In line with the findings of this study, it was recommended that considerable attention should be paid by the management of FMCs to efficient utilization of tangible non-current assets because it is only when non-current assets are efficiently utilized that they would have significant contributions to or implications for the return on assets of the business.

Keywords	plants and machineries, land and buildings, motor vehicles, return on assets, Nigeria.
JEL Classification	G11, G12, L66

INTRODUCTION

The use of machines and other tangible non-current assets is indispensable in all stages of manufacturing operations. Hence, there is an increase in the interest in tangible non-current assets by scholars and practitioners and how it affects business operations (Zhang, 2017; Chukwu et al., 2017; Nangih et al., 2020). In the food manufacturing sector, tangible non-current assets are becoming of paramount importance due to the problem of food insecurity and also because food manufacturing companies have fallen victims to untimely liquidation as a result of inadequate investment in non-current assets (Pritchard, 2000).

In recent times, the majority of foods sold to consumers are in packaged form and pass through different stages of processing and packaging through the use of various food machines (Aday & Aday, 2020). As a result of changes in demand for food by consumers, production of new foodstuffs in the food sector and changes in food packages, there is a resultant change in the way food machines are produced and designed. It is expected that the quantity and quality of food produced will be increased and performance enhanced when equipment that

enhances capacity and productivity contributes to the safety of employees and improves the hygiene of the product employed (Aday & Aday, 2020). It is crucial that food manufacturing companies must adapt their machine and equipment to new technologies to reduce cost of production, have a permanent presence in market, and have competitive advantage (Amit et al., 2017).

However, in spite of the massive farm output, Nigeria, like most developing countries, is faced with the significant problem of food insecurity (Otekunrin, 2022). Food manufacturing companies are not meeting up with the task of ensuring food security in the country and this is attributed to low productivity, wastages during postharvest, processing and distribution (Otekunrin et al., 2022). Furthermore, Gustavsson et al. (2011) asserted that about 40% of food losses in developing countries occur during postharvest and processing. In contrast, in industrialized countries, more than 40% of food losses occur at the consumer and retail levels. Perhaps, improved investment in tangible non-current assets could turn the return on assets of these firms and engender improved food security in the country.

1. LITERATURE REVIEW

This study focused on tangible non-current assets and return on assets as a measure of financial performance. The study is underpinned on the efficiency and resource-based theories. The efficiency theory was proposed by Demsetz (1973). According to the theory, better management, as well as greater scale efficiency gives rise to greater profitability and hence better firm performance. The theory presupposes that management efficiency does not only increase profitability but also results in more outstanding market share and improved market concentration (Athanasoglou et al., 2008). It can therefore be said that management efficiency in utilization of tangible non-current assets will lead to an increase in a firm's return on assets.

On the other hand, resource-based theory explains that the possession of certain resources or assets gives an organization the opportunity to have competitive advantage over its competitors. The organization can achieve lasting profitability as a result of this competitive advantage (Barney, 1991). Porter (1991) advanced that a resource can be valued by its ability to enable a firm to gain helpful advantage in a given market. The importance of a firm's resources cannot be overemphasized within the Resource-Based Theory. Hence, the importance of this theory in this study is that adequate investment and efficient utilization of tangible non-current assets will result in an increase in the financial performance of food manufacturing companies in Nigeria.

Tangible non-current assets are assets owned by a company that cannot be converted into cash quickly, and the realization of its benefits lasts more than a year (Corporate Finance Institute, 2022). All assets of an organization, which are recorded at acquisition cost on the balance sheet, are made up of property, plant and equipment, intangible assets, intellectual property and other long-term assets (Udeh, 2017). Non-current assets are categorized into tangible assets, intangible assets and natural resources. Tangible assets are assets in a physical form. They form an essential part of a company's core operations. Tangible non-current assets constitute a major form of assets in the financial statements of many industries (Udeh, 2017). Tangible non-current assets are capital intensive and hence expected to last for more than one accounting year. Oftentimes, tangible non-current assets account for over eighty percent of the total assets available for a manufacturing firm (Lyandres & Palazzo, 2016). The degree to which a firm invests in plant and equipment, land and building, motor vehicles and its relationship to the total asset value of the firm is oftentimes referred to as asset tangibility (Almeida & Campello, 2007). The tangible non-current assets employed in this research are plants and machineries, land and buildings and motor vehicles.

Return on assets (ROA) is a profitability ratio that shows how profitable a company is concerning its total assets. Investors, corporate management and analysts use ROA to determine the efficiency of a company in generating profit from its assets. The ratio is highlighted in the financial ratio analysis due as it indicates the company's success in creating profits (Wild, et al., 2005). Return on assets measures a company's ability to generate profits

in the past and hence project them in the future. The assets include all the company's property that is derived from the capital itself or obtained from foreign capital, which has been converted into the assets of the company for the purpose of corporate sustainability.

1.1. Calculation of return on assets

Brigham and Hoston (2001) compared available net profit for common shareholders to total assets in determining return on assets (ROA). That is:

$$ROA = \frac{Available\,net\,profit\,for\,common\,shareholder}{Total\,assets}. \qquad (1)$$

A higher value of ROA indicates better performance of a company, since it shows that the company can earn more money with little investment. Simply put, higher ROA implies more asset efficiency. Wild et al. (2005) noted that the value of ROA shows a company's return on all assets provided to the company.

There are several studies on different facets of tangible non-current assets and their impact on a firm (Lawal et al., 2019). In this study, three tangible non-current assets are considered. These are plant and equipment, land and building, and motor vehicles. Land is an essential tool for the development of the agricultural and related sectors of a given economy. Nigeria has a total area of roughly 924,768 square kilometers with a growing population of about 200 million people (Oluwatayo, Timothy & Ojo, 2019). More than 250 ethnic groups may be found throughout Nigeria's 36 states and Federal Capital Territory (Nuhu, 2009). Omole (2009) asserts that land serves as a factor of production and a non-current asset for the vast majority of Nigerian households. Despite this, the state decides the extent of access and title ownership (Udoekanem et al., 2014). Odoemelan et al. (2013) assert that the availability of land in Nigeria, given the state of agricultural development, determines the security of food and livelihood. Further, Oladapo and Olajide (2005) identified the problems with agricultural productivity and food security to include limited access to land, technology, and financing, a lack of infrastructure, and inconsistent regulatory regimes.

On the other hand, plants and machinery are assets that are not stock in trade, the business premises or parts of the business premises, but they are used for carrying on the business. The difference between plant and machinery is that generally, plants will not have moving parts, whereas machinery will have. Abdi (2008) stated that the extent of food production in most firms is affected by investment in machinery and equipment and oftentimes, this is the only source of growth. Pakko (2002) affirmed this by asserting that the firms that invest in machinery and equipment are positively affected by technological development. Meliciani (2000) stated that investment in machinery and equipment has a positive effect on the performance of firms. Sala-i-Martin (1997) affirmed this by saying that investment in machinery and equipment has a four times greater effect on the performance than if the firms worked with existing machinery. Plant and equipment affect the level of the production process in a firm (Abdi, 2008). Also, according to Rao et al. (2003), investment in machinery and equipment is critical for boosting the productivity of an individual worker in an organization. Ojo (2004) stated that one of the factors that manufacturing companies ought to be sensitive to is planning for the replacement of tangible non-current assets. When plants and equipment are used after their effective useful life, there will be over expenditure on repairs that will cause the expenditure to be more than the returns. If there are obsolete machines as a result of changes in technology and the design of new products, it will be imperative to replace such assets early enough in order to ensure that production and sales are not negatively affected. Stergois and Prodogans (2014) asserted that investment in machinery and equipment has a positive effect on firm performance.

Gunasekaran (2011) opined that the food manufacturing companies have been forced to consider automation of most manufacturing processes due to rapid advances in technology and increased expectations of consumers as well as regulatory agencies for improved food safety and quality. Nevertheless, food manufacturing companies are among the fastest-growing industries for plant automation. For instance, food manufacturing companies rank among the top ten in the use of machine vision technology, which is a major component in plant automation.

Motor vehicle as a component of tangible non-current asset is important to every manufacturing firm as it is used to transport people and products from one location to another but does not run on tracks (like trains or trams). The motor vehicle is a motorized (mechanical or electrically powered) road vehicle, including its cargo that is not operated on rails. A vast global cargo network links the various parts of the food manufacturing companies' operation is the continuous and uninterrupted flow of products from distribution centers to store locations. Kenton (2017) stated that tangible non-current assets are physical items of value that corporations use to generate revenue, and they are not sold to customers. Liberti and Sturgess (2016) assert that physical non-current assets provide high guarantees, serve as the primary source of collateral for corporate borrowing, and are crucial for a company's ability to receive external financing.

Studies on the influence of tangible non-current assets on profitability show mixed results. With some scholars asserting that tangible non-current assets have positive and significant influence on profitability of a firm (e.g., Lawal et al., 2019). Specifically, Lawal et al. (2019) found existing connections between land tenure and food security in Africa, which supports the idea that land is essential to many Africans' ability to survive. This suggests that in order to achieve food security and, by extension, poverty reduction, it is necessary to address the issues of land access, tenure security, and the ability to manage land sustainably and productively (Food and Agriculture Organization (FAO), 2003). A company with comparatively less tangible assets is more likely to have trouble securing outside funding and will also be financially constrained, missing out on investment possibilities (Almeida & Campello, 2007). However, Onalolapo and Kajola (2010) found a negative association between investments in tangible non-current assets and a company's profitability. Likewise, Kebewar (2013) found that high levels of tangible non-current assets reduce profitability due to more sales fluctuations, low development and research activity, and these factors reduce the availability of long-term investment opportunities. Based on the mixed results from previous studies on tangible non-current assets and profitability, this study aims to provide updated evidence especially from

a developing economy perspective by examining the effects of changes in tangible non-current assets on return on assets of food manufacturing firms in Nigeria.

Based on the above, the following hypotheses are proposed:

H1: *Investment in land and buildings has a significant influence on return on assets.*

H2: *Investment in plants and machineries has a significant impact on return on assets.*

H3: *Investment in motor vehicles has an impact on return on assets.*

2. METHODOLOGY

2.1. Research design and population

To achieve the objectives of this study, an ex-post facto research design was used. The use of the ex-post facto research design is justified because the observations investigated had already taken place and data for the research are already in existence (Sharma, 2019). Matutes et al. (2021) assert that the ex-post facto research design deals with events that had already occurred. This study used data obtained from top food manufacturing companies quoted on the Nigerian Stock Exchange. The data was obtained from 2008 to 2020, a period of thirteen years.

The population of the study comprised all the food manufacturing companies quoted on the Nigerian Stock Exchange as at the year 2022. A total of fifteen food manufacturing companies were chosen due to their importance in food security as well as the economic structure of the country. Also, food manufacturing companies were chosen due to the nature of their assets, which involves heavy investment in tangible non-current assets.

2.2. Model development

The model was developed using the Egbuhuzor and Chukwu (2017) model on tangible assets and corporate performance: evidence from the manufacturing industry in Nigeria is as follows:

$$Y = \propto + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \varepsilon, \qquad (2)$$

where Y = Dependent variable (ROA); X_1 = Land and Building; X_2 = Plant and Machinery; X_3 = Board Independence; ROA = Return on Assets; $\propto$ = constant of regression; ε = error term; $\beta_1, \beta_2, \beta_3$ = coefficients of regression.

2.3. Model specification

The ordinary least square regression technique was used to analyze the relationship between investment in non-current assets and profitability of food manufacturing companies in Nigeria, proxied by Return on Assets. Adopting the Egbuhuzor and Chukwu (2017) model gives the following:

$$ROA = \beta_o + \beta_1 LBD_{it} + \beta_2 PME_{it} + \\ + \beta_3 MOV_{it} + \varepsilon, \qquad (3)$$

where ROA = Return on Assets; LBD = Land and Building; PME = Plants, Machineries and Equipment; MOV = Motor Vehicles; β_0 = constant; ε = error term (representing factors other than those specified in the model); β_1-β_3 = coefficients.

2.4. Method of data analysis

The data collected and collated in this study were first presented on tables to the trend of changes in the investments in plants, machineries and equipment, land and buildings as well as motor vehicles of the selected food manufacturing companies from 2008 to 2020 using their mean value (average). The trend of changes of the variables mentioned above was plotted and related to trends of changes in the values of the return on asset for the same period (which were used as proxies for the dependent variables). The data was then analyzed using the Ordinary Least Square (OLS) regression method to test the different hypotheses formulated for the study. Regression, as a statistical tool, is used to understand the relationship between two or more variables. Also, it is very helpful when developing a model for predicting a wide range of outcomes. It is more amenable to "all things being equal analysis" due to the fact that it allows the explicit control for a lot of other factors that affect the dependent variable simultaneously.

The use of ordinary least square regression in this study helped to determine the effect of the independent variable(s) on the dependent variable and to what degree. In other words, it determined both the direction and magnitude of the relationships between the independent variables (land and building, plant, machinery and equipment and motor vehicles), and the dependent variable in this study is measured by return on assets.

3. RESULTS

This study's major goal was to ascertain the effects of tangible non-current assets on the financial performance of Nigeria's food manufacturing companies (FMCs) between 2008 and 2020. Data were generated and empirically tested to confirm the effect of changes in investment in tangible non-current assets on financial performance measure of return on assets. Research hypotheses were tested using the Statistical Package for Social Sciences (SPSS) version 25.

Table 1. Changes in investment in land and buildings and return on assets

Source: Researcher's analysis, 2022.

Year	Investment in Land and Building (Average)	% Change	Return on Asset (average)	% Change
2008	2,472,173		0.19	
2009	2,453,931	−0.7	0.14	− 26.3
2010	2,387,912	−2.7	0.15	7.1
2011	4,245,616	77.8	0.15	0
2012	4,978,709	17.3	0.14	−6.7
2013	6,308,190	26.7	0.16	14.3
2014	7,961,661	26.2	0.11	−31.3
2015	8,353,451	4.9	0.09	−18.2
2016	8,819,632	5.6	0.08	−11.1
2017	11,949,782	35.4	0.12	50
2018	10,459,461	−12.5	0.11	−8.3
2019	12,962,043	23.9	0.09	−18.2
2020	15,450,175	19.2	0.08	−11.1

In the base year of the study (i.e. year 2008), there was an average of ₦2,472,173 investments in land and building in FMCs, while ROA was 0.19. Positive changes in investment in land and buildings were found to have a positive impact on the ROA of the selected FMCs in 2011, 2013 and 2017 (0%, 14.3% and 50%, respectively). However, it was found to have an unstable impact on ROA in other

years. Perhaps, this trend suggests that changes in investment in land and building only has a complementary impact on ROA and does not singly explain variation in ROA.

Table 2. Changes in investment in plants and machineries on return on assets

Source: Researcher's analysis, 2022.

Year	Investment in Plant Machinery and Equipment (Average)	% Change	Return of Asset (Average)	% Change
2008	5,969,127		0.19	
2009	6,396,430	7.16	0.14	−26.3
2010	6,437,296	0.64	0.15	−7.1
2011	8,095,149	25.8	0.15	0
2012	9,007,091	11.3	0.14	−6.7
2013	10,565,410	17.3	0.16	14.3
2014	12,784,907	21.0	0.11	−31.3
2015	13,002,324	1.7	0.09	−18.2
2016	13,192,717	1.5	0.08	−11.1
2017	15,581,766	18.1	0.12	50
2018	14,660,712	−5.9	0.11	−8.3
2019	16,630,689	13.4	0.09	−18.2
2020	24,268,821	45.9	0.08	−11.1

In the base year of the study (i.e. year 2008), there was an average of ₦5,969,127 investments in plant machinery and equipment in FMCs, while ROA was 0.19. Positive changes in investment in plants and machineries were found to only have a positive impact on the ROA of the selected FMCs in 2011, 2013 and 2017 (0%, 14.3% and 50%, respectively). However, it was found to have a vacillating impact on ROA in other years. Perhaps, this trend suggests that changes in investment in plant machinery and equipment has a complementary impact on ROA and does not singly explain variation in ROA.

Table 3. Changes in investment in motor vehicles on return on assets

Source: Researcher's analysis, 2022.

Year	Investment in Motor Vehicle (average)	% Change	Return of Asset (average)	% Change
2008	373,637		0.19	
2009	667,060	78.5	0.14	−26.3
2010	498,083	−25.3	0.15	−7.1
2011	606,558	21.8	0.15	0
2012	494,166	−18.5	0.14	−6.7
2013	1,085,822	119.7	0.16	14.3
2014	997,034	8.2	0.11	−31.3
2015	1,039,913	4.3	0.09	−18.2

Year	Investment in Motor Vehicle (average)	% Change	Return of Asset (average)	% Change
2016	749,899	27.9	0.08	−11.1
2017	1,532,831	104.4	0.12	50
2018	1,445,712	−5.7	0.11	−8.3
2019	1,737,749	20.2	0.09	−18.2
2020	2,882,925	65.9	0.08	−11.1

In the base year of the study (i.e. year 2008), there was an average of ₦373,637 investments in motor vehicles in the Food Manufacturing Companies (FMCs) while Return on Asset (ROA) was 0.19. However, by the year 2009, when the investment in motor vehicles was increased by 78.5%, the value of Return on Asset fell from 0.19 to 0.14 (a percentage decrease of 26.3%). Similar impact was observed in 2010, 2012, 2014, 2015, 2016, 2018, 2019 and 2020. Positive changes in investment in motor vehicles was found to have a positive impact on the value of the ROA of the selected FMCs in 2011, 2013 and 2017 (0%, 14.3% and 50% respectively). Therefore, the trend shows an unstable relationship between investment in motor vehicles and return on assets of Food Manufacturing Companies. These findings seem to suggest that the impact that investment in motor vehicles would have on ROA of selected FMCs is dependent on other factors which could be based on the extent to which the non-current assets were effectively and efficiently utilized.

3.1. Test results for hypothesis one

H_1: *Investment in land and buildings has a significant influence on return on assets.*

The results in Tables 4a – 4c provided an investigation into the overall significance of the model. The value of r is 0.806, implying that there is a strong relationship. The r-square indicates that about 65.0% variation in the endogenous variable (Return on Asset) can be explained by the exogenous variable (changes in investment in land and building), while 35% is accounted for by other factors aside from changes in investment in land and building (LBD). In addition, the estimated value of the regression coefficient (β) is 0.097. This shows that investment in land and building has a significant positive impact on return on assets of the selected companies in food manufacturing companies (FMCs) in Nigeria. That is, a relative

Table 4a. Model summary for hypothesis one

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.806a	.650	.618	.021	.650	20.391	1	11	.001

Note: a. Predictors: (Constant), LOG10LBD, b Dependent Variable: ROA.

Table 4b. ANOVA result for hypothesis one

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.009	1	.009	.001	.001b
	Residual	.005	11	.000		
	Total	.014	12			

Note: a. Dependent Variable: ROA, b. Predictors: (Constant), LOG10LBD.

Table 4c. Coefficients result for hypothesis one

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	784	.146		5.358	.000
	LOG10LBD	.097	.022	.806	4.516	.000

Note: a. Dependent Variable: ROA.

increase in the investment in land and building will result in about 9.7% increase in the return on assets of FMCs in Nigeria. This impact is relatively low but significant.

The probability value of the independent variable (LBD), which is 0.000, suggests that changes in investment in land and buildings have a significant effect on the return on assets of FMCs. Thus, this study agrees with the alternative hypothesis (*H1*) and the conclusion is drawn that changes in investment in land and buildings have a favorable ef-

fect on the return on assets of FMCs. This finding suggests that variations in land and building investment have a statistically significant influence on FMCs' return on assets.

3.2. Test results for hypothesis two

H_2:   *Investment in plants and machineries has a significant impact on return on assets.*

The results in Tables 5a – 5c provided an investigation into the overall significance of the mod-

Table 5a. Model summary for hypothesis two

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.832a	.692	.664	.01989	.692	24.661	1	11	.000

Note: a. Predictors: (Constant), LOG10PME, b Dependent Variable: ROA.

Table 5b. ANOVA result for hypothesis two

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.010	1	.010	24.661	.000b
	Residual	.004	11	.000		
	Total	.014	12			

Note: a. Dependent Variable: ROA, b. Predictors: (Constant), LOG10PME.

Table 5c. Coefficients result for hypothesis two

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.211	.219		5.530	.000
	LOG10LBD	.154	.031	.832	.4.966	.000

Note: a. Dependent Variable: ROA.

el. The value of *r* is 0.832, implying that there is a strong relationship. The r-square indicates that about 69.2% variation in the endogenous variable (Return on asset) can be explained by the exogenous variable (changes in investment in plant and machinery), while 30.8% is accounted for by other factors aside changes in investment in plant, machinery and equipment (PME). In addition, the estimated value of the regression coefficient (β) is 0.154. This shows that changes in investment in plant, machinery and equipment has a significant positive impact on return on assets of the selected FMCs in Nigeria. That is, a relative increase in investment in plant, machinery and equipment will result in about 15.4% increase in the return on assets of FMCs in Nigeria. This impact is low but significant.

To test for the significance of the independent variable, the probability value of the independent variable (PME), that is, 0.000, indicates that changes in investment in plant, machinery and equipment has a positive impact on the return on assets of FMCs (i.e. p-value is less than 0.05 or 5% critical value). Thus, the alternative hypothesis (H_1) is accepted, and it is concluded that changes in investment in plant and machinery positively affect return on assets of FMCs. This result implies that changes in investment in plants and machineries have a positive impact on return on assets of quoted FMCs.

3.3. Test results for hypothesis three

H_3:   *Investment in motor vehicles has an impact on return on assets.*

The results of Tables 6a-6c provided an investigation into the overall significance of the model. The value of *r* is 0.713, implying that there is a strong relationship. The r-square indicates that about 50.9% variation in the endogenous variable (Return on assets) can be explained by the exogenous variable (investment in motor vehicles), while 49.1% is accounted for by other factors aside from changes in investment in motor vehicles (MOV). In addition, the estimated value of the regression coefficient (β) is .096. This shows that investment in motor vehicles has a significant positive impact on return on assets of the selected FMCs in Nigeria. That is, a relative increase in investment in motor vehicles will result in about a 9.6% increase in the return on assets of FMCs in Nigeria. This impact is also low but significant.

To test for the significance of the independent variable, the probability value of the independent variable (MOV), that is, 0.006, indicates that changes in investment in motor vehicles have a positive impact on the return on assets of quoted FMCs (i.e. p-value is less than 0.05 or 5% critical value). Thus, the alternative hypothesis (H_1) is accepted and it is concluded that changes in investment in

Table 6a. Model summary for hypothesis three

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.713a	.509	.464	0.025	.509	11.402	1	22	.000

Note: a. Predictors: (Constant), LOG10MOV, Dependent Variable: ROAb.

Table 6b. ANOVA result for hypothesis three

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.007	1	0.007	11.402	.006b
	Residual	0.007	11	0.001		
	Total	.014	12			

Note: a. Dependent Variable: ROA. b. Predictors: (Constant), LOG10MOV.

Table 6c. Coefficients result for hypothesis three

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.697	.170		4.102	.002
	LOG10LBD	.096	.028	.713	3.377	.006

Note: a. Dependent Variable: ROA.

motor vehicles have an impact on return on assets of quoted FMCs. These results imply that changes in investment in motor vehicles have a positive impact on return on assets of quoted food manufacturing companies.

4. DISCUSSION

The previous section of this paper presented and analyzed the results of this study using the objectives of the study as a guide. Land and buildings, plants and machineries, and motor vehicles were adopted as proxies of tangible non-current assets, while return on assets was adopted as a proxy for financial performance. The results of the hypotheses testing revealed that changes in investment in tangible non-current assets have a significant effect on the firms' financial performance as measured by return on assets. This implies that variations in the return on assets of firms in the food manufacturing sector can be explained by how well or efficiently an organization manages or utilizes its tangible non-current assets. The finding corroborates the finding of Olatunji and Tajudeen (2014) in the Nigerian banking sector. It also supports the findings of the study by Egbuhuzor and Chukwu (2017) who revealed that investment in tangible non-current assets affect profitability of firms. Similar assertion was made by Musah et al. (2019) who asserted that the difference between profit and loss in any organization depends on how well it utilizes its assets. This was also reiterated in the study by Safiq et al. (2020) who argued that when properties of firms are idle or not generating enough cash flows, it could have an impact on the value and financial health of the business.

Furthermore, the findings of this study corroborates the study of Udoayang et al. (2020) who also revealed that property, plant and equipment have a significant relationship with return on assets, while there is a joint relationship between variables of property, plant and equipment and return on assets. The same assertion was observed in Aboody et al. (1999). However, the findings in this study disagree with the findings in the study by Okwo et al. (2012) who reported that investments in property, plant and equipment did not significantly affect profitability of brewing companies in Nigeria. Perhaps, the variation between both studies could be linked to the assertion in the study of Olonite and Okoro

(2021) who opined that the need for investment in tangible non-current assets varies greatly among companies of different sizes. It could be suggested from the aforementioned that capital intensive businesses, who give significant investment to tangible non-current assets, would observe a significant impact on their return on assets unlike technology or service businesses with a small investment in tangible non-current asset. Impliedly, consideration should be given to the size and type of company in making an evidence-based decision on the use of the ROA ratio (Adarov & Stehrer, 2019).

The findings in this study contrast that of Bhutta and Hassan (2013), who found that a firm's specific factors have no significant impact on profitability. It also disagrees with Lee (2010) in the United States who reported a negative but significant association between fixed assets utilization and the performance of restaurants in the United States. Perhaps, the variation in both studies could be explained by the fact that while the present study focused on land and buildings, plants and machineries, and motor vehicles, the latter used capital intensity as the proxy for the independent variable. Obviously, capital intensity increases the risk of firms.

Further findings from the study also showed that changes in investment in motor vehicles of the selected firms had a significant positive impact on the return on assets of the selected food manufacturing companies in Nigeria. This finding suggests that an increase in the investment in motor vehicles among the selected firms had a positive impact in the value of return on assets of the selected companies. It could be asserted from these findings that changes in investment in motor vehicles have an impact on return on assets of quoted food manufacturing companies. However, consideration should also be given to the availability and quality of road infrastructure needed for facilitating easy transportation or distribution of food products across the country. Again, the findings suggest that Nigerian Food Manufacturing Companies (FMCs) should encourage investment in motor vehicles to enhance speedy distribution of food products in Nigeria as well as to enhance their overall performance and profitability. This is consistent with the assertion in a study by Musah et al. (2019), who conducted a similar study among firms listed on the Ghana Stock Exchange.

CONCLUSION

This study's goal was to ascertain how changes in investment in tangible non-current assets affected Nigeria's food manufacturing companies' (FMCs') financial performance (2008–2020). The conclusion showed that tangible non-current assets are crucial to the financial performance of Nigerian food manufacturing companies. The research covered land and buildings, equipment and machinery, and automobiles as tangible non-current assets, and profitability was calculated using return on assets. The study found that changes in land and building investment (LBD) had a statistically significant influence on the return on assets of listed food manufacturing companies. The finding suggests that an increase in the investment in land and building among the selected firms would have a positive impact or lead to an increase in the value of return of assets of the selected companies. Similarly, the study established that changes in investment in plant and machinery (PME) have an impact on return on assets (ROA) of quoted food manufacturing companies. This indicates that an increase in the investment in plant and machinery among FMCs would increase the value of return of assets of the selected firms.

Also, the finding showed that variation in the return of assets of the FMCs can be explained by how well or efficiently an organization manages or utilizes its investment in motor vehicles. This indicates that an increase in the investment in motor vehicles among the selected firms would have a positive impact on the increase in the value of return of assets of the selected companies. In line with the findings of this study, it was recommended that considerable attention should be paid by the management of the FMCs to efficient utilization of tangible non-current assets as it is only when the non-current assets are efficiently utilized that they would have significant contributions to or implications for the survival of the business. Further, to improve the return on assets of Nigeria's food manufacturing companies, more money should be invested in tangible non-current assets, particularly plant and machinery. Additionally, to solve the issue with food product distribution in Nigeria, food manufacturing companies should also invest carefully in motor vehicles.

AUTHOR CONTRIBUTIONS

Conceptualization: Marian Mukosolu Okobo, Robinson Onuoha Ugwoke, Ekom Etim Akpan.
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