FIRM ATTRIBUTES AND SYSTEMATIC RISK IN LISTED INDUSTRIAL GOODS FIRM IN NIGERIA

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Abstract

The study examined Firm attributes and systematic risk in industrial goods firm in Nigeria. Six specific objectives and hypotheses were formulated. The study adopted ex-post facto research design. Cross sectional panel data secondarily sourced from the annual financial reports and accounts of ten (10) listed industrial goods firm in Nigeria, Central Bank of Nigeria Statistical Bulletin and Central Security Clearing System (CSCS) from 2012 to 2020 were analyzed using descriptive statistics, hausman specification test and ordinary least square regression analyses with the aid of E-view at 5% level of significance. The study proxy firm attributes using profitability, liquidity, financial leverage, firm size, operating efficiency and firm growth as explanatory variables while systematic risk proxy using firm beta as response variable. The study found that profitability, liquidity and financial leverage have negative coefficient and are insignificant firm attributes of systematic risk in industrial goods firm in Nigeria. Firm size maintains positive coefficient and is a significant attribute of systematic risk in industrial goods firm in Nigeria, while operating efficiency and firm growth maintain positive coefficient and significantly, non-attributes of systematic risk in industrial goods firm in Nigeria. The paper recommends that managers of Industrial goods firm in Nigeria should lookout for those operating, investing and financing policies that will improve and sustain the profitability (ROA), liquidity and financial leverage opportunity of the firm to contend with the systematic risk exposure that threatens the positive growth of industrial goods firm' stock prices performance in Nigeria.

Keywords: Firm Attributes, Systematic Risks & Industrial Goods Firm

Introduction

Decision making is one of the major management functions. It involves commitment to action towards day to day running of an organization. To arrive at a quality decision, there must be a plan. Planning refers to setting attainable goals which relate to the future (Institute of Cost and Management Accounting, (ICMA, 2006). The environments in which decisions are made are laced with uncertainties and inherent risk towards firm' objectives. Each and every investment made by a business entity or an individual has a specific risk attached to it (Abdelsalam, Barake & Kulaib, 2020). In today's hostile and highly volatile economic business environment, risk is a stumbling block for every organization in each sector of the economy. This could arise from changes in price levels, politics, economic laws and other factors affecting market supply and demand (Genrkh, 2015). It is an intrinsic part of the business that firm must be willing to take on a fair proportion to provide most value to the stakeholders. Typically, managers are exposed to both unsystematic and systematic risk. On the part of unsystematic risk, it falls on the hand of the management to lessen its exposure towards firm performance through the application and practices of risk management techniques mostly derived from managers' experience and competence (Souad, Amal & Haitham, 2020). On the other hand, systematic risk, commonly referred to as market risk is caused by external factors that are not within the control of the organizational manager. It is a risk due to non-firm reasons such as interest rate, inflation, economic stagnation and political risk (Karakus, 2017). All investment including security held by the firm are subject to systematic risk and thus, they cannot be mitigated through the diversification of the portfolio. It is one of the most important factors of stock market worth to be considered in investment and financial decisions. Systematic risk is measured by beta. The importance of beta is derived from the fact that it creates a link between the stock market investors' expectations and firm's decisions (Eldomiaty, 2010). Even though systematic risk arises from uncontrollable external factors, however, managerial decisions can change the degree of systematic risk exposure to firm's performance (Chee, Hooy & Chyn, 2010).

Operating and Financial leverage can be combined to show the total leverage effect for a given change in sales on earnings available to ordinary shareholders. Combined leverage combines the effect of business and financial risk (Olowo, 2017). They together cause wide fluctuation in earnings per share (EPS) for a given changes in sales and operating costs (Saleem, Rahman & Sultena, 2012). The operating leverage affects Earnings before Interest and Tax (EBIT) and financial leverage affects Earnings per Share (EPS), Return on Equity (ROE) and Return on Investment (ROI) (Saleem et al, 2012). Financial Leverage is calculated by Debt ratio measured by the ratio of total debt to total assets. Total debt contains short- and long-term loan or financing from financial institutions, debenture/bonds, deferred payment arrangements for buying capital equipment, interest bearing public deposits, and any other interest-bearing loans. (Mohamad, Mohd, Amirul & Sharifah, 2020, Alaghi, 2013, Hooy & Lee, 2010, Igbal & Shah, 2010). The study measured financial leverage as the degree of debt ratio calculated as the total debts divided by total assets.

Methodology

The research design that was adopted for this study is the ex-post facto research design because it sought to investigate the effect of

independent variables on the dependent variables after occurrence using existing data from secondary source which cannot be manipulated. The ex-post facto research design is causal comparative research which is used when the researcher intends to determine cause-effect relationship between the independent and dependent variable with a view to establishing a causal link between them (Ofor 2022). Therefore, this study sought to ascertain the firms attributes of systematic risk of quoted industrial firms in Nigeria. This study adopted secondary data and the data were sourced from the annual reports and accounts of the various industrial goods firm quoted on the Nigeria stock Exchange from 2012 to 2020, Central Bank of Nigeria Statistical Bulletin and Central Security Clearing System (CSCS). Firm's specific variables were sourced from annual reports and accounts of industrial goods firm. All Share index and Treasury bill were sourced from the Central bank of Nigeria statistical bulletin, while market share price of industrial goods firm was sourced from central security clearing system.

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The liner regression model used in this study is adopted from the prior studies of Igbai,

Khan, Igbai (2015) and Alaghi, (2013). The model is consistent with the previous studies in pattern, but peculiar in content with this study and was guided by the Random Effect Regression analysis because the study was based on panel data. Secondly, the Fixed and Random Effect Regression model took care of heteroskedasticity from the respective data of variables

The adopted model is as thus stated:

$$Y = F (X1, X_2, X_3, X_4, X_5 \_ \_ \_)...................1$$

$$BETA = F (PROF, LIQ, LEV, FS, OE,)....2$$

The linear model for this study includes additional variable "Firm Growth", to the adopted linear models of Igbaiet el, 2015 and Alaghi, 2013.

$$BT_{it} = \beta_o + \beta_1 PROF_{it,} + \beta_2 LIQ_{it,} + \beta_3 LEV_{it,} + \beta_4 FSIZE_{it,} + \beta_5 OPEY_{it,} + \beta_6 FGW_{it,} + \mu ....3$$

***Where*:**

BT denotes BETA
PROF= PROFITABILITY
LIQ= LIQUIDITY
FLEV= FINANCIAL LEVERAGE
FSIZE = FIRM SIZE
OPEY = OPERATING EFFICIENCY
FGW = GROWTH
i denotes number of firm

t denotes years or time series dimensions ranging from 2012 to 2020

$\sum$ is the error term of the model

$\beta_o, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ -------------- is the regression model coefficients

Descriptive Analysis

The descriptive statistics for the dependent and independent variables in the study were presented in table 4.1 below

Table 4.1 Summary of descriptive statistics for the variable employed in the study

Variables	Mean	Minimum	Maximum	Std Deviation	JP(value)	No of Observations
BT	0.27	0.00	2.13	0.45	0.00	90
ROA	0.11	-9.52	9.25	1.44	0.00	90
LIQ	1.33	0.04	8.17	1.09	0.00	90
FLEV	0.57	0.04	1.79	0.36	0.00	90
FSIZE	7.37	-4.46	9.32	0.99	0.00	90
OPEY	0.67	0.01	1.89	0.46	0.00	90
FGW	-2.21	-169.62	80.84	29.58	0.00	90

Source: Extract from E view Results

The result on Table 4.1 demonstrates the descriptive statistics of systematic risk (Beta) and six independent variables (Firm Attributes) for 10 listed industrial goods firm in Nigeria for period of Nine years 2012 to 2020. The mean value of data sourced from ten listed industrial goods firm in Nigeria on average of 9 years shown that the beta value is 0.27. This indicates that on average most sampled industrial goods firm in Nigeria had systematic risk value that fell below market risk average value of 1. The standard deviation which measures the degree of deviation from mean value is 0.45. The standard value showed a little difference when it was compared to the mean value of 0.27 and likely more variably free from extreme value (outliers). Profitability (ROA) indicates that the average rate of return on investment is 0.11. This value seems to connote low profitability of 11% from asset utilisation of industrial goods firm in their business operations in Nigeria with standard deviation of ±1.44. The standard value showed a little difference when it was compared to the mean value of 0.11 and likely less variable free from extreme value (outliers). Liquidity has average score of 1.33 with standard deviation of ±1.09. This indicates that the listed companies on average have enough cash and receivable up to 133% to cover their current liabilities. The standard value showed a little difference when it was compared to the mean value of 1.33 and likely more variably free from extreme value (outliers). This may contribute and lead to the low ROA witness in the industry due to assets redundancy. Financial leverage has mean value of 0.57 with standard deviation of ±0.36. This indicates that on average 57% of the assets are financed by debt. The standard value showed a little difference when it was compared to the mean value of 0.57 and likely more variably free from extreme value (outliers). The firm size has a mean log value of 7.37 with standard deviation of ±0.99. The standard value showed a much difference when it was compared to the mean value of 7.37 and likely less variably free from extreme value (outliers). Operating efficiency indicates that the average return on capital invested in the total assets is 67% from sales revenue with a

standard deviation of 0.46. The standard value showed a little difference when it was compared to the mean value of 0.67 and likely more variably free from extreme value (outliers). Finally, firm growth has mean value of -2.21. The negative value implies retardation in the growth rate of the industrial firm in Nigeria with standard deviation of 29.58. The standard value showed a much difference when it was compared to the mean value of -2.21 and likely less variably free from extreme value.

Table 4.2: Cross-Section Random Effects Test Comparisons Correlated Random Equation: Untitled
Test Cross-Section Random Effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.
Cross-section random	7.560892	6

The Hausman test in Table 4.2 above was to determine the most appropriate technique between the fixed and random model to analyse the study. The test result is; statistic value = 7.560892 and probability value = 0.2721. Therefore, since the p. value 0.2721 is greater than 0.05% significant level, the study accepts the null hypothesis which states that the random effect model is preferred for the analysis of the study.

Table 4.3: Summary of Panel Regression Result
Model: Panel Least Square

Variable	Coefficient	T-statistics	P-value
ROA	-0.0089	-0.3581	0.7212
LIQ	-0.0138	-0.3894	0.6981
FLEV	-0.1271	-1.1715	0.2451
FSIZE	0.34787.4625	0.0000*	
OPEY	0.1160	1.2268	0.2237
FGW	0.0019	1.6054	0.1126

No of Observations:	90
R. Square:	0.59
Adjusted R-Square	0.51
F-Statistics:	7. 74
Prob(F-Statistics)	0.000
Durbin-Watson Stat	1.64

Source: Extract from E view Results
Note: *1% level of Significance, **5% of Significance

The result of the coefficient of determination (R-square) is 0.5910. This means that about 59% of the factors that explain systematic risk in industrial firm in Nigeria come from the independent variables (profitability, liquidity, leverage, firm size, operational efficiency and firm growth).

The F-statistics is used to test the overall effect of the model. The F-statistics is 7.741298 with a p.value of 0.0000. Since the p.value is less than 0.05% level of significance, the study concludes that firm characteristic indicators including profitability, liquidity, leverage, firm size, operational efficiency and firm growth, accounted for about 59% of the systematic risks in industrial firm in Nigeria. The result of Table 4.3 shows that the t-statistic for return on assets (ROA)is -0.3581. The probability value is 0.7212 which is greater than 0.05% level of significance. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance, or to accept on the otherwise. Since the p.value is greater than the 0.05 level of significance, the study did not reject the null hypothesis that "Profitability has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group". The study thus concludes that profitability has a negative and insignificant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group. The result of Table 4.3 above shows that the t-statistic for liquidity is -0.3894.The probability value is 0.6981 which is greater than 0.05% level of significance. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance, or to accept on the otherwise. Since the p.value is greater than the 0.05% level of significance, the study did not reject the null hypothesis that "Liquidity has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market". The study

then posits that liquidity has negative and insignificant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group.

The result of Table 4.3 shows that the t-statistic for financial leverage is -1.1715. The probability value 0.2451 is greater than 0.05% level of significance. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance or to accept on the otherwise. Since the p.value is greater than the 0.05% level of significance, the study did not reject the null hypothesis that "Firm leverage has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market". The study however, posits that firm leverage has negative and insignificant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group.

The result of Table 4.3 shows that the t-statistic for firm size is 7.4625 with a probability value of 0.0000. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance, or to accept on the otherwise. Since the p.value is less than the 0.05% level of significance, the study rejected the null hypothesis that "Firm size has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market". The study concluded that firm size has a positive and significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group.

The result of Table 4.3 shows that the t-statistic for operating efficiency is 1.2268 with a probability value of 0.2237. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance, or to accept on the otherwise. Since the p.value is greater than the 0.05 level of significance, the study rejected the null hypothesis that "Operational

efficiency has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market". The study posited that operational efficiency has a positive but no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria exchange group.

The result of Table 4.3 shows that the t-statistic for Firm growth is 1.6054 with a probability value of 0.1126. The decision rule is to reject the null hypothesis when the p.value is less than 0.05% level of significance, or to accept on the otherwise. Since the p.value is greater than the 0.05% level of significance, the study did not reject the null hypothesis that "Firm growth has no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market". It thus concludes that firm growth has a positive but no significant relationship with systematic risk exposure of listed industrial goods firm in Nigeria stock exchange market.

Conclusion and Recommendations

The study concludes that firm size is the only significant attribute of systematic risk exposure in industrial goods firm in Nigeria. Moreover, although profitability, liquidity and financial leverage maintain negative coefficients relationship with systematic risk; they are insignificant attributes of systematic risk exposure of listed industrial goods firm in Nigeria Exchange Group. It further provides opportunity for regulators and managers to better understand the dynamics of systematic risk theories and practices of the market that improves the wealth creation of the investors and as well, sustains the performance of industrial goods firm in Nigeria. Above all, the study concludes that the need for efficient management of systematic risk attributes cannot be over emphasized because it raises public awareness on the key issues and potential of systematic risk in emerging global stock market.

Recommendations

On the basis of the findings and conclusions of the study, we recommend among others that

1. Managers should endeavor to improve on the overall strategy for enhanced return on assets with likely future expectation of a significant relationship between the return on asset and the systematic risk of quoted industrial goods firm in Nigeria since the return on assets of industrial goods firm in Nigeria has negative coefficient relationship with the systematic risk.

2. Although liquidity has negative coefficient relationship with the systematic risk of the industrial good firm in Nigeria, it should be moderately maintained in the daily operations since it has insignificant relationship with the industrial goods firm in Nigeria.

3. Managers are encouraged to be consistent in financing more of its firm' operations through debt since the coefficient of financing the operation of industrial goods firm through leverage has a negative relationship with the systematic risk.

4. Management of industrial goods firm in Nigeria should remained conscious towards the expansion of the firm's total assets since additional increase in firm's asset attracts addition in systematic risk for the firm to contend.

5. Managers of industrial goods firm in Nigeria should proficiently strategize the affairs of the firm in a manner that the operational efficiency of the firm takes comparative advantage over the exposure of systematic risk since operational efficiency maintains positive coefficient relationship with systematic risk.

6. As increase in firm's growth comes with additional systematic risk exposure, Managers of listed

industrial goods firm in Nigeria should lookout for operating, investing and financial policies that will contend with this additional systematic risk for a favorable growth of the firm.

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