

**ENTERPRISE RISK MANAGEMENT AND SUSTAINABLE CORPORATE FINANCIAL PERFORMANCE****OWOLABI, S.A.PhD.****Department of Accounting, Babcock University,  
Nigeria****AND****AJAH, CHIZOBA CHRISTIANA****Department of Accounting, Babcock University,  
Nigeria****Abstract**

*Effective risk identification and mitigation are essentially means of ensuring the sustainability of corporate organizations. Enterprise risk management has been adjudged as one of the drivers to sustainable corporate financial performance as every company and industry is prone to diverse and inherent risks. This study examined the effect of enterprise risk management on sustainable corporate financial performance. In addressing the problem of sustainable corporate performance, the study employed ex-post facto research design, using Global Reporting Initiative (GRI) checklist, the independent variable of enterprise risk management was measured using corporate risk appetite (CRA), risk identification and recording, risk assessment and measurement and risk assessment and reporting sourced from financial statements purposively selected 8 oil and gas companies listed in Nigeria for a period of 15 years, giving a total of 120 observations. While profitability was employed as a surrogate of sustainable corporate financial performance. The study revealed a strong character of the parameters, as corporate risk appetite and risk assessment and measurement exhibited positive and significant effects, risk identification and recording, and risk assessment and reporting revealed positive but insignificant effects. However, the joint results revealed that enterprise risk management positively and significantly affected the sustainable corporate financial performance of the oil and gas companies in Nigeria. Based on the documented results, the study recommended that the management of oil and gas companies in Nigeria should not underplay the inherent risks in the industry and should devise means of identifying, and assessing these risks for proper enterprise risk management to enhance sustainable corporate financial performance.*

*Keywords: Enterprise risk management, corporate risk appetite, Risk identification, Risk assessment, Risk reporting, Sustainable corporate financial performance*

**Introduction**

Corporate financial performance is becoming continually competitive and, meeting the shareholders' performance expectation is putting the management under intense pressure to attain competitive market share and in sustaining successes for the future. In the recent times, sustainable corporate financial performance has gained vast attention in the literature as corporate bodies understand the significance of intensifying performances beyond the constricted and short-term financial performance, but the ability to stretch to include sustainability tripod indexes of economy, environment, and social sustainability respectively (Saeidi, Sayyede, Gutierrez, Streimikiene, Melfi, Parastoo & Mardani, 2020; Haffar & Searcy, 2017). Abideen, Fazeeda and Fernando (2020) noted that sustainability entails meeting current

needs without compromising future generations' capability to meet their own needs in the future, this includes, environmentally, social perspectives, and corporate financial performance, hence for companies to continue to remain relevant in the growing markets, it has to consider the environmental and stakeholders' concern and not only profits alone (Grilli, Latif & Boris, 2019; Saeidi *et al.*, (2020).

Sustainable corporate financial reporting significantly helps pollution-sensitive corporate bodies explain to the stakeholders how their products and services create value for their shareholders and other interested parties and at the same time foster stronger future sustainability for the companies, the shareholders, the customers, the public, and the broader communities. The financial sustainability of the companies, protection of the planet and health of the environment, the wellbeing of the customers ought to be the concern and core business of the companies, and ensure adequate and significant investments in this direction (Gupta, Gregorious & Ebrahimi, 2018). Incidentally, achieving a sustainable corporate financial performance is full of complexities and quite challenging as corporate organization operations and inability to manage its wastes has left the environment endangered, exposing the inhabitant to high and unprecedented vulnerabilities (Anton, 2018; Annamalah, Murali, Govindan & Aravindan, 2018). Sustainable corporate financial performance has been viewed from different perspectives and its potential characteristics based on the understanding of the companies point of view and the public. Anuforo, Ayoup, Mustapha and Abubakar (2019) posited that sustainability reporting on one side is a systematic tool in the hand of corporate bodies to collect and present sustainable data to assist the management process and present to the shareholders and the stakeholders' efforts to protect the environment while adding value to them by ensuring quality products and services.

Enterprise risk management is found to be a major means of enhancing sustainable corporate financial performance. According to Orabueze, Agbaji and Iyodo (2020), enterprise risk management is one of the surviving engine strengthening and reinforcing drivers of a sound organizational financial performance. A clear understanding of inherent risks, the ability to have a strong appetite for risks management, risk identification, risk assessment, and measurement go along the length in mitigation such risks that could impede the sustainable corporate financial performance. Undemanding this, the majority of the oil and gas companies in Nigeria place much premium on meeting reporting deadlines, yet the contents of such reports lack factual realities, substance peculiar to the Nigerian environmental sustainable problems, rather many emphases were placed in paper branding annual reporting rituals (Oti & Mbu-Oga, 2018; Sanusi & Sanusi, 2019).

Besides, while some companies are struggling to remain afloat due to the unprecedented effect of the COVID-19, other companies in the oil and gas are still facing diverse myriad challenges of the sustainable corporate financial performance in regards to adequate profitability goals, illiquidity challenges, insecurity, and infrastructural deficit problems, meeting environmental protection of expectation of host communities, human and career development of its workforce (Oko, Odama, 2020; Onyekwelu & Onyeka, 2014).

### **Statement of the Problem**

The oil and gas companies are faced with the problems of meeting strategic goals and objectives, operational efficiency and effective optimization of resources, sustainable reporting

and compliance, and the problem of inadequate financial performance. In addition, the sustainable corporate financial performance includes the absence of concrete formal reporting mechanisms, reflecting the underlying realities and levels of commitment to sustainable corporate financial performance in Nigeria, rather than mere reporting to just to be seen as meeting annual sustainable corporate financial performance requirements Odoemela and Okafor (2018); Manipulative sustainable corporate financial performance was not a new practice, but pro-active approaches to monitoring these irregularities and possibilities were rigidly lacking in Nigeria (Agugom, Dada & Nwaobia, 2019; Olasupo and Akinselure, 2017).

The oil and gas sector is fundamentally faced with diverse enterprise risks that require systematic risk assessment and risk management to have a successful financial performance. Risks are everywhere in the oil and gas industry, however, the ability to identify these risks, assess and manage them is essentially imperative. Nigeria companies in the oil and gas industry are still faced with the problems of profitability due to harsh business operating environmental challenges, insecurity and kidnapping has become a major menace, dilapidated infrastructures and epileptic power supply have made these companies resulting encounter high cost of doing business in Nigeria, making corporate financial performance unprecedentedly and extremely difficult (Agugom, 2020; Hanggraeni, Beata, Liyu & Subroto, 2019). The extent of compliance to existing legal and regulatory policies towards sustainable corporate financial performance is multitasking, in the midst of arrays of tax laws and multiplicity of taxes (Otero, Santomil & Herrera, 2020).

Evidently, some previous studies have shown different understanding of the relationship between enterprise risk management and sustainable corporate financial performance, while some have documented that enterprise risk management is essentially required to identify and mitigate various risks inherent on the road navigating to desired sustainable financial performance (Khalil-Oliwa, 2019; Laury, Matondang & Sembiring, 2020), others are of the contrary opinion (Aguinis, Ramani & Villamor, 2019; Bhasin, 2017; Bromiley, Nair, & Rustambekov, 2015). Aguinis *et al.*, (2019)-revealed that enterprise risk management positively influenced sustainable corporate financial performance. Consistent with position, Bromiley *et al.*, (2015) had earlier reported that enterprise risk management had a positive impact on the financial performance of pollution sensitive companies. Some of the companies now exist now and are not sure of their sustainability; some of them struggle to pay annual dividends since this is one of the crucial criteria and bases of performance assessment by the shareholders (Karjati & Evawany, 2017; Kariuki & Peddy, 2017; Nguyen & Dinh, 2019).

On the contrary, some studies found inconsistent results, Lechner & Nadine (2018) submitted that enterprise risk management had an inverse relationship with corporate performance of corporates organization, while other studies Karjati and Evawany (2017) and Orabueze, Agbaji and Iyodo (2020) revealed that enterprise risk management effectiveness is subjective, prescriptive and corporate-noncommittal, as most companies do not comply to risk management models as reported in the most financial statement.

The study of Parastoo (2020) investigated the effect of enterprise risk management on sustainable corporate financial performance; the regression analysis revealed that enterprise risks management had a negative and insignificant effect on sustainable corporate financial performance. Besides, while there are few studies in Nigeria that have studied sustainable

corporate financial performance, however, there is a dearth of studies that have considered the effect of enterprise risk management on sustainable corporate financial performance, creating gaps in literature. In contributing to knowledge, this addresses these gaps. Consequently, this study examined the effect of enterprise risk management on sustainable corporate financial performance in the oil and gas companies listed in Nigeria.

Consequent to different opinions and mixed results, inclusiveness in literature, this study proposed the following research objective, research objective and hypothesized as thus:

**Research Objective:** Determine the effect of enterprise risk management on sustainable corporate financial performance in oil and gas companies quoted in Nigeria

**Research Question:** What is the effect of enterprise risk management on the sustainable corporate financial performance of oil and gas companies quoted in Nigeria?

**Research Hypothesis (H<sub>0</sub>1):** Enterprise risk management has no significant effect on sustainable corporate financial performance in oil and gas companies quoted in Nigeria.

The rest of the study is structured in this manner: Section 2 considered the review of extant literature, section three, the methodology, while data analysis, results, and discussions in section 4, while the conclusion and recommendations were presented in section 5 of the study.

## **Review of Extant Literature**

### **Sustainable Corporate Financial Performance**

Sustainable corporate financial performance reflects the effective and comprehensive strategies put in place by corporate organizations to identify and manage all various forms of risks faced by the companies. According to Rafiq, Zhang, Yuan, Naz and Maqbool (2020), enterprise risk management is the totality and all-compassing modalities in sustaining risk appetite and mitigation strategies by the companies. In this study, enterprise risk management is considered from four perspectives: corporate risk appetite, risk identification and recording, risk assessment and management, and risk assessment reporting. Sustainable corporate financial performance can be assessed from a comprehensive performance of the oil and gas companies, in respect of effective resource management to enhance profitability, ability to meet the shareholders' expectation to a reasonable extent, various risks identification, and management, ability to ensure adequate achievement in the three viewpoints of environmentally protection, economic attainment and social perspective in meeting customers satisfaction and the stakeholders' financial disclosure requirements, ability to meet adequate employees reward system and career development (Saeidi, Sayyede, Gutierrez, Streimikiene, Melfi, Parastoo & Mardani, 2020; Annamalah, Murali, Govindan & Aravindan, 2018).

### **Profitability**

In this study sustainable corporate financial performance is surrogated with profitability. The propensity and capacity to ensure profitability and sustainable corporate financial performance by the oil and gas companies in Nigeria are getting slimmer every year, the fortunes and prospects in the Nigerian oil and gas business are deeply dwindling consequent to various setbacks, the issue of insecurity and hostility of the host communities (Berry, Thomas & Jianren, 2018, Oko & Odama, 2020). For the oil and gas companies to attain sustainable financial performance, the operative environment in Nigeria must improve, cost-effectiveness and adequate infrastructure must be given a deserving priority, to allow the companies to compete with their contemporaries in the similar industries

## **Enterprise Risk Management**

Enterprise risk management is corporate conscious efforts target at identifying and mitigating operational risk capable of having negative effect on the operational activities and performance of the organization. According to Bohnert, Nadine, Hoyt and Lechner (2019), organizations cannot shy away from risks and these risks when adequate assessment and management are not properly checked and met appropriate measures in the right perspectives, are capable of derailing the course of the corporate goals and objectives. Duran and Gonzalez (2020) posited that enterprise risk management and sustainable corporate financial and nonfinancial performances are closely interrelated, as adequate corporate risk appetite management, increased risk education, and risk awareness are favorably linked to effective and sustainable corporate financial performance. From the angle of this study, enterprise risk management is considered from four perspectives: the corporate risk appetite, risk identification and recording, risks assessment and management and risk assessment and reporting (Neto, Joan, Lampert & Julio, 2018; Nasr, Saideh, Fateme, Rasoulyan, Tayaran & Mohammad, 2019).

### **Corporate Risk Appetite**

Risk appetite is a core consideration in an enterprise risk management approach. Risk appetite can be defined as the amount and type of risk that an organization is willing to take in order to meet their strategic objectives (Perez-Cornejo, Esther & Juan, 2019; Ping & Muthuveloo, 2017). It is the overall level of risk an organization is willing to accept given its capabilities and the expectations of its stakeholders (Blanco-Mesa, Rivera-Rubiano, Hernandez & Maribel, 2019). Organizations will have different risk appetites depending on their sector, culture, and objectives. A range of appetites exist for different risks and these may change over time.

### **Risk Identification and recording**

Risk identification is the first step in a comprehensive and continuous risk management method. Most project risks are usually known by project personnel and therefore can be managed. The first step to successful risk management is to write down the risks and make them visible to all (Elbanna, Abdelzahner & Ramadan, 2020). El-Ansary (2019) stated that risk recording helps to identify risks in a structured way, it helps to facilitate the description and assessment of risks. It is the searching for, locating, and documenting risks before they become problems. It involves the creation of a Risk register and Risk universe which captures all the risks that can impact an organization. Fisayo and Nwankwo (2015); Florio, and Leoni (2017) stated that while many organizations have risk management practices in place; a formally documented ERM framework is not always present.

### **Risk Measurement**

It is generally accepted that risk matters and it affects how managers and investors make decisions, it follows logically that measuring risk is a critical first step towards managing it. Various risk management tools exist, ranging from the strict minimum to comprehensive methodological approaches that include knowledge and expertise bases, auditing tools, simulation tools for gauging risk levels in relation to the security measures taken, performance indicators (Gadzo, Kportorgbi & Gatsi, 2019). Furthermore, Gates Nicolas and Walker (2012)

stated that Risk measurement can be quantitative, semi-quantitatively, or qualitatively achieved. This process is designed at capturing the probability of occurrence and the possible consequence of a risk. Consequently, different organizations adopt different methods that suit their needs.

### **Risk Assessment and Reporting**

Risk assessment increases profitability. Contracts can be selected and priced at the right level of risk, and the organization can be managed with risk fully understood. Specific risks can be negotiated, it can be made clear who bears them, and they can be built into contracts. Organizations can benefit from risk assessment by making better decisions based on accurate information. They benefit from realistic forecasting and an understanding of sensitivity and can make management decisions by considering the best current knowledge of the future (Enyinda & Chris, 2018; Ele & Oko, 2015). Risk assessment is often performed as a two-stage process. An initial screening of the risks and opportunities is performed using qualitative techniques followed by a more quantitative treatment of the most important risks and opportunities lending themselves to quantification (not all risks are meaningfully quantifiable) (Federico, Ricardo & Fabio, 2018; Liu, 2019). Qualitative assessment consists of assessing each risk and opportunity according to descriptive scales. Quantitative analysis requires numerical values for both impact and likelihood using data from a variety of sources.

### **Theoretical Consideration**

#### **Risk and Uncertainty Theory**

Risk and uncertainty theory was developed by Charles Berger and Richard Calabrese in February 1975. The risk and uncertainty theory is devoted to the handling of incomplete information. To a large extent, it is comparable to probability theory because it is based on set functions. It differs from the latter by the use of a pair of dual set functions (possibility and necessity measures) instead of only one. Besides, it is not additive and makes sense on ordinal structures (Adam, 1994; Admati & Pfleiderer, 1988).

In supporting this theory, Ebbinghaus and Flum (2005) posited that the importance of risk and uncertainty theory especially using the perception of probability and statistics intuitively especially in the economic sense cannot be overlooked. Theory of risk and uncertainty like probability is applied in the study and analysis of risk, ranking alternatives, decision making, and even in investment among other interesting applications. Investment options abound in our everyday activities (Gavrea, Ilies & Stegorean, 2011; Li, Wu, Ojiako, Marshal & Chipulu, 2014).

Contrary to the proponents of the theory, Mohamed and McCowan (2011) study found flaws in the theory. That forecasting or making a suitable decision may not necessarily be a way of overcoming the challenges posed by such options requires modeling such investment decisions under uncertainty through the application of risk theory. A procedural evaluation of investment options is critically important in any capital resources-based project so as to arrive at or make use of the most appropriate option for such investment. And it is simply proposed that the uncertainties encountered in this type of challenge are represented using risk and uncertainty theory through modeling of the effects of both monetary and non-monetary attributes of options of such investment.

### **Performance Possibility Theory**

According to Limperg (1932) performance possibility theory lies at the crossroads between fuzzy sets, probability, and non-monotonic reasoning. Performance possibility theory can be cast either in an ordinal or in a numerical setting (Majula & Raymond, 2011). Qualitative performance possibility theory is closely related to belief revision theory and common-sense reasoning with exception-tainted knowledge in Artificial Intelligence. Possibility logic provides a rich representation setting, which enables the handling of lower bounds of performance possibility theory measures while remaining close to classical logic. Qualitative performance possibility theory has been axiomatically justified in a decision-theoretic framework in the style of Savage, thus providing a foundation for qualitative decision theory (Muteti, 2014; Yegon, 2015).

Quantitative performance possibility theory is the simplest framework for statistical reasoning with imprecise probabilities. As such it has close connections with random set theory and confidence intervals and can provide a tool for uncertainty propagation with limited statistical or subjective information (Rakauskaite, 2016). Consequently, the ability of an entity to identify some inherent risks associated with its operations, and make adequate assessment towards its mitigation, it is for a method to leaving performance to the unforeseen probability of solving risk-related problems when there are possible occurrences.

### **Empirical Review**

Oko and Odama (2020) investigated the impact of enterprise risk management on the sustainable financial performance of selected deposit money banks operating in Nigeria. The study measured sustainable financial performance with earnings per share and Tobin's Q as a measure of enterprise risk management. Using data sourced from secondary data, for a period of 5 years spanning from 2013 to 2018, the study employed multiple regression analysis, using the ordinary least square method to analyze the study models. The study found that enterprise risk management had a positive significant effect on the sustainable financial performance of the selected deposit money banks in Nigeria for the period investigated. Specifically, the study revealed that firm size and leverage had a strong effect on earnings per share. The study advised that companies operating in the banking industry should employ robust enterprise risk management modalities to secure their operations and sustainable future growth of the banks.

Orabueze, Agbaji and Iyodo (2020) studied the effect of enterprise risk management on the sustainable survival of deposit money banks in Nigeria. The study employed a survey research design and judgmental sample selection of 111 respondents from selected 16 deposit money banks in Jos North local government of Plateau. Using a 5-Likert scale questionnaire as administered and retrieved, descriptive statistics was adopted in data analysis of the specified hypothesis. The study regression analysis revealed that enterprise risk management had a positive significant effect on corporate survival. The study recommended that for companies to remain relevant and financially sustainable, the issue of enterprise risk management must be one of the most priorities of its strategic decisions.

Saiful (2017) carried an investigation of the effect of risk management on the financial performance of commercial banks operating in Indonesia. The study employed secondary data sourced from some selected commercial banks for a period of 4 years covering 2010 to 2013. Using regression analysis and ordinary least square and correlation analysis, the study found

that risk identification and management had a positive effect on financial performance in Indonesia. The study recommended that the commercial banks operating in Indonesia should install risk management policies to ensure the safety of the financial performance of the commercial banks.

Mukhtar and Soliman (2017) conducted a study of the effect of enterprise risk management on the financial performance of banks. The study employed an ex-post facto research design, using 10 commercial banks listed for an unspecified number of years. The study used descriptive statistics and simple regression analysis for the study. Measuring financial performance with return on average equity, share price return and firm value, the study regression analysis revealed that enterprise risk management exhibited a positive significant effect on the financial performance of the companies tested in the study.

Mojtaba and Davoud (2017) studied the effect of enterprise risk management on the performance of listed companies in the Iran capital market. The study adopted an ex-post facto research design using a selected 66 companies listed in the Tehran Stock Exchange for a period of 16 years covering 2001 to 2015. The companies were selected based on their ability to have met the criteria of having complete data for the period under consideration and some of the criteria included evidence of enterprise risk management implementation. Multivariate regression analysis and logit model were employed for the data analysis. The study measured firm performance using return on assets (ROA) while risk assessment unit (RAU) was used in measuring enterprise risk management. The study then revealed that enterprise risk management had a positive effect on the performance of listed companies in Iran.

Rakauskaite (2016) investigated the effect of enterprise risk management financial performance of some selected oil and gas companies in selected European countries for a period of 6 years separated by events of pre-crisis 3 years covering 2003 to 2006 and another 3 years of post-financial crisis covering 2011 to 2014. Ordinary least square (OLS) and correlation analysis were adopted for the analysis of data sourced from these companies. The study revealed that unmitigated enterprise risk had a negative effect on management financial performance in the countries used for the study.

## Methodology

This study examined the effect of enterprise risk management on sustainable corporate financial performance. In addressing the problem of sustainable corporate performance, the study employed an *ex-post facto* research design, measuring sustainable corporate financial performance using profitability. Using, Global Reporting Initiative (GRI) checklist, the independent variable of enterprise risk management was measured using corporate risk appetite (CRA), risk identification and recording, risk assessment and measurement, and risk assessment and reporting sourced from financial statements purposively selected 8 oil and gas companies listed in Nigeria for a period of 15 years, giving a total of 120 observations.

## Models Specifications

### Functional Relationship

$$Y_{it} = f(X_{it}) \quad (1)$$

$$SCFR = f(CRA, RIDR, RAM, RAR) \quad (2)$$

### Model

$$SCFP_{it} = \alpha_1 + \beta_1 BDIND_{it} + \beta_2 RIDR_{it} + \beta_3 RAM_{it} + \beta_4 RAR_{it} + \mu_1 \quad (3)$$



**Where:**

SCFR = Sustainable corporate financial performance, CRA = Corporate risk appetite, RIDT = Risk identification and recording, RAM = Risk assessment and measurement, and RAR = Risk assessment and reporting

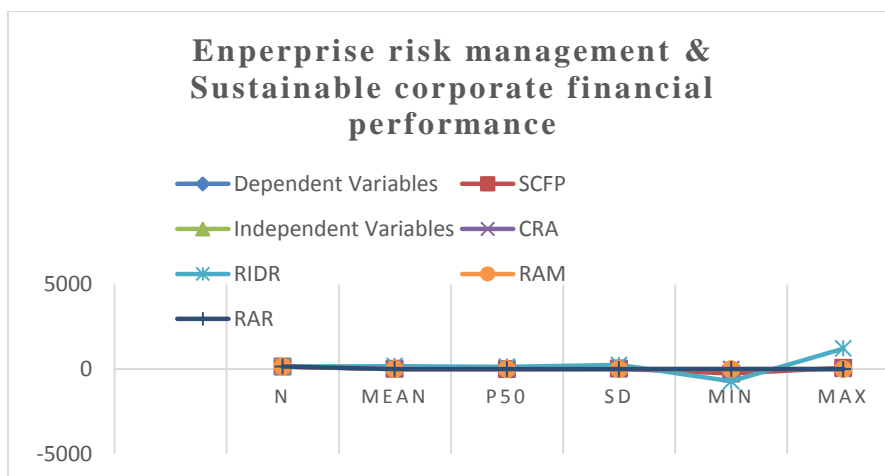
**Data Analysis, Results, and Discussion of Findings****Descriptive Analysis**

Table 1 shows the number of observations, mean, median, maximum, minimum, and standard deviation of each of the dependent and independent variables. There are two categories of variables discussed in this section. The first category is the dependent variable which is sustainable corporate financial performance (SCFP). The second category is the explanatory variable which is enterprise risk management (ERM). The independent variable was proxied using corporate risk appetite (CRA), risk identification and recording (RIDR), risk assessment and management (RAM), and Risk assessment reporting (RAR).

**Summary of Statistics****Table 1: Summary Statistics**

| <i>Stats</i> | <i>Dependent Variables</i> | <i>SCFP</i> | <i>Independent Variables</i> | <i>CRA</i> | <i>RIDR</i> | <i>RAM</i> | <i>RAR</i> |
|--------------|----------------------------|-------------|------------------------------|------------|-------------|------------|------------|
| <i>N</i>     |                            | 150.00      |                              | 150.00     | 150.00      | 150.00     | 150.00     |
| <i>mean</i>  |                            | 7.49        |                              | 0.22       | 186.12      | 0.98       | 1.52       |
| <i>p50</i>   |                            | 6.30        |                              | 0.15       | 139.66      | 0.80       | 1.40       |
| <i>Sd</i>    |                            | 27.66       |                              | 0.50       | 245.70      | 0.66       | 0.80       |
| <i>Min</i>   |                            | -265.68     |                              | -1.06      | -713.68     | 0.13       | 0.20       |
| <i>Max</i>   |                            | 80.57       |                              | 1.62       | 1222.76     | 4.34       | 6.02       |

Source: Author's Computation (2019), underlying data from annual reports of oil and gas companies listed on Nigerian Stock Exchange (NSE). Note: Sustainable corporate financial performance = SCFP, Corporate risk appetite = CRA, Risk identification and recording = RIDR, Risk assessment and management = RAM and Risk assessment reporting = RAR.



**Graph1: Researcher (2021)**

### **Sustainable corporate Financial Performance (SCFP)**

This is measured as the ratio of profit after tax less preferred dividend to total equity (Padachi, 2006). The mean value of SCFP is 7.49% while the median value is 6.30% indicating that the selected oil and gas companies' total Sustainable corporate financial performance capital is 7.49% on average during the period and as a matter of fact, these returns among the firm are relatively closed. Furthermore, the minimum and maximum values of -265.68% and 80.57% with a standard deviation value of 27.66% show that during one of the years under study the management of oil and gas companies might have made poor risk management decisions that lead to about -265.68% returns while on the other extreme the management of a firm might have made an effective risk management decision that lead to about 80.57% returns on financial performance. Again, in this study, we adopted the following as proxies of enterprise risk management: Corporate risk appetite (CRA), risk identification and recording (RIDR), risk assessment and management (RAM) and risk assessment reporting (RAR).

### **Correlation Matrix.**

**Table 2: Correlation Matrix**

|             | <i>SCFP</i>            | <i>CRA</i>             | <i>RIDR</i>            | <i>RAM</i>             | <i>CUR</i> |
|-------------|------------------------|------------------------|------------------------|------------------------|------------|
| <i>SCFP</i> | 1                      |                        |                        |                        |            |
| <i>CRA</i>  | -0.08150<br>[0.32130]  | 1                      |                        |                        |            |
| <i>RIDR</i> | 0.2362***<br>[0.00360] | 0.07450<br>[0.36520]   | 1                      |                        |            |
| <i>RAM</i>  | 0.10510<br>[0.20070]   | 0.5956***<br>[0.00000] | 0.4323***<br>[0.00000] | 1                      |            |
| <i>RAR</i>  | 0.08490<br>[0.30150]   | 0.5550***<br>[0.00000] | 0.4579***<br>[0.00000] | 0.9227***<br>[0.00000] | 1          |

Source: Author's Computation (2021), underlying data from annual reports of oil and gas companies listed on Nigerian Stock Exchange (NSE). Note: Sustainable corporate financial performance = SCFP, Corporate risk appetite = CRA, Risk identification and recording = RIDR, Risk assessment and management = RAM and Risk assessment reporting = RAR, Probability values in square bracket; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As part of the descriptive statistics analysis in the preceding Tables, the study assesses the degree of association among the selected variables. The results of the correlation which consider Sustainable corporate financial performance (SCFP) from the perspective of profitability, the explanatory variable of corporate risk appetite (CRA), Risk identification and recording (RIDR), Risk assessment and management (RAM), and Risk assessment reporting (CUR) are discussed. Among other usefulness of this result is to determine whether there are bivariate relationship between each pair of the dependent and independent variables considered in our subsequent analysis and to ensure that the correlations among the explanatory variables are not so high to the extent of posing multicollinearity problems. Specifically, the result in Table 2 shows that there is existence of positive and significant association between risk identification and recording (RIDR) ( $r = 0.2362$ ) and sustainable corporate financial performance (SCFP). However the existence of association between corporate risk appetite (CRA) ( $r = -0.08150$ ), risk assessment and management (RAM) ( $r = 0.10510$ ), risk assessment reporting (RAR) ( $r = 0.0849$ ) and sustainable corporate financial performance (SCFP) were not significant at 5% level.

Focusing on the explanatory variables, the associations hover around 0.07450 and 0.9227. These show that multicollinearity problem is likely to exist and that is why we proceed to VIF.

### Test for Multicollinearity: Variance Inflation Factor

**Table 3: Variance Inflation Factor**

|                | <i>VIF</i> | <i>1/VIF</i>  |
|----------------|------------|---------------|
| <b>RAM</b>     | 7.35       | 0.1360        |
| <b>RAR</b>     | 6.85       | 0.1460        |
| <b>CRA</b>     | 1.65       | 0.6062        |
| <b>RIDR</b>    | 1.34       | 0.7486        |
| <b>Average</b> | <b>4.3</b> | <b>0.4092</b> |

Source: Author's Computation (2021), underlying data from annual reports of oil and gas companies listed on Nigerian Stock Exchange (NSE). Note: Corporate risk appetite = CRA, Risk identification and recording = RIDR, Risk assessment and management = RAM and Risk assessment reporting = RAR

Following the outcome of the correlation analysis in Table 2 above, the study further checked if multicollinearity problem actually exist in table 3. Evidences from the prior study indicated that a VIF that is below 5 and tolerance values that are above 0.10 suggest no harmful effect of multicollinearity. From the result in table 3, all the VIFs are less than 5 and the inverse

of VIF (tolerance values) are more than 0.10. These indicated that the variables under consideration were not perfectly and linearly related to the extent of causing multicollinearity.

### Inferential Statistics

Effect of Enterprise Risk Management on Sustainable Corporate Financial Performance

Table 4. Effect of Enterprise Risk Management on Sustainable Corporate Financial Performance

Dependent Variable: SCFP

| Variables               | Coefficient       | Robust Standard error | Z-test | Prob. |
|-------------------------|-------------------|-----------------------|--------|-------|
| Constant                | -0.175            | 0.244                 | -0.717 | 0.474 |
| CRA                     | 0.118**           | 0.048                 | 2.458  | 0.016 |
| RIDR                    | 0.003             | 0.141                 | 0.021  | 0.985 |
| RAM                     | 0.241**           | 0.119                 | 2.025  | 0.038 |
| RAR                     | 0.322             | 0.188                 | 1.713  | 0.087 |
| Adjusted R <sup>2</sup> | 0.28              |                       |        |       |
| Wald-Test               | 115252.92 (0.000) |                       |        |       |
| Hausman Test            | 2.54 (0.441)      |                       |        |       |
| Bresuch-Pagan RE Test   | 43.77 (0.000)     |                       |        |       |
| Heteroscedasticity Test | 866.36 (0.000)    |                       |        |       |
| Serial Correlation Test | 204.98 (0.000)    |                       |        |       |
| Pesaran CSI             | -1.19 (0.233)     |                       |        |       |
| Observations            | 120               |                       |        |       |

Source: Researcher's computation (2021)

Notes: Table 4 reports the cluster random effect model that corrects for autocorrelation and heteroscedasticity panel regression results of the effects of enterprise risk management, firm size and leverage on sustainable corporate financial performance of selected oil and gas companies Nigeria. The dependent variable is sustainable corporate financial performance (SCFP). The independent variables are corporate risk appetite (CRA), Risk identification and recording (RIDR), Risk assessment and measurement (RAM), and Risk assessment and Reporting (RAR). The control variables are Firm Size (FSIZ) and Firm Leverage (FLEV). \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.

### Interpretation of Diagnostic Test

From Table 4, the diagnostic test reported are the Hausman test, the Bresuch-Pagan RE Test for a random effect test, the heteroskedasticity, the Wooldridge test for autocorrelation, and the Pesaran's test of cross-sectional independence, these tests were carried out so as to determine the appropriateness of the estimation technique for the specified model. First, the Hausman test was used to determine the appropriateness between the fixed effect and the random effect model. The null hypothesis of the Hausman specification test is that there is no correlation between the random effect and fixed effect model, thus the random effect estimates are efficient and consistent, and that the fixed effect estimates are inefficient and the alternative hypothesis is that the fixed effect model is consistent and efficient. The Hausman statistic of 2.54 with a probability value of 0.441 is greater than the 5% level of significance hence, the non-rejection of the null hypothesis and the rejection of the alternative hypothesis. This implied that the random effect model was efficient and appropriate. To determine the appropriateness of the random effect model, the Bresuch-Pagan RE Test for random effect

model was conducted; the result showed that the statistic of 43.77 with a probability value of 0.000 is less than the 5% level of significance. Thus, the random effect model is appropriate.

To determine the cross-sectional dependence between the selected oil and gas companies in Nigeria, the Pesaran CD test was used. The statistic of -1.19 and with a probability value of 0.233 is not statistically significant at a 5% level of significance. This implied that the selected oil and gas companies are cross-sectional independent. The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was carried out to determine if the variance of the residual is constant. The null hypothesis of homoscedasticity was rejected and the alternative hypothesis of heteroscedasticity was accepted. This was because the test statistic of 866.36 is statistically significant at a 1 percent level.

In testing for autocorrelation in the panel data, the Wooldridge test was used. The null hypothesis that the successive error terms are not correlated was rejected in favour of the alternative hypothesis that the successive error terms are serially correlated because of the statistic of 204.98 with a probability value of 0.000 which is less than the 5% level of significance. However, with the presence of autocorrelation and heteroscedasticity, the study used the cluster option for the random effect model.

### Model

$$SCFP_{it} = \alpha_1 + \beta_1 BDIND_{it} + \beta_2 RIDR_{it} + \beta_3 RAM_{it} + \beta_4 RAR_{it} + \mu_1$$

$$SCFP_{it} = -0.175 + 0.118CRA_{it} + 0.003RIDR_{it} + 0.241RAM_{it} + 0.322RAR_{it}$$

### Interpretation of Results

Table 4 showed the results of regression analysis of the effects of enterprise risk management, on the sustainable corporate financial performance of oil and gas companies in Nigeria. The results showed that corporate risk appetite, risk identification and recording, risk assessment and measurement, risk assessment and reporting, have a positive relationship with the sustainable corporate financial performance of oil and gas companies in Nigeria.

In addition, there is evidence that corporate risk appetite and risk assessment and measurement had significant relationship with the sustainable corporate financial performance of oil and gas companies in Nigeria (CRA = 0.118, t-test= 2.458,  $p < 0.05$ ; RAM = 0.241, t-test= 2.025,  $p < 0.05$ ), respectively. This implied that corporate risk appetite, risk assessment, and measurement, are significant factors influencing changes in the sustainable corporate financial performance of oil and gas companies in Nigeria.

Conversely, there is evidence that risk identification and recording, risk assessment and reporting, do not have significant relationship with the sustainable corporate financial performance of oil and gas companies in Nigeria (RIDR= 0.003, t-test= 0.021,  $p > 0.05$ ; RAR= 0.322, t-test= 1.713,  $p > 0.05$ ). This also implied that risk identification and recording, risk assessment and measurement, risk assessment and reporting, are not significant factors influencing changes in the sustainable corporate financial performance of oil and gas companies in Nigeria.

Concerning the magnitude of the estimated parameters for the coefficients of the regression analysis, a unit increase in the change in corporate risk appetite, risk identification and recording, risk assessment and measurement, risk assessment, and reporting will lead to 0.118, 0.003, 0.241, 0.322, increases in the sustainable corporate financial performance of oil and gas companies in Nigeria, respectively.

The Adjusted  $R^2$  which measure the proportion of the changes in the sustainable corporate financial performance of oil and gas companies in Nigeria as a result of changes in the corporate risk appetite, risk identification and recording, risk assessment and reporting, risk assessment, and measurement explains about 28 percent changes in the sustainable corporate financial performance of oil and gas companies in Nigeria, while the remaining 72 percent were other factors explaining changes in the sustainable corporate financial performance of oil and gas companies in Nigeria but were not captured in the model.

### **Discussions**

The result of the analysis revealed mixed results; however, the joint statistics exhibited a positive effect, on sustainable corporate financial performance in the oil and gas companies in Nigeria. This equally is consistent with the results of Oko and Odama (2020); Orabueze, Agbaji and Iyodo (2020); Mukhtar and Soliman (2017); Rakauskaite (2016); Saiful (2017). For instance, Oko and Odama (2020) investigated the impact of enterprise risk management on the sustainable financial performance of selected deposit money banks operating in Nigeria and study found that enterprise risk management had a positive significant effect on the sustainable financial performance of the selected deposit money banks in Nigeria for the period investigated. In addition the study revealed that firm size and leverage had a strong effect on earnings per share.

In addition, Orabueze, Agbaji and Iyodo (2020) studied the effect of enterprise risk management on the sustainable survival of deposit money banks in Nigeria. The study regression analysis revealed that enterprise risk management had a positive significant effect on corporate survival. The study also found that firm characteristic of firm size had a positive influence on environmental disclosure. However, there are contradictory results as recorded in the studies of (Parastoo, 2020).

### **Conclusion and Recommendation**

#### **Conclusion**

The study considered enterprise risk management and sustainable corporate financial performance, and employed enterprise risk management properties of corporate risk appetite, risk identification and recording, risk assessment, and measurement and risk assets and reporting as explanatory variables to measure enterprise risk management, however, sustainable corporate financial performance was surrogated using profitability of the oil and gas company to measure its sustainable financial performance. The study had the strong character of the parameters, while corporate risk appetite and risk assessment and measurement exhibited positive and significant effects, risk identification and recording and risk assessment and reporting revealed positive but insignificant effects. However, the study has shown that the joint results in a model that enterprise risk management positively and significantly affected the sustainable corporate financial performance of the oil and gas companies in Nigeria.

#### **Recommendations**

Based on the documented results, the study recommended that the management of oil and gas companies in Nigeria should not underplay the inherent risks in the industry and should devise means of identifying, and assessing these risks for proper enterprise risk management to

enhance sustainable corporate financial performance. Government and policymakers should ensure strict compliance to existing risk management policies to heighten the safety and protection of the environment. Quality assurance agencies in Nigeria should ensure the companies operating in Nigeria meet with quality assurance of goods and services, in order to protect innocent consumers and alleviate the problem of consuming substandard goods, considering its potential risks.

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