

Determinants of Environmental Accounting information disclosure in an emerging market: The Moderating effect of agency cost - An empirical evidence from Nigeria

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Abstract

By producing and discharging hazardous substances, liquids, sounds, and carbon emissions, businesses blatantly contribute to environmental damage. This study seeks to investigate firm specific drivers of environmental accounting information disclosure in Pharmaceutical companies in Nigeria. Quantitative research was employed and data will be collected from the annual report and financial statement of listed pharmaceutical firms in Nigeria for a period of 11 years spanning 2011-2021. The study used logit regression to estimate the model. Firm specific factors used are leverage, firm size, firm age, profitability. The findings of the study revealed profitability having an insignificant positive effect, leverage an insignificant positive effect, firms size a significant positive effect, and firm age a significant positive effect on environmental accounting information disclosure. Also, the study concluded that firm characteristics have a joint significant effect on environmental accounting information disclosure. Agency cost moderates the relationship between firm size, firm age also firm characteristics jointly and environmental accounting information disclosure. The recommendation of the study is for management of health care firms in Nigeria to improve on the firm specific characteristics in order to disclose more environmental information in their annual report and for the firms to improve generally on their environmental accounting information practices. Also, for the government to enact laws that will improve upon environmental accounting practices of health care firms in Nigeria and done by some other developed countries.

Keywords: 1.Environmental accounting information disclosure, 2.firm age, 3.firm size, 4.leverage profitability

1.0 Introduction

Recent issues such as the degradation of the natural environment, overuse of the natural resource base, and increased pollution by harmful carbon elements have driven new regulations from governments as well as from both local and international businesses (Ganda & Milondzo, 2018).

Environmental accounting drew more attention at the 1992 United Nations (UN) conference on environment and development as well as in the 1987 "Our Common Future" report of the UN World Environment and Development Committee (Haleem et al., 2021). Since the middle of the 20th century, businesses, academic groups, accounting regulatory organizations, and professional associations, among others, have developed an increasing interest in environmental information (Mata et al., 2018). An essential component of business responsibility for environmental protection is environmental reporting (Yang et al. 2021). Wider and quicker environmental changes have occurred throughout human history as a result of increased usage of natural resources and their scarcity (Tooranlo & Shahamabad, 2020).

Since the 1970s, when the idea of sustainable development of human civilization first emerged, environmental accounting has developed into a distinct field of accounting science. Since the early 1970s, environmental accounting has been categorized as accounting and used as a tool for monitoring and reflecting economic activity related to the environment (Haleem et al., 2021). The most popular method of environmental accounting information disclosure at the moment is supplementing corporate environmental information disclosure with data from existing financial reports (Lu and Li 2020; Pien 2020; Tzouvanas et al. 2020). However, environmental issues are escalating due to the severe loss of natural resources (Fondevila et al. 2019; Odoemelam& Okafor, 2018), and traditional accounting is no longer able to satisfy information users' expectations. Environmental protection has received a lot of attention due to the tremendous waste of natural resources and the effects of pollution (Acar&Temiz 2020; Odoemelam& Okafor 2018). Natural resources, often known as the environment, such as the country's water, air, minerals, forests, etc., have an impact on all businesses. Corporate activities have an impact on the environment just like they do. As a result, you must maintain accurate financial records that show how your business affects the environment, and vice versa (Drisya&Mythili, 2022). Environmental accounting encourages businesses to manage better by considering the needs of all stakeholders, with a special emphasis on how management choices may affect the environment (Carandang& Ferrer, 2020). It is vital to look for forces that support the improvement of the quality and level of corporate environmental information disclosure because businesses still retain a great deal of discretion over the environmental accounting information disclosure's quality and level. This is due to the fact that high-quality corporate environmental information disclosure may satisfy both the information needs of stakeholders and the regulatory obligations, which is advantageous for the long-term growth of society (Wang et al. 2021). Recent years have seen an increase in managers' understanding of environmental challenges, including resource consumption, climate change, greenhouse gas emissions, waste disposal, landfill site utilization, land and water contamination, and material recycling (Scarpellini et al., 2019).

In Nigeria, there has been an increase in demand for improved disclosure of information relating to environmental performance from a variety of stakeholder groups, including commercial clients, investors, local communities, and the government. As a result, businesses that contribute to environmental deterioration were voluntarily instructed that it was required and desirable to disclose environmental accounting information as and when it became due (Ja'afar et al., 2021).

A well managed firm characteristics will improve the environmental accounting reporting and disclosure practices of firms, specifically in the health care sector of Nigeria. Such attributes as profitability, firm size, leverage, it is believed to be able to increase the environmental accounting reporting and disclosure practices of firms.

The motivation of the work was drawn from the companies in Nigeria and the nature of their operation, specifically the health care sector. Their production nature usually result to environmental pollution, degradation and emission of gases in the environment. Also, it was observed that there is little or no attention pay towards the health care industrial sector, as regards their environmental accounting practices. Based on this premise, this study sought to look into the environmental accounting information disclosure practices of health care firms in Nigeria, from the perspective of firm characteristics.

2.0 Literature review and theoretical underpinning

2.1 Environmental accounting and information disclosure

According to Shoeb et al. (2022), environmental accounting disclosure refers to the dissemination of economic and non-economic information about an organization to stakeholders, which is represented by the tasks of the financial, environmental, and social aspects with a picture of a business setting. Marrone et al. (2020) noted that environmental accounting research looks at how businesses account for and disclose their environmental consequences as well as how environmental performance affects business results. The new theoretical framework and accounting techniques are used by environmental accounting, which is a

component of the accounting system, to record, measure, and publish environmental information that is relevant to stakeholder decisions (Nguyen, 2020). The pressure from stakeholders (such as the government, community, customers, shareholders, etc.), the nature of the business (such as its size, industry, profitability, etc.), the manager's environmental awareness, and the accountant's credentials have all been identified as factors that affect the implementation of environmental accounting (Nguyen, 2020). Lam (2019) has identified six factors that have an impact on the disclosure of environmental information in Vietnamese aquaculture enterprises, including: the oversight of environmental management agencies; the accountants' qualifications for the position; the managers' attitudes toward environmental protection; the EA's guidance; and the pressure from the government, importers, investors, financial institutions, and the community. Nguyen, et al. (2020) identified factors such as government pressure, stakeholder pressure, managers' perceptions of the company, firm size, community pressure, industry, profit, and financial leverage as having an impact on the disclosure of environmental information. Profit and financial leverage are two separate variables that have a negative impact. Environmental accounting information includes environmental investments, environmental liabilities, and environmental expenditures made to protect the environment. These items are included in the balance sheet, income statement, and notes that are added to the financial statements as well as in annual reports (Senn& Giordano-Spring, 2020). Since it integrates regular accounting reporting with ecological reporting, environmental accounting, sometimes known as "green accounting" or "environmental management accounting," is a crucial component of the accounting frontier. As a result, providing information to users of accounting information about both conventional and environmental issues is known as providing environmental accounting information (Deswanto&Siregar, 2018). An adaptable instrument for providing information that isn't always offered in conventional managerial systems is environmental accounting (Kalola, 2020). The process by which a business informs certain interest groups and the general public about the environmental consequences of its operations is known as environmental reporting (Chijoke-Mgbame&Mgbame (2018). The management of emissions, the mitigation or repair of environmental harm, the preservation of natural resources, and other environmental information are all covered by environmental disclosure information. Environmental data is a significant type of corporate social reporting, according to the study by Okere et al. (2017)

Legitimacy theory

Dowling & Pfeffer were the ones who propounded this theory in 1975. The idea of legitimacy presupposes that a company is connected to the neighborhood where it operates. According to the legitimacy hypothesis, organizations can only exist if they are conducting their operations in accordance with societal norms and values (Kipnetich, 2020; Nguyen & Tran, 2019). According to the legitimacy theory, organizations are required to carry out activities and shape their structures in accordance with the social order's aims to ensure their continuous existence (Carandang& Ferrer, 2020). According to this theory, businesses ought to follow societal norms and take their environmental responsibilities seriously (Wang et al. 2021). The legitimacy theory is predicated on the notion that a business will employ corporate disclosure in a way that shapes society's perspective and establishes its behavior as legitimate (Portella&Borba, 2020). The theory assumes that businesses should take into account, care for, and expect to seem legitimate in the eyes of their stakeholders and guarantee that their actions are morally just and secure (Abubakar, 2017). An organization must operate in a way that is consistent with its norms and values and adopt social responsibility practices. It states that in order to have legal standing and a call to action, organizations must fulfill certain social obligations (Chowdhury et al., 2020). In the light of this study, several persons supported this theory (Angela & Handoyo, 2021; Nguyen 2020), whereas some others refuted it (Kipnetic et al. 2019)

Stakeholder theory

Edward Freeman was the one who propounded stakeholder theory in 1984. Onyali and Okafor (2018) stated that any group or person that can affect or is affected by the achievement of the organization's objectives is

referred to as a stakeholder, according to the traditional definition. Freeman stated that all stakeholders, including shareholders, lawmakers, employees, suppliers, and the government, are impacted by all company actions (Nguyen & Tran, 2019). Stakeholder theory's central tenet is that a company will succeed when it can successfully manage all of its interactions with stakeholders. The relationships between businesses and their management with stakeholders are managed, as is the disclosure of environmental information as requested by stakeholders. (Chowdhury and others, 2020). Stakeholder theory is actually thought to be an explainable theory for corporate environmental accounting, for example. It entails recognizing and identifying the connection between a company's actions and their effects on the stakeholders they serve. In order to gain a competitive edge, businesses should be able to respond to complicated rules and establish a rapport with their stakeholders that is trustworthy, interesting, and productive (Khairredine et al., 2020). In the light of this study, several persons supported this theory (Nguyen et al. 2017; Baalouch et al. 2019), whereas some others refuted it (Saha et al. 2020).

Profitability and environmental accounting information disclosure

Profitability is one of the firm specific characteristics that influence environmental accounting information disclosure. Most of the reviewed studies reported a positive of between profitability and environmental accounting information disclosure.

Using fixed effect regression estimation technique, Nguyen (2017) carried out a study on the determining factors of environmental accounting information disclosure in Vietnam, the study depicted profitability having a positive effect on environmental accounting information disclosure. Several other studies from Asian region supported this finding (Pareek et al. 20219; Nguyen, 2020; Chowdhury et al. 2020; Akbas and Canikli (2018; Baalouch et al. 2019; Ofoegbu&Megbuluba, 2016; Ja'afar et al. 2017; Chijioke-Mgbame&Mgbame, 2018; Abubakar, 2017; Onyali and Okafor, 2018; Baalouch et al. 2019, Khairredine et al., 2020), although some other studies from same region contradicted this finding (Halimah&Yanto, 2018; Agyemang et al. 2021; Nguyen et al. 2020).

Based on the reported evidence of most reviewed works, the hypothesis is stated thus;

H₁: Profitability has a positive effect on environmental accounting information disclosure.

Firm size and environmental accounting information disclosure

Firm size is one of attributes of a firm that influences environmental accounting information disclosure. Most of the reviewed studies reported a positive of between firm size and environmental accounting information disclosure. Focusing on industrial firms in Nigeria, Onyali and Okafor (2018) studied environmental performance and its determinants, for the period between 2008 to 2017. Using STATA 13 statistical software, it was reported that a positive effect existed between firm size and Environmental performance, which was supported by several other studies (Fahad and Nidheesh (2020) Egbunike&Tarilaye, 2017; Khairredine et al. (2020; Agyemang et al. 2021; Baalouch et al. 2019; Angela and Handoyo, 2021; Ofoegbu&Megbuluba, 2016; Shuaibu, 2020; Nguyen et al. 2017; Chijioke-Mgbame&Mgbame, 2018; Ofoegbu&Megbuluba, 2016; Abubakar, 2017; Baalouch et al. 2019) Using Logistic regression estimation technique, Akbas and Canikli (2018) conducted a research on greenhouse emission disclosure and its determinants. The study focused on 84 Turkish firms covering a period of 3 years. The evidence of a positive effect was reported between firm size and greenhouse emission disclosure. There are also few reported negative effect (Halima &Yanto, 2018; Kipnetic et al. 2019; Pareek et al. 2019; Saha et al. 2020).

Based on the reported evidence of most reviewed works, the hypothesis is stated thus;

H₂: Firm size has a positive effect on environmental accounting information disclosure.

Leverage and environmental accounting information disclosure

Leverage is one of the firm specific characteristics that influence environmental accounting information disclosure. Most of the reviewed studies reported a positive of between leverage and environmental

accounting information disclosure. Using 14 oil and gas firms in Nigeria as a case study, Ja’afar et al. (2017) studied the disclosure of environmental information and looking at the period between 2010 to 2019. With the aid of STATA statistical software, the result was that leverage had a positive effect on the disclosure of environmental information. Several studies were in support of this result (Angela &Handoyo, 2021;Chowdhury et al. 2020; Shuaibu, 2020;Nguyen, 2020; Nguyen et al. 2017; Fahad &Nidheesh, 2020; Egbunike&Tarilaye, 2017)

Using Logistic regression estimation technique, Akbas and Canikli (2018) conducted a research on greenhouse emission disclosure and its determinants. The study focused on 84 Turkish firms covering a period of 3 years. The evidence of a positive effect was reported between leverage and greenhouse emission disclosure. There are also few reported negative effect (Nguyen et al. 2020; Agyemang et al. 2021; Kipnetic et al. 2019; Chijioke-Mgbame&Mgbame, 2018; Chijioke-Mgbame&Mgbame, 2018; Nguyen et al. 2020; Abubakar, 2017).

Based on the reported evidence of most reviewed works, the hypothesis is stated thus;

H₃: Leverage has a positive/negative effect on environmental accounting information disclosure.

Firm age and environmental accounting information disclosure

Firm age is one of attributes of a firm that influences environmental accounting information disclosure. Most of the reviewed studies reported a positive of between firm size and environmental accounting information disclosure. Focusing on industrial firms in Nigeria, Onyali and Okafor (2018) studied environmental performance and its determinants, for the period between 2008 to 2017. Using STATA 13 statistical software, it was reported that a positive effect existed between firm age and Environmental performance. Several other studies supported this finding (Fahad &Nidheesh, 2020; Egbunike&Tarilaye, 2017; Khaireddine et al. 2020; Angela &Handoyo, 2021; Shuaibu, 2020; Chijioke-Mgbame&Mgbame, 2018; Pareek et al. (2019;)

Using tobit regression to estimate carbon emission disclosure and its determinants in the united kingdom, Saha et al. (2020) revealed firm age having a positive effect on carbon emission disclosure. There are also few reported negative effect (Ja’afar et al. 2017).

Based on the reported evidence of most reviewed works, the hypothesis is stated thus;

H₄: Firm age has a positive effect on environmental accounting information disclosure

3.0 Methodology

Quantitative research was employed and data was obtained from the annual report of listed health care firms in Nigeria for the period of 11 years spanning 2011 to 2021. The study considered all the listed health care firms which are seven (7) in number. The Nigerian stock is categorized into 11 sector, of which health care is part of them. However, due to lack of complete data, the study made use of five listed health care firms out of seven. Table 1 explains the variables employed for the study.

Table 1: Variable definition

Variable	Measurement	Reference
Dependent		
Environmental accounting information disclosure (EAID)	1 for section in the annual report for Env. Rep., & 0 for otherwise	Chijoke-Mgbame&Mgbame, (2018)
Explanatory variable(s)		
Profitability (ROA)	Profit before tax dividend by total asset	Halimah&Yanto (2018), Pareek et al. (2019), Ja’afar et al. (2021);

Leverage (LEV)	Ratio of total debt to total equity	Angela &Handoyo, 2020; Kipngetic et al. (2019)
Firm size (FS)	Natural log of total revenue	Ezeoha& Okeke (2021)
Firm age (FA)	Number of years since incorporation	Saha (2020), (Shuaibu, 2020)
Agency cost (AC)	Ratio of operating expense to total revenue	Ayunitha et al. (2020)

Source: Author, 2023

Empirical model

The study adopted a baseline model from the ordinary least square regression (OLS), which states that environmental accounting information disclosure is function of profitability, leverage and firm size as depicted below:

$$EAID_{it} = \alpha_0 + \sum_{i=1}^n \beta_i (ROA, LEV, FS, FA, AC)_{it} + \mu_{it} \quad (1)$$

A second model was generated to capture the interaction of agency cost, as pointed out by Baron and Kenny (1986). Moderating effect could take the form of an interaction, that is to say the product of the independent variable and the moderating variable, and is stated below:

$$EAID_{it} = \alpha_0 + \beta_1(ROA*AC)_{it} + \beta_2(LEV*AC)_{it} + \beta_3(FS*AC)_{it} + \beta_4(FA*AC)_{it} + \mu_{it} \quad (2)$$

Where;

α_0 is the constant; β_i is the coefficient of the explanatory variables; ROA= return on asset; LEV= leverage; FS = firm size; FA= firm age; AC = Agency cost; μ_t is the white noise.

However, due to the nature of the dependent variable, logit regression was employed.

4.0 Data presentation and analysis

Table 2 displays the characteristics of the variables such as the minimum and maximum value, standard deviation and mean.

Environmental accounting information disclosure has a mean of 0.254545 and the implication is that on the average the health care firms in Nigeria have an environmental disclosure information of 0.254545. The minimum value of 0 and maximum value of 1 shows that the disclosure information varies across the health care firms in Nigeria.

Table 2: Descriptive statistics

Variable	Obs	Mean	Std. dev	Min	Max
EAID	55	0.254545	0.439620	0.000000	1.000000
ROA	55	0.039738	0.088745	-0.177600	0.273000
LEV	55	1.211747	1.078623	-4.946100	4.053400
FS	55	9.718818	0.525271	8.663500	10.48940
FA	55	48.800000	17.37964	16.000000	77.000000

Source: Author, 2023

Return on asset having a mean value of 0.039738 implies that the listed health care firms in Nigeria have an average profit of 4 percent. The minimum and maximum values of -0.177600 and 0.273000 respectively shows how the returns differ across the health care firms, which is characterized by losses and profit.

The mean value (1.211747) of leverage explains that on the average the health care firms in Nigeria employed more debt financing strategy of 1.211747. The minimum and maximum values of -4.946100 and 4.053400 respectively only shows how the leverage of the health care firms differ across themselves.

Firm size has a mean value of 9.718818 which explains the average firm size value of the health care firms. The minimum and maximum values of 8.663500 and 10.48940 respectively depicts how the firm size of the health care firms differ across each other.

The mean value of the firm age recorded a value of 48.8 which means that the average age of the health care firms is approximately 49 years, since incorporation. The minimum and maximum values of 16 and 77 implies that the youngest firm is 16 years, and the oldest firm is 77 year, all from incorporation time till date.

Table 3: Correlation Matrix

Variable	EAID	FS	LEV	ROA	FA
EAID	1				
FS	0.270837	1			
LEV	0.198729	0.168957	1		
ROA	0.247566	0.469588	0.059237	1	
FA	0.200686	-0.232070	0.104848	-0.106573	1

Source: Author, 2023

Table 3 shows the correlation matrix of the variables for the study. From observation, all the variables reported values less than 0.08, as the highest correlation is 0.469588 between return on asset and firm size. This implies the non-existence of a strong correlation among the variables under study. According to Okeke et al. (2022), the existence of multicollinearity is evidenced from the value of 0.8 (80%) and above.

Table 4: Logit Regression

Without moderating effect				With moderating effect			
Variable	Coeff.	Std. error	Prob.	Variable	Coeff.	Std. error	Prob.
ROA	7.1407	5.3153	0.1791	ROA_AC	-11.4387	14.8732	0.4418
LEV	0.8186	0.5444	0.1327	LEV_AC	2.8635	2.0942	0.1715
FS	1.6852	0.9019	0.0617*	FS_AC	0.7717	4.2148	0.8547
FA	0.0393	0.0213	0.0646*	FA_AC	0.1007	0.1003	0.3154
C	-21.2164	9.5836	0.0268	C	-0.4555	0.4904	0.3529
				AC	-19.3997	41.1582	0.6374
R_Squared	0.2074			R_Squared	0.1350		
LR Statistic	12.9434			LR Statistic	8.4231		
Prob(LR Statistic)	0.0116*			Prob(LR Statistic)	0.1344		

Source: Author, 2023(pval in parentheses; *** p<0.01, ** p<0.05, * p<0.1)

Table 4 shows the logit regression output. You will be able to observe that ROA with a coefficient of 7.1407 implies a positive effect with environmental accounting information disclosure. The prob. value of 0.1791 implies an insignificant effect. The coefficient value of 0.8186 for leverage is an indication of a positive effect whereas the prob. value of 0.1327 implies an insignificant effect. The coefficient value of 1.6852 for firm size is an indication of a positive effect whereas the prob. value of 0.0617 implies an insignificant effect. The coefficient value of 0.0393 for firm age is an indication of a positive effect whereas the prob. value of 0.0646 implies an insignificant effect. 5 percent is the level of significance.

With regard to the moderating effect, it is measured by the probability value (Baron & Kenny, 1986), and the results show that all firm characteristics, except return on asset and leverage, reported significant and insignificant impact (without and with interaction respectively) on environmental accounting information disclosure, indicating that agency cost moderates the relationship between such characteristics and environmental accounting information disclosure. Also, the

4.1 Discussion of findings

This study investigated environmental accounting information disclosure from the perspective of firm specific characteristics of listed health care firms in Nigeria. From the logit regression, return on asset was found to having a positive effect on environmental accounting information disclosure which the coefficient value of 7.1407, although the effect is insignificant with the prob. value of 0.1791. This finding is supported by several empirical works (Egbunike&Tarilaye, 2017; Khaireddine et al. 2020;Onyali& Okafor, 2018) and the implication is that as profitability increases by 1 unit, environmental accounting information will increase by 7.1407 units. Also, 0.8186 coefficient value of leverage means that it has positive effect on environmental accounting information disclosure, with an insignificant effect evidenced by the prob. value of 0.1327. It means that more leverage with result to an increase in environmental accounting information disclosure by 0.8186 times. This finding is in support of several previous works (Chowdhury et al. 2020; Fahad &Nidheesh, 2020; Akbas&Canikli, 2018). Firm size was found to having a positive effect on environmental accounting information disclosure which the coefficient value of 1.6852, although the effect is insignificant with the prob. value of 0.0617. This finding is supported by several empirical works (Agyemang et al. 2021; Nguyen 2020; Angela &Handoyo, 2021) and the implication is that as the size of the firm increases by 1 unit, environmental accounting information will increase by 1.6852units. The 0.0393 coefficient value of firm age means that it has positive effect on environmental accounting information disclosure, with an insignificant effect evidenced by the prob. value of 0.0646. It means that as firms age by one year, the resultant effect will be an increase in environmental accounting information disclosure by 0.0393 times. This finding is in support of several previous works (Shuaibu, 2020; Chijioko-Mgbame&Mgbame, 2018; Pareek et al. 2019)

The reported R-square value of 0.207426 is an indication that 21 percent of environmental accounting information disclosure practices of health care sector in Nigeria is influenced by the firm characteristics variables factored in this research, whereas the remaining 79 percent is influenced by factors not considered in this study.

The probability value of 0.0116(without interaction) implies that firm characteristics joint have a significant effect on environmental accounting information disclosure of health care firms in Nigeria. Also probability value of 0.1344 (with interaction) which implies a different effect from the situation without interaction is an indication that agency cost do moderate the relationship between firm characteristics and environmental accounting information disclosure.

5.0 Conclusion & Recommendation

This study sought to investigate environmental accounting and its determining factor from firm specific characteristics point of view. Quantitative research was employed and data was obtained from the financial statement and annual report of listed health care firms in Nigeria. Using logit regression for the estimation, the study evidenced profitability having an insignificant positive effect, leverage having an insignificant positive effect, firm size having an insignificant positive effect, and also firm age having an insignificant positive effect on environmental accounting information disclosure of health care firms listed in the Nigeria stock exchange. Also, these firm specific characteristics depicted a joint significant effect on environmental accounting information disclosure and the study concludes accordingly. Agency cost moderates the relationship between firm size, firm age, firm characteristics and environmental accounting information disclosure.For recommendation, the researcher calls on management of the health care firms to improve upon these specific attributes of their firms (profitability, leverage, firms size, firm age) in order to enhance its environmental accounting information disclosure. Also, for the government to enact laws that will improve upon environmental accounting practices of health care firms in Nigeria and done by some other developed countries.

References:

1. Abubakar, A. A. (2017). Influence of firms attributes on environmental disclosure in listed brewery companies in Nigeria. *Research Journal of Finance and Accounting*, 8 (21),31- 35. (www.iiste.org)
2. Acar, M. &Temiz, H. (2020). Empirical analysis on corporate environmental performance and environmental disclosure in emerging market context: socio-political theories versus economics disclosure theories. *International Journal of emerging markets*, 15(6), 1061-1082. (www.emerald.com)
3. Agyemang, Yusheng, K., Twum, A. K., Ayamba, E. C., Kongkuah, M &Musah, M. et al (2021). Trend and relationship between environmental accounting disclosure and environmental performance for mining companies listed in China. *Environment, Development and Sustainability*, 23(8),12192–12216. (www.springer.com)
4. Angela, P. &Handoyo, S. (2021). The determinants of environmental disclosure quality: empirical evidence from Indonesia. *Journal of Accounting Auditing and Business*,4(1),1-13. (www.jurnal.unpad.ac.id)
5. Akbas, H. E., &Canikli, S. (2019). Determinants of voluntary greenhouse gas emission disclosure: An empirical investigation on Turkish firms. *Sustainability*, 11(107), 1–24. (www.mdpi.com)
6. Ayunitha, A. (2020). Does the good corporate governance approach affect agency cost? *Solid State Technology*, 63(4), 3760-3770. (www.solidstatetechnology.us)
7. Baalouch, F., Ayadi, S. D &Hussainey, K. (2019). A study of the determinants of environmental disclosure quality: evidence from French listed companies. *Journal of Management and Governance*, 23(4), 939–971. (www.springer.com)
8. Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychology research: conception, strategic, and statistical consideration. *Journal of personality and social psychology*,51(6), 1173-1182. (www.apa.org/pubs/journals/psp)
9. Carandang, J. & Ferrer, R. (2020), Effect of environmental accounting on financial performance and firm value of listed mining and oil companies in the Philippines. *Asia-Pacific Social Science Review*, 20(1), 117-134. (www.animorepository.dlsu.edu.ph)
10. Chijioke-Mgbame, A. M.&Mgbame, C. O. (2018). Discretionary environmental disclosures of corporations in Nigeria. *International Journal of Disclosure and Governance*. 15, 252-261(www.springer.com)
11. Chowdhury, M.A., Dey, M., Abedin, M.T. (2020), Firms' attributes and environmental disclosure: evidence from listed firms in Bangladesh. *Asian Journal of Accounting Perspectives*, 13(2), 57-77. (www.ajap.um.edu.my)
12. Deswanto, R. B. & Sylvia Veronica Siregar, S. V. (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, 14(1),180-193. (www.emerald.com)
13. Drisya, k. &Mythili, (2022). A study on the importance of environmental accounting in the context of sustainable development. *Baltic Journal Of Law & Politics*, 15(4), 1116-1134. (www.sciendo.com)
14. Egbunike, P. A.&Tarilaye, N. (2017). Firm's specific attributes and voluntary environmental disclosure in Nigeria: evidence from listed manufacturing companies. *Academy of Accounting and Financial Studies Journal* 21(3), 1-9. (www.abacademies.org)
15. Fahad, P., &Nidheesh, K. B. (2020). Determinants of csr disclosure: an evidence from India. *Journal of Indian Business Research*, 13(10), 110-133. (www.emerald.com)
16. Ganda, F., &Milondzo, K. S. (2018). The impact of carbon emissions on corporate financial performance: Evidence from the South African firms. *Sustainability*, 10(7), 1–22. (www.mdpi.com)
17. Haleem, A., Nazar, M. C. &Hilal, M. I. (2021). A systematic review on environmental accounting. *Academy of Entrepreneurship Journal*, 27(4), 1-13. (www.abacademies.org)

18. Halimah, N., &Yanto, H. (2018). *Determinant of carbon emission disclosure at mining companies listed in Indonesia stock exchange. KnE Social Sciences/International conference on economics, business and economic education 2018 (ICE)* (pp. 127–141). (www.knepublishing.com)
19. Ja'afar, Y., Bala, H., MuhammedLawal, A. (2021). *Determinants of corporate environmental accounting disclosure of oil and gas firms in Nigeria. Global Business Management Review, 13(1), 16-36.*(www.e-journal.uum.edu.my)
20. Kalola, R. (2021), *An analysis of environmental accounting and firm profitability of reliance industry limited. Research Guru, 14(4), 1-8.* (www.researchguru.net)
21. Khaireddine, H., Salhi, B., Aljabr, J., &Jarboui, A. (2020). *Impact of board characteristics on governance, environmental and ethical disclosure. Society and Business Review, 15(3), 273-295.* (www.emerald.com)
22. Kipngetch, T., J. (2020). *Effect of firm-specific attributes on environmental accounting disclosure. Evidence from firms listed in the nairobi securities exchange, kenya. African Journal of Education, Science and Technology, 5(4), 1-15.* (www.ajest.info)
23. Kipngetic, T. J., Tenai, J &Bonuke, R. (2019). *Determinant of environmental disclosure. Does leverage matter? Reflection from firms listed in the Nairobi security exchange. Journal of Accounting, Business and Finance Research, 7(2), 107-114.* (www.scipg.org)
24. Lam, T. T. L. (2019). *Factors affecting Disclosure of environmental accounting information in Vietnamese aquaculture enterprises (Doctoral dissertation). Ho Chi Minh City University of Economics, Ho Chi Minh, Vietnam.*
25. Lu, J., & Li, H. (2020). *The impact of government environmental information disclosure on enterprise location choices: heterogeneity and threshold effect test. Journal of cleaner production, 277, 1-13*(www.sciencedirect.com)
26. Mata, C., Fialho, A. & Eugenio, T. (2018). *A decade of environmental accounting reporting: what we know? Journal of Cleaner Production, 198, 1198-1209.*(www.sciencedirect.com)
27. Marrone, M., Linnenluecke, M. K., Richardson, G.& Smith, T. (2020). *Trends in environmental accounting research within and outside of the accounting discipline. Accounting, Auditing & Accountability Journal, 33(8), 2167-2193.* (www.emerald.com)
28. Nguyen, T. D. (2020). *Factors influencing environmental accounting information disclosure of listed enterprises on vietnamese stock markets. Journal of Asian Finance, Economics and Business, 7(11), 877–883.* (www.jafeb.org)
29. Nguyen, T. K. T. (2020). *Studying factors affecting environmental accounting implementation in mining enterprises in Vietnam. Journal of Asian Finance, Economics and Business, 7,(5), 131 – 144.* (www.jafeb.org)
30. Nguyen, L. S., Tran, M. D & Nguyen, T. X. H. & Le, Q. H. (2017). *Factors affecting disclosure levels of environmental accountingInformation: the case of Vietnam. Accounting and Finance Research, 6(4), 255-264.* (www.afr.sciencedupress.com)
31. Nguyen, T. L. H., Nguyen, T. T. H., Nguyen, T. T. H., Le, T. H. A., & Nguyen, V. C. (2020). *The determinants of environmental information disclosure in Vietnam listed companies. Journal of Asian Finance, Economics and Business, 7(2), 21-31.* (www.jafeb.org)
32. Nguyen, H. A., Nguyen, L. S. & Ha, H. H. (2020). *Environmental accounting practices and cost of capital of enterprises in Vietnam.Cogent Economics & Finance, 8(1), 1-17.* (www.tandfonline.com)
33. Odoemelam, N., & Okafor, R. G. (2018). *The influence of corporate governance on environmental disclosure of listed non-financial firms in Nigeria. IndonesianJournal of Sustainability Accounting and Management, 2(1), 25–49.* (www.unpas.id)
34. Ofoegbu, G. N. &Megbuluba, A. (2016). *Corporate environmental accounting information disclosure in the nigeria manufacturing firms. International Journal of Management Sciences and Business Research, 5(12), 1-13.*(www.ijmsbr.com)

35. Okeke, O. C., Okere, W., Dafyak, C. F. & Abiahu, M-F. C. (2022). Inventory management and financial sustainability: insight from quoted manufacturing firms in Nigeria. *International Journal Managerial and Financial Accounting*, 14,(1), 84-97. (www.inderscienceonline.com)
36. Okere, W., Rufai, O., Okeke, O. C. & Oyinloye, J. B. (2021). Board characteristics and environmental information disclosure of listed manufacturing firms in Nigeria. *Journal of Business and Entrepreneurship*, 9(2), 1-12. (www.ojs.sampoernauniversity.ac.id)
37. Onyali, I. C. & Okafor, G. T. (2018). Firm attributes and corporate environmental performance: evidence from quoted industrial firms on Nigerian stock exchange. *Scholars Journal of Economics, Business and Management*, 2(5), 854-863. (www.saspjournals.com)
38. Pareek, R., Pandey, K.D., Sahu, T.N. (2019). Corporate governance, firms' characteristics and environmental performance disclosure practices of Indian companies. *Indian Journal of Corporate Governance*, 12(2), 142-155. (www.journals.sagepub.com)
39. Pien, C.-P. (2020). Local environmental information disclosure and environmental nongovernmental organizations in Chinese prefecture-level cities. *Journal of Environmental Management*, 275, 1-11. (www.sciencedirect.com)
40. Saha, A. K., Al-shaer, H. & Demirag, I. (2020). Determinants of carbon emission disclosures and UN sustainable development goals: the case of uk higher Education institutions. *Australian Accounting Review*, 0(0), 1-29. (www.onlinelibrary.wiley.com)
41. Scarpellini, S., Marín-Vinuesa, L.M., Aranda-Usón, A.Y., & Portillo-Tarragona, P. (2020). Dynamic capabilities and EA for the circular economy in businesses, *Sustainability Accounting, Management and Policy Journal*, 11(7), 1129-1158. (www.emerald.com)
42. Senn, J., & Giordano-Spring, S. (2020). The limits of Environmental Accounting disclosure: enforcement of regulations, standards and interpretative strategies. *Accounting, Auditing & Accountability Journal*, 33(6), 1367-1393. (www.emerald.com)
43. Shoeb, M., Aslam, A. & Aslam, A. (2022). Environmental accounting disclosure practices: a bibliometric and systematic review. *International Journal of Energy Economics and Policy*, 12(4), 226 - 239. (www.econjournals.com)
44. Shuaibu, K. (2020). Firm characteristics and environmental disclosure quality of listed Cement companies in Nigeria. *African Scholar Journal of Mgt. Science and Entrepreneurship*, 18(7), 105-118. (www.africanscholarpublications.com)
45. Tooranloo, H.S., & Shahamabad, M.A. (2020). Designing the model of factors affecting in the Implementation of social and environmental accounting with the ism approach, *International Journal of Ethics and Systems*, 36(3), 387-410. (www.emerald.com)
46. Tzouvanas, P., Kizys, R., Chatziantoniou, I., & Sagitova, R. (2020). Environmental disclosure and idiosyncratic risk in the European manufacturing sector. *Energy Economics*, 87, 1-13. (www.sciencedirect.com)
47. Wang, C., Weng, Y., & Wang, L. (2021). Effect of air quality on corporate environmental disclosure: The moderating role of institutional investors. *Borsa Istanbul Review*, 21(1), 1-12. (www.sciencedirect.com)
48. Yang, H., Le Luo, L., Bhattacharyya, A. (2021). Mandatory environmental reporting in Australia: An in-depth analysis of quantity and quality. *Abacus*, 57(4), 737-779. (www.onlinelibrary.wiley.com)