International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 7, Issue 3. September, 2024

The use of exploratory factor analysis in evaluating the prevailing factors of environmental accounting information in Nigeria

*Ibrahim Abubakar[1], Muhammad Abubakar[2], Yahaya Abdulsalam[3], & Hannatu Yohanna Gimba[4]

[1]*Department of Economics and Finance Accounting Unit,*
School of Business and Public Administration University of the Gambia.
[2]*Department of Estate Management School of Environmental Technology*
Nigerian Army University Biu Borno State – Nigeria.
[3,4]*Department of Accountancy and Taxation School of Management Studies*
Abubakar Tatari Ali Polytechnic, Bauchi – Nigeria.

Corresponding Author: iabubakar@utg.edu.gm

Abstract

This study examines the main factors that influence environmental accounting Information in Nigeria using Exploratory Factor Analysis (EFA). Given the increasing importance of environmental sustainability in corporate reporting, understanding the factors that drive environmental disclosures in Nigeria is crucial. The research analyzed data from a sample of Nigerian companies across different industries using EFA to identify the key factors that shape their environmental accounting practices. Structured questionnaire was distributed to respondents with the view to compare their perception and experience on prevailing factors. The findings revealed several significant indicators, which are grouped across four factors namely; Environmental Expenditure Reporting, Carbon Emission Disclosure and Environmental Liability Recognition and Creditors Decision Making. Also, companies may need to focus more on immediate, tangible aspects of environmental accounting rather than broader, long-term sustainability initiatives to satisfy current market and regulatory demands. And recommended that, companies' needs to understand the specific environmental factors that influence creditor decision-making, such as Carbon Emission Disclosure and Environmental Liability Recognition, can aid in tailoring reports to meet stakeholder expectations, particularly those of financial institutions.

Keywords: Corporate reporting, Environmental accounting, Exploratory Factor Analysis, Sustainability

1. Introduction

Environmental accounting has become a crucial part of corporate reporting, showing the increasing importance of environmental sustainability for long-term business success (Chung, & Cho 2018). Nigeria, is country facing significant environmental challenges such as pollution, resource depletion, and climate change, transparent and accurate environmental reporting is essential (Hassan & Kouhy, 2015). Companies are now expected to disclose their environmental impact not just to comply with regulations but also to meet the growing demands of stakeholders who prioritize sustainability (Lipton, 2020).

However, environmental accounting practices in Nigeria are still developing, and companies use different approaches to report their environmental activities (Kameel, & Festus, 2023). These differences arise from varying interpretations of what constitutes important environmental information and the absence of a standardized framework tailored to the Nigerian context (Ambituuni, et al., 2014). There is a need to identify the main factors influencing environmental accounting practices within

the country (Dinh, et al., 2022). Understanding these factors is crucial for developing a coherent and effective approach to environmental reporting that aligns with both global standards and local environmental priorities (Newig, et al., 2020).

Previous related researches on factors of environmental accounting information EAI, in Nigeria, were on the bases of central ideas such as psychological green climate (Haldorai, et al., 2022), organizational commitment (Awan, et al., 2022), organizational identification (Al-Shammari, et al., 2022) and pro-environmental psychological capital (Saeed et al., 2019). Until now, researches on the prevailing factors of environmental accounting information EAI, in Nigeria, is still not sufficiently investigated and needs to be carried out further (Kanan, et al., 2023; Awwad, et al., 2022; Khaskhely., et al., 2022).

This research seeks to address this gap by evaluating the various factors of environmental accounting information EAI, within organizations, in Nigeria. While prior studies have explored the general relationships of EAI and sustainability outcomes, they often lack specificity regarding the key factors of environmental accounting information EAI, such as Pollution control cost, west management cost, Energy Efficiency Investments, Water Conservation Expenses, Environmental Compliance Costs, Renewable Energy Investments, Land Restoration Costs, Biodiversity Conservation Initiatives, Employee Training on Environmental Practices, and Sustainability Reporting and Certification Costs. This study aims to identify among others, the prevailing factors of EAI in Nigeria.

Moreover, current research mainly focuses on case studies or qualitative analyses, thus restraining the generalizability of results (Kanan, et al., 2023). Through a quantitative research method, this study intends to offer empirical evidence that can provide wider insights applicable across varied organizational contexts (Kanan, et al., 2023). By employing EFA statistical techniques to analyze data collected from a representative sample of organizations, this research pursues to reveal patterns and relationships between factors of EAI.

In the end, the findings of this study are expected to contribute to both theoretical understanding and practical implications in the realms of EAI and sustainability management. By pinpointing the specific factors of EAI that drive sustainable performance, organizations will be better equipped to develop tailored strategies that foster environmental responsibility.

2. Literature Review

The use of Exploratory Factor Analysis (EFA) in environmental accounting research has gained traction as a powerful statistical method for identifying underlying structures within complex datasets (Allee, & Raymundo, 2022). Previous studies have utilized EFA to analyze various aspects of environmental accounting practices across different regions and industries. For instance, Wu, & Yu, (2024) employed EFA to explore environmental reporting in China, identifying key factors such as corporate governance , environmental Liability, Carbon emission disclosure and market orientation as primary drivers of environmental disclosures. Similarly, Lim, (2022) applied EFA to investigate the factors influencing environmental disclosure in South Africa, revealing that industry-specific practices, Environmental expenditure, regulatory pressure, and stakeholder engagement were significant determinants. In the same vein another research by Liu, & Liu, (2021) has established environmental expenditure reporting, Carbon Emissions Disclosure and Environmental Liability Recognition as some of the factors that determines environmental accounting information.

In the Nigerian context, research on environmental accounting Information has predominantly focused on the descriptive analysis of corporate disclosures and the impact of regulatory frameworks on reporting practices (Osemene, et al., 2024). For example, Okafor, et al., (2022) examined the level of environmental disclosure among Nigerian companies and found that industry type, environmental Liability, environmental expenditure, and company size were significant factors influencing the extent of reporting. However, there is a paucity of studies employing EFA to systematically identify the prevailing factors shaping environmental accounting information in Nigeria (Bin Idrees, et al., 2024). This gap highlights the need for more sophisticated analytical approaches, such as EFA, to uncover the latent variables that drive environmental accounting information in the country.

Empirical studies on the determinants of environmental accounting Information in Nigeria have often highlighted the role of environmental expenditure reporting, and Environmental Liability Recognition. Awolola, and Yahaya, (2024) conducted a survey-based study that identified environmental expenditure reporting, Carbon Emissions Disclosure and Environmental Liability Recognition as a critical factor influencing environmental accounting information in the Nigerian oil and gas sector. Their findings suggest that companies are more likely to disclose environmental information when there is strong regulatory oversight. Similarly, Oruwari, et al., (2024) found that stakeholder engagement, particularly from international investors and non-governmental organizations, plays a significant role in shaping environmental reporting practices in Nigeria.

In addition, a study by Okafor, & Daferighe, (2020) establishes environmental expenditure reporting, Carbon Emissions Disclosure and Environmental Liability Recognition factors, and external pressures such as regulatory frameworks and stakeholder engagement, have been recognized as critical determinants of environmental accounting information in Nigeria. Hassan, et al., (2024) stressed the impact of regulatory pressure, emphasizing that stringent environmental regulations compel companies to disclose more detailed environmental information to underscore compliance. This regulatory influence is particularly pronounced in industries with significant environmental impact, where non-compliance can lead to significant legal and financial consequences. Furthermore, the growing significance of international standards and guidelines, such as those established by the Global Reporting Initiative (GRI), has led to an increased alignment of Nigerian environmental reporting practices with global norms, driven by the necessity to attract foreign investment and maintain a positive corporate reputation (Oluseyi-Sowunmi, et al., 2020). These findings underscore the multifaceted nature of environmental accounting determinants in Nigeria, highlighting the crucial roles played by both internal company attributes and external regulatory and stakeholder influences.

Despite these contributions, the literature remains limited in exploring the underlying factors that comprehensively influence environmental accounting Information in Nigeria (Ojiakor, 2017). This study seeks to fill this gap by applying EFA to a broader dataset of Nigerian companies across various industries. By doing so, it aims to identify the core factors that drive environmental accounting Information in the country, providing a more nuanced understanding of the motivations and pressures that shape corporate environmental disclosures.

2.1 Determinants of Environmental Accounting Information in Nigeria

Extensive empirical research on the influencing factors of environmental accounting information has uncovered a complex web of determinants that shape corporate environmental accounting Information. Studies such as (Liu, & Anbumozhi, (2009), Buniamin, (2010), Ferreira, et al., (2010), Zeng, et al., (2010), Clarkson, et al., (2011), Setyorini, & Ishak, (2012), Christ, & Burritt, (2013), Pondeville, et al., (2013)) have indicated that environmental expenditure reporting factors, the dimensions were found to significantly influencing Environmental accounting information includes, Pollution control cost, west management cost, Energy Efficiency Investments, Water Conservation Expenses, Environmental Compliance Costs, Renewable Energy Investments, Land Restoration Costs, Biodiversity Conservation Initiatives, Employee Training on Environmental Practices, and Sustainability Reporting and Certification Costs. Furthermore, studies like (Alrazi, et al., (2016), Giannarakis, et al., (2017), Velte, et al., (2020), Linares-Rodríguez, et al., (2022), Han, et al., (2023), Fransisca, et al., (2024), Al-Mari, and Mardini, (2024),) has discovered that, Carbon Emissions Disclosure factors, the dimension that significantly impact environmental accounting information were, Total Carbon Emissions, Emission Reduction Targets, Carbon Intensity Ratios, Emission Sources Breakdown, Use of Renewable Energy, Offsets and Carbon Credits, Compliance with Regulatory Requirements, Emission Reduction Initiatives, Engagement with Stakeholders on Carbon Emissions. Similarly, studies such as (Firoz, & Ansari, (2010), Raiborn, et al., (2011), Bassey, (2012), Effiok, & Eton, (2013), Barbu, et al., (2014), Munteanu, & Tinta, (2016), Nascimento, & Fontgalland, (2023), revealed Environmental Liability Recognition factors, the dimensions that Influence it on environmental accounting information includes, Remediation Obligations, Legal Compliance Costs, Restoration Costs, Waste Disposal Obligations, Compensation for Environmental Damage, Costs of Compliance with Future Environmental Regulations, Environmental Insurance Reserves, Carbon Tax Liabilities. Moreover, researches such as (Matias Gama, et al., (2012), Doumpos, et al., (2019), Doumpos, et al., (2019), Yhip, et al., (2020), Chen, et al., (2023), establishes Creditor Decision-Making factor, the dimensions used to measure it are, Credit Risk Assessment, Loan terms, Overall financial evaluation, Debt Structure and Maturity Profile, Industry and Market Conditions, Company's Credit Rating, Management Quality and Governance. Consequently, these groups of factors were extracted from the analysis of the extant literature on Determinants of environmental accounting information in Nigeria.

3. Methodology

Using a cross-sectional survey method, data were collected from the annual reports of the listed environmentally oriented companies, across various industries in Nigeria, these include; Dangote Cement Plc, Total Energies Nigeria Plc, Lafarge Africa Plc, Seplat Energy Plc, Guinness Nigeria Plc, MTN Nigeria Communications Plc, Nestlé Nigeria Plc, Oando Plc, Unilever Nigeria Plc, and Zenith Bank Plc by issuing a structured questionnaire instrument. Further, only those companies that have their environmental accounting practices reported were purposively selected to choose the sample for the study. In whole, 370 questionnaires were distributed for the data collection. A total of 350 responses from the respondents were retrieved, thus, returning a response rate of about 95%. Exploratory Factor Analysis EFA was used for the data analysis to be able to respond to the research questions of the study. In an

entirety, 36 items signifying compliance dimensions were subjected to principal component analysis using varimax rotation in order to find out the factor structure. In this, the factors with factor loadings greater than or equal to 0.5 were recollected and reserved (Kaiser, 1974). The outcomes were also used to identify the sampling adequacy Kaiser-Meyer-Olkin (KMO).

4. Results and Discussion

4.1 Data Screening and Preparation

Data screening is a significant process particularly in factor analysis. In this study, data was checked and no missing data were recorded. Multivariate outliers were also checked using the Mahalanobis test. In these 10 cases were found to be above the Mahalanobis Value, these cases were removed as outliers and were not used in the analysis.

4.2 Data Analysis: Exploratory Factor Analysis (EFA)

Exploratory factor analysis EFA was used in this study, as a dimension reduction tool, to find out, among others, the dominant and relevant factors of Environmental Accounting Information in Nigeria. To achieve this, the result of the sampling adequacy test revealed:

Table I below displays Kaiser-Meyer-Olkin (KMO) together with the Bartlett's test of sphericity values. The KMO results show that (0.843) is significant at 1% level of significance and above the required threshold of 0.6. This had further complied with the sampling adequacy for exploratory factor analysis (Kline, 2014).

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.843
Bartlett's Test of Sphericity	Approx. Chi-Square	5064.825
	Df	465
	Sig.	0.000

Table 2 explains the latent factor structure or components and Cronbach's alpha reliability values of each scale or construct. From the EFA analysis four components factors were identified with eigenvalues greater than one (>1), which also explained 60 % of the total variance. Subject to the high extraction of communalities amongst the variable components, four main constructs were identified from the analysis.

These constructs were numbered 1 to 4 each representing a particular component or construct with a good loading of items or predictors. The value of a factor loading determines the strength of an item and how well that specific item or predictor correlates with or explains the main construct. For instance, in component 3 of table 2, ELR1 is the item that has the highest factor loading, which means is the item that best predict and explains the main construct. However, the minimum acceptable limit of a factor loading is 0.5. Hence, any item with less than 0.5 factor loading is a weak predictor in the entire construct. Nevertheless, the results revealed that some of the items would be deleted on the bases of low factor loadings (<0.4).

Table 2: Rotated Component Matrix

Item Codes	Components			
	1	2	3	4
EER7	.672			
EER4	.661			
EER6	.640			
EER2	.618			
EER3	.565			
EER1	.512			
EER9	.417 Deleted			
EER10	.425 Deleted			
EER8	.418 Deleted			

EER5	.403 Deleted			
CED1		.814		
CED3		.739		
CED5		.727		
CED2		.702		
CED4		.466Deleted		
CED6		.453Deleted		
CED7		.442Deleted		
ELR1			.910	
ELR2			.899	
ELR3			.881	
ELR4			.818	
ELR5			.802	
ELR6			.800	
ELR7			.488Deleted	
ELR8			.465Deleted	
CDM5				.829
CDM6				.796
CDM4				.706
CDM3				.657
CDM2				.619
CDM1				.562
CDM8				.480 Deleted
CDM7				.461 Deleted
CDM11				.443 Deleted
CDM9				.393 Deleted
CDM10				.381 Deleted
Reliability Test	**0.770**	**0.705**	**0.821**	**0.768**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.
b. EER= Environmental Expenditure Reporting, CED= Carbon Emission Disclosure, ELR= Environmental Liability Recognition, CDM= Creditors Decision Making

4.3 Prevailing Factors of Environmental Accounting Information in Nigeria

Table 3 presents the prevailing factors, item descriptions and their corresponding factor loadings. In this table all the items were reduced to more strong and reliable predictors. This revealed 22 resilient predictors across the entire research constructs. Out of the 22 predictors, six loaded to the first component and were labeled as the Environmental Expenditure Reporting construct. These include Pollution control cost, West Management cost, Energy Efficiency Investment, Water conservation Expenses, Environmental compliance cost, and Land restoration cost these are said to be the factors that best explains Environmental Expenditure Reporting. Four items that loaded under the second component were termed as Carbon Emission Disclosure; they include Total carbon emission, Emission Reduction Targets, Compliance with Regulatory Requirements, and Emission reduction Initiatives these items are termed as the strongest predictors of Carbon Emission Disclosure. While six items loaded to the third component, these were called Environmental Liability Recognition they consist of the Remediation Obligations, Legal compliance cost, Restoration cost, West Disposal obligations, Environmental Insurance reserves, and Carbon Tax Liability. These are the more appropriate predictors that explains why people aspire for Environmental Liability Recognition.

Table 3 Prevailing Factors of Environmental Accounting Information in Nigeria, Factor Loadings and Reliability

Item Description	Components			
	Environmental Expenditure Reporting	Carbon Emission Disclosure	Environmental Liability Recognition	Creditors Decision Making
Pollution control cost	.663			
West management cost	.652			
Energy Efficiency Investments	.630			
Water Conservation Expenses	.608			
Environmental Compliance Costs	.556			
Land Restoration Costs	.502			
Total Carbon Emissions		.804		
Emission Reduction Targets		.749		
Compliance with Regulatory Requirements		.747		
Emission Reduction Initiatives		.712		
Remediation Obligations			.910	
Legal Compliance Costs			.899	
Restoration Costs			.881	
Waste Disposal Obligations			.818	
Environmental Insurance Reserves			.802	
Carbon Tax Liabilities			.800	
Credit Risk Assessment				.829
Loan terms				.796
Overall financial evaluation				.706
Debt Structure and Maturity Profile				.657
Industry and Market Conditions				.619
Company's Credit Rating				.562
Reliability Test	**0.770**	**0.705**	**0.821**	**0.768**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Similarly, for the fourth components in table 3, six items loaded to the fourth component, these were called Creditors Decision Making they include, Credit Assessment, Loan terms overall financial evaluation, debt structure and maturity profile, Industry and market condition, and Company's credit rating these items are

termed as the strongest predictors of Creditors Decision Making based on the responses of respondents.

4.4. Discussion and implications

This study focused on identifying the core factors that drive environmental accounting information in Nigeria. The findings of this study revealed that, of the overall 36 items or predictors of factors of environmental accounting information, 22 prevailed and emerged as the strongest and reliable predictors of the various construct factors in Nigeria. Consistent with this finding are the outcomes of the various researches such as Alnsour *et al.*, (2009) which also argued that Creditors decision making is significantly influenced by various environmental accounting information factors.

To this end, four main constructs were detected from the result of the exploratory factor analysis EFA. These include Environmental Expenditure Reporting, Carbon Emission Disclosure and Environmental Liability Recognition. Further, 22 measurement items loaded across the aforementioned constructs each with an acceptable factor loading of 0.5 and above. This means that 14 items with factor loading below 0.5 are not relevant to the 4 identified constructs or factors of Environmental accounting information based on the responses of the respondents and were therefore deleted. Out of the 14 deleted items, 4 are from Environmental Expenditure Reporting construct. These include Renewable Energy Investments, Biodiversity Conservation Initiatives, and Employee Training on Environmental Practices, Sustainability Reporting and Certification Costs. This could be ascribed to the fact that those variables are not the most immediate ways of Environmental Expenditure Reporting to the respondents. Also from the deleted items, three belonged to Carbon Emission Disclosure construct, which involved Offsets and Carbon Credits, Use of Renewable Energy, Engagement with Stakeholders on Carbon Emissions. The weakness of these items in this study could only be connected to the fact that those factors could be more relevant to general Environmental Issues rather than Carbon Emission Disclosure in particular. Similarly, 2 items were removed from Environmental Liability Recognition construct; these are Compensation for Environmental Damage, and Costs of Compliance with Future Environmental Regulations. These also may be associated to the fact that the 2 items are more relevant to General Environmental Issues rather than the Environmental Liability Recognition construct. In the Creditor Decision-Making construct, 5 items appeared not related to the main construct; these are Management Quality and Governance, Historical Financial Performance, Collateral and Security Evaluation, Legal and Regulatory Compliance, and Obligations for Product Stewardship etc. These also are associated to the reason that that these factors are not part of the Creditor Decision-Making as suggested by (Sarkheyli, Sharifi, Rafieian, reza Bemanian, & Murayama, 2012).

The findings have practical implications for both policymakers and corporate entities in Nigeria. For regulators, the study highlights the key factors that are most relevant to environmental accounting disclosures, helping to refine guidelines and standards. Focusing on the 22 significant factors identified can enhance the quality and transparency of corporate environmental reporting. Moreover, the elimination of certain items like renewable energy investments from key constructs suggests that companies may need to focus more on immediate, tangible aspects of environmental accounting rather than broader, long-term sustainability initiatives to satisfy current market and regulatory demands. And recommend companies, needs to understand the specific environmental factors that influence creditor decision-making, such as Carbon Emission Disclosure and Environmental

Liability Recognition, can aid in tailoring reports to meet stakeholder expectations, particularly those of financial institutions.

5. Conclusion

Results in this study indicated that from the EFA analysis, 4 main constructs were identified, and of the 36 items that were used at the initial analysis, 22 prevailed and emerged as stronger and relevant predictors of the main constructs of Environmental Accounting Information in Nigeria. In this, 6 items loaded under Environmental Expenditure Reporting construct, 4 items belong to Carbon Emission Disclosure construct, 6 items also relevant to Environmental Liability Recognition construct, similarly, compliance ability have 6 items loaded on to it and finally Creditor Decision-Making has 6 items.

References

Allee, K. D., Do, C., & Raymundo, F. G. (2022). Principal component analysis and factor analysis in accounting research. *Journal of Financial Reporting*, *7*(2), 1-39.

Al-Mari, J. R., & Mardini, G. H. (2024). Financial performance and carbon emission disclosure. *Journal of Business and Socio-economic Development*.

Alrazi, B., De Villiers, C., & Van Staden, C. J. (2016). The environmental disclosures of the electricity generation industry: a global perspective. *Accounting and Business Research*, *46*(6),665-701.

Ambituuni, A., Amezaga, J., & Emeseh, E. (2014). Analysis of safety and environmental regulations for downstream petroleum industry operations in Nigeria: Problems and prospects. *Environmental Development*, *9*, 43-60.

Awolola, M., & Yahaya, O. A. (2024). The Impact Of Environmental, Social, And Governance Reporting On Investment Decisions.

Barbu, E. M., Dumontier, P., Feleagă, N., & Feleagă, L. (2014). Mandatory environmental disclosures by companies complying with IASs/IFRSs: The cases of France, Germany,and the UK. *The International Journal of Accounting*, *49*(2), 231-247.

Bassey, B. E., Effiok, S. O., & Eton, O. E. (2013). The impact of environmental accounting and reporting on organizational performance of selected oil and gas companies in Niger Delta Regionof Nigeria. *Research Journal of finance and accounting*, *4*(3), 57-73.

Bin Idrees, S., Alhabshi, S. M., Sharofiddin, A., & Othman, A. H. A. (2024). Framing external environmental dimensions as institutional constraints on adopting Islamic financial transactions: empirical evidence from: Libyan commercial banks. *International Journal of Ethics and Systems*.

Buniamin, S. (2010). The quantity and quality of environmental reporting in annual report of public listed companies in Malaysia. *Issues in Social and Environmental Accounting*, *4*(2), 115135.

Chen, Z. S., Zhou, J., Zhu, C. Y., Wang, Z. J., Xiong, S. H., Rodríguez, R. M., ... & Skibniewski, M. J. (2023). Prioritizing real estate enterprises based on credit risk assessment :an integrated multi-criteria groupdecision support framework. *Financial Innovation*, *9*(1), 120.

Christ, K. L., & Burritt, R. L. (2013). Environmental management accounting: the significance of contingent variables for adoption. *Journal of cleaner production*, *41*, 163-173.

Chung, J., & Cho, C. H. (2018). Current trends within social and environmental accounting research: A literature review. *Accounting Perspectives*, *17*(2), 207-239.

Clarkson, P. M., Overell, M. B., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, *47*(1), 27-60.

Dinh, T. K. X., Nguyen, T. D., & Nguyen, T. H. (2022). Factors affecting the application of environmental accounting in manufacturing enterprises in vietnam. *Journal of Accounting, Finance and Auditing Studies*, *8*(3), 115-140.

Doumpos, M., Lemonakis, C., Niklis, D., & Zopounidis, C. (2019). Analytical techniques in the assessment of credit risk. *EURO advanced tutorials on operational research. Cham: SpringerInternational Publishing*.

Doumpos, M., Lemonakis, C., Niklis, D., Zopounidis, C., Doumpos, M., Lemonakis, C., ... & Zopounidis, C. (2019). Introduction to credit risk modeling and assessment. *Analytical Techniques in the Assessment of Credit Risk: An Overview of Methodologies and Applications*, 121.

Ferreira, A., Moulang, C., & Hendro, B. (2010). Environmental management accounting and innovation: an exploratory analysis. *Accounting, Auditing & Accountability Journal*, *23*(7), 920948.

Firoz, M., & Ansari, A. A. (2010). Environmental Accounting and IFRS. *International Journal of Business and Management*, *5*(10), 105.

Fransisca, S., Robiani, B., Meutia, I., & Yusnaini, Y. (2024). Development of Carbon Emission Disclosure Indicators in Indonesia and Analysis of Determining Factors. *Qubahan AcademicJournal*, *4*(3), 242-262.

Giannarakis, G., Konteos, G., Sariannidis, N., & Chaitidis, G. (2017). The relation between voluntary carbon disclosure and environmental performance: The case of S&P 500. *International Journal of Law and Management*, *59*(6), 784-803.

Han, Y. G., Huang, H. W., Liu, W. P., & Hsu, Y. L. (2023). Firm-value effects of carbon emissions and carbon disclosures: evidence from Taiwan. *Accounting Horizons*, *37*(3), 171-191.

Hassan, A., & Kouhy, R. (2015). From environmentalism to corporate environmental accountability in the Nigerian petroleum industry: do green stakeholders matter?. *International Journal of Energy Sector Management*, *9*(2), 204-226.

Hassan, O. A., Romilly, P., & Khadaroo, I. (2024). The impact of corporate environmental management practices on environmental performance. *Business Ethics, the Environment & Responsibility*, *33*(3), 449-467.

Kameel, A. K., & Festus, A. F. (2023). Analysis of Environmental Accounting and Reporting Practices of Listed Banking Companies in Nigeria. *Journal of Finance and Accounting*, *11*(4),134-142.

Lim, M. (2022). *Environment, Social, Governance (ESG) Factors And The Impact On Market Value Added (MVA) For Malaysian Public Listed Companies* (Doctoral dissertation, UTAR).

Linares-Rodríguez, M. C., Gambetta, N., & García-Benau, M. A. (2022). Carbon management strategy effects on the disclosure and efficiency of carbon emissions: A

study of Colombian companies' context and inherent characteristics. *Journal of Cleaner Production*, *365*,132850.

Lipton, A. M. (2020). Not everything is about investors: the case for mandatory stakeholder disclosure. *Yale J. on Reg.*, *37*, 499.

Liu, X., & Anbumozhi, V. (2009). Determinant factors of corporate environmental information disclosure: an empirical study of Chinese listed companies. *Journal of cleaner production*, *17*(6), 593-600.

Liu, Z., & Liu, M. (2021). Quality evaluation of enterprise environmental accounting information disclosure based on projection pursuit model. *Journal of cleaner production*, *279*, 123679.

Matias Gama, A. P., & Susana Amaral Geraldes, H. (2012). Credit risk assessment and the impact of the New Basel Capital Accord on small and medium sized enterprises: Anempirical analysis. *Management Research Review*, *35*(8), 727-749.

Munteanu, V., & Tinta, A. (2016). Considerations on the integration of environmental information in the entity's financial accounting system. *Academic Journal of Economic Studies*,*2*(1), 11-24.

Nascimento, M. C., & Fontgalland, I. L. (2023). Mitigation Of Environmental Liabilities In Brazilian Companies: What Does This Have To Do With Compliance?. *Revista Contemporânea*, *3*(2), 855-899.

Negash, M. (2012). IFRS and environmental accounting. *Management Research Review*, *35*(7), 577-601.

Newig, J., Challies, E., Cotta, B., Lenschow, A., & Schilling-Vacaflor, A. (2020). Governing global telecoupling toward environmental sustainability. *Ecology & Society*, *25*(4), 1-17.

Ojiakor, I. P. (2017). *Responsiveness of Organizational Performance to Environmental Accounting Information of Motor Vehicle Manufacturing Organizations in South East, Nigeria* (Doctoral dissertation).

Okafor, O. O., Egbunike, P. A., & Amahalu, N. N. (2022). Determinants of environmental disclosure of quoted oil and gas firms in Nigeria. *International Journal of Management Studies and Social Science Research*, *1*(1), 77-88.

Okafor, U., Oji, R., & Daferighe, E. (2020). Environmental and social accounting practices, and financial performance of cement companies: empirical evidence from Nigeria. *European Journal of Business and Management*, *12*(20), 60-72.

Oluseyi-Sowunmi, S. O., Iyoha, F. O., & Owolabi, A. A. (2020). Corporate environmental reputation management and financial performance of environmentally sensitive companies inNigeria. *Cogent Social Sciences*, *6*(1), 1813368.

Oruwari, H. O., Obunwa, Q., Ahuchogu, J., & Ayuba, S. (2024, August). The Effect of Stakeholders Engagement on Corporate Social Responsibility Project Sustainability in Niger Delta. In *SPE Nigeria Annual International Conference and Exhibition* (p. D022S026R006). SPE.

Osemene, O. F., Adinnu, P., Fagbemi, T. O., & Olowookere, J. K. (2024). Corporate governance and environmental accounting reporting in selected quoted African companies. *Global*

Business Review, *25*(4), 1096-1119.

Pondeville, S., Swaen, V., & De Rongé, Y. (2013). Environmental management control systems: The role of contextual and strategic factors. *Management accounting research*, *24*(4), 317-332.

Raiborn, C. A., Butler, J. B., & Massoud, M. F. (2011). Environmental reporting: toward enhanced information quality. *Business Horizons*, *54*(5), 425-433.

Setyorini, C. T., & Ishak, Z. (2012). Corporate social and environmental disclosure: a positive accounting theory view point. *International Journal of Business and Social Science*, *3*(9).

Velte, P., Stawinoga, M., & Lueg, R. (2020). Carbon performance and disclosure: A systematic review of governance-related determinants and financial consequences. *Journal of Cleaner Production*, *254*, 120063.

Wu, W., & Yu, L. (2024). How does environmental corporate social responsibility affect technological innovation? The role of green entrepreneurial orientation and green intellectual capital. *Journal of the Knowledge Economy*, *15*(1), 3297-3328.

Yhip, T. M., Alagheband, B. M., Yhip, T. M., & Alagheband, B. M. (2020). Credit Analysis and Credit Management. *The Practice of Lending: A Guide to Credit Analysis and Credit Risk*, 3-46.

Zeng, S. X., Xu, X. D., Dong, Z. Y., & Tam, V. W. (2010). Towards corporate environmental information disclosure: an empirical study in China. *Journal of Cleaner Production*, *18*(12),1142-1148.