



## Capital Intensity and Environmental Accounting Information Disclosure in Nigeria

**Ime Isaiah Udoh**

Department of Accountancy, Faculty of Management Science, Ignatius Ajuru University of Education, Port Harcourt | E-mail: [ime\\_success@yahoo.com](mailto:ime_success@yahoo.com)

**Peter Chukwutem Chegwe**

Department of Accountancy, Faculty of Management Science | Ignatius Ajuru, University of Education | E-mail: [peterchegwe@gmail.com](mailto:peterchegwe@gmail.com)

**Chinda Godstime Nyema**

Department of Accountancy, Faculty of Management Sciences, Rivers State University | Email: [godstime.chinda@ust.edu.ng](mailto:godstime.chinda@ust.edu.ng)

**Orlu Gift Ndaburoma**

Department of Accountancy, Faculty of Management Sciences, Rivers State University  
E-mail- [gift.orlu@ust.edu.ng](mailto:gift.orlu@ust.edu.ng)

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**Abstract:** Firm's specific characteristics have been contended in the literatures as determining environmental information disclosure, but only very few evidences were reported from Nigeria. This concern therefore, gives rise to this study which explores capital intensity (one of the firm specific characteristics) and environmental information disclosure in Nigeria from prior extant studies. The study made use of survey research design, which involves getting evidences from texts, books or scholars who explored the topic and the related works in the recent past. Thus, the study revealed that capital intensity has a positive relationship with environmental information disclosures. It was also disclosed that, profitability has a positive influence on environmental information disclosure. The following recommendations are made from the findings presented above. The study recommended that entities should disclose more environmental information as it leads to increase in profit; Management should ensure compliance with the environmental laws of the nation to promote sustainability.

**Keywords:** Capital intensity, Environmental accounting disclosure, Qualitative characteristics

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### INTRODUCTION

Environmental Accounting could be said to be the identification, measurement, allocation and the integration of environmental costs into business as well as communicating such information to the companies' stakeholders. This goes a long way to engender good corporate governance that stimulates entities' openness and transparency in its societal activities. Economic entities are increasingly engaged in environmental management as part of their overall management efforts to identify measures for dealing with environmental issues and to internally carry out environmental conservation activities. Environmental accounting therefore, is a tool to

enhancing environmental management. Environmental accounting information is meant for both internal and external users in the corporate environment which is made public through disclosures in environmental and sustainable reports. Environmental accounting information disclosures is said to reflect the growing public emphasis on social and environmental accountability as a result of the operational impacts (externalities) of the entities to the operational environment. Examples of these negative externalities are the problem of waste mismanagement, ineffective restoration (decommissioning) of the environment, climate change and industrial pollution among other environmental issues, which are now matters of strategic concern for many businesses (Elshabasy *et al.*, 2021).

Environmental information disclosure has been confirmed to be an important determinant of qualitative accounting information reporting. This information enables the users to have in-depth understanding of the company's commitments to environmental conservation activities and how it specifically deals with environmental issues. Financial commentators have argued that firm specific characteristics can significantly influence environmental accounting disclosures - one of which characteristics as cited, was capital intensity. Capital intensity has been said to mean how much money (real assets) or fixed assets that are invested to produce a Naira/dollar unit of sales revenue in an entity. Capital intensity is confirmed to be a very important firm specific characteristic which is sometimes connected with many other firm characteristics such as firm leverage, age, firm size, tangibility and profitability. Capital-intensive companies are those companies which require more funds for physical structure (fixed assets) as compared to other companies for producing goods or services and are regarded as a representative of a firm's operating leverage or the operating costs of a company's leverage. Capital-intensive industries instead of making an investment on labour they invest more on most expensive machines. This term was said to have firstly introduced in the mid-to-late-19th century, when business of steel or iron gained importance in the newly manufacturing world (Abubakar, 2020).

At that time the financial hazards were high due to extra cost of the machines and instead of increasing the efficiency and productivity these companies could only get a small share of the market. Companies which are considered as capital intensive includes those in train transportation, airlines, petroleum production and refining, telecommunications, mining, chemical plants, power plants, etc. The 21st century business environment is witnessing stiff competition which requires firms to make structural transformation from labour-intensive to capital-intensive firms. High level of capital intensity through the use of machinery is contended to be helpful in making the workforce more efficient and thus increases the production of the firms and hence their disclosures.

Scholars are still contending whether or not Capital intensity (a firm specific characteristic) can stimulate information disclosures and which a consensus has not been reached - this creates a gap in the literature. Therefore, this paper attempts to fill this gap by investigating the impact of capital intensity on environmental accounting disclosures using evidences from extant literatures.

## **REVIEW OF RELATED LITERATURE**

This section presents the literature reports of the previous works done on capital intensity and environmental accounting disclosures in Nigeria and the related topics. This was required to guide the present investigation and as well help the investigator's better understanding of the topic. This section is sub-divided into conceptual, empirical and theoretical reviews.

### **Conceptual Review**

This sub-section outlined some specific concepts and definitions of terms underpinning environmental accounting information disclosures in Nigeria.

### **Capital Intensity**

Capital intensity has been said to mean how much money (real assets) or fixed assets that are invested to produce a Naira unit of sales revenue in an entity. Capital intensity is confirmed to be a very important firm specific characteristic which is sometimes connected with many other firm characteristics such as firm leverage, age, firm size, tangibility and profitability. Capital-intensive companies are those companies which require more funds for physical structure (fixed assets) as compared to other companies for producing goods or services and are regarded as a representative of a firm's operating leverage or the operating costs of a company's leverage.

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Capital intensity is the amount of money invested in order to get one Naira/dollar worth of output. In essence, the more capital applied to produce that same unit the more capital intense the firm is said to be. There are some industries that are considered to be more capital intensive than others, and in those industries increasing the capital intensity results in improved quality and timely production. At present, for the purpose of increasing the capital intensity of a firm, the managers should have to consider for the right financing alternative, to increase their market share and at the same time the market value. Firms are preferred to increase their capital intensity and improve quality as a result, but getting optimal financing for this purpose becomes

significant, because if the right mix is not selected it might prove counter productivity and might adversely affect the standings of the firm (Elshabasy *et al.*, 2021).

Capital intensity or capital intensity describes how much the company's wealth is invested in the form of fixed assets. Capital intensity ratio is also called the total asset turnover ratio or the capital turnover ratio. The capital intensity ratio indicates the level of efficiency of the entire assets of the company in generating a certain sales volume. The higher the capital intensity ratio, the more efficient the use of overall assets in generating sales. The amount of the same asset can increase the sales volume if the capital intensity ratio is increased or magnified. This capital intensity ratio is essential for creditors and owners of the company, but it will be more important to the management of the company as it indicates whether the usage of the entire assets of the company is efficient.

Capital intensity in economic field is said to mean how much capital is used for production in comparison with two other factors, especially labour. Capital stock refers to the sum of capital goods in an economy that is measured by the same unit. Since capital intensity is measured as capital – labour ratio, it was confirmed to be useful in expressing the amount of capital needed for creating new jobs in the industry, so it can show the capital intensive or labour-intensive state of technology.

### **Measurement of Capital Intensity**

**Formula** = Capital intensity ratio equals total assets divided by sales: **Total Assets /Sales**. Capital intensity ratio is the reciprocal of the total assets' turnover ratio: that is Capital Intensity Ratio =  $1/\text{Total Assets Turnover Ratio}$ .

Capital intensity refers to the weight of a firm's assets - including plants, property, and equipment in relation to other factors of production. This is the inverse of the asset turnover ratio, an indicator of the efficiency with which a company is deploying its assets to generate revenue.

**The Impact of Capital Intensity on Earnings:** Capital-intensive firms generally use a lot of financial leverage in their financial structure, as they can use plant and equipment as collateral. However, having both high operating leverage and financial leverage is very risky should sales fall unexpectedly.

Since capital-intensive industries have high depreciation costs, analysts that cover capital-intensive industries often add depreciation back to net income using a metric called earnings before interest, taxes, depreciation and amortization (EBITDA). By using EBITDA, rather than net income, it is easier to compare the performance of companies in the same industry.

### **Capital Intensity and Environmental Accounting Disclosure**

Capital intensive industry refers to an industry that requires substantial amount of capital for the production of good assets. Capital intensive industry requires huge investments in capital assets due to the specific industrial structure and type. Companies with greater capital costs invest in

new machinery. These upgrades and investments should improve environmental efficiency, stimulate increased voluntary disclosures. Evidences in the literature show that marketization and capital intensity had significant effects on environmental accounting disclosure. In a scenario where capital intensity is high, corporations are motivated to disclose more information because the entry barrier is high. However, when the capital intensity of companies is low, the proprietary costs for the reporting are high as the resources to prevent competitors from implementing similar activities decreases. Therefore, companies with low capital intensity are less motivated to report social and environmental accounting- the level of capital investment influences firms to disclose social and environmental issues. Thirty-seven sample firms from different industries were identified based on their environmental sensitivity. Evidences also found that firms that are large or had high tax rates, high market shares, or high rates of return, were more likely to provide environmental disclosures (Abubakar 2020).

### **Environmental Accounting**

Environmental accounting, as defined in these guidelines, aims at achieving sustainable development, maintaining a favourable relationship with the community, and pursuing effective and efficient environmental conservation activities. These accounting procedures allow a company to identify the cost of environmental conservation during the normal course of business, identify benefit gained from such activities, provides the best possible means of quantitative measurement (in monetary value or physical units) and support the communication of its results. Environmental conservation is said to be the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities. The environmental impacts are the burden on the environment from business operations or other human activities and potential obstacles which may hinder the preservation of a favourable environment.

Environmental Accounting has also been defined as a subset of accounting proper, its target being to incorporate both economic and environmental information. It can be conducted at the corporate level or at the level of a national economy through the system of integrated Environmental and Economic Accounting, a satellite system to the National Accounts of Countries (among other things, the National Accounts produce the estimates of Gross Domestic Product otherwise known as GDP (Kuti 2021)

Environmental accounting is described as a field that identifies resource use, measures and communicates costs of a company's or national economic impact on the environment. Costs include; costs to clean up or remediate contaminated sites, environmental fines, penalties and taxes, purchase of pollution prevention technologies and waste management costs.

An environmental accounting system consists of environmentally differentiated conventional accounting and ecological accounting. Environmentally differentiated accounting measures effects of the natural environment on a company in monetary terms. Ecological accounting measures the influence a company has on the environment, but in physical measurements.

Realisation of environmental degradation by companies has over the years mounted pressure on the need for Nigerian firms to be environmentally friendly and accountable. These pressures require corporations to react to public issues such as the need for effective waste management, effective restoration/decommissioning, the need to avoid earth, water and air pollution and the general need for a safe and clean environment.

Cost investments and expenses related to the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in monetary value. Investment amounts are expenditures allocated during a target period for the purpose of environmental conservation. The benefits from these investments are seen over several periods and are recorded as expense during the depreciation period (the amount of depreciable assets recorded during the period under financial accounting standards). Expense amounts refer to the expense or losses recorded under financial accounting standards resulting from the consumption of goods or services for the purpose of environmental conservation.

Benefits obtained from the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in physical units. Profit resulting from environmental conservation activities are measured in monetary value. The environmental costs outlined within these guidelines do not represent **social costs**. Social costs differ from a company's usual cost burden and are those costs resulting from a business' impact on society. This arises as the company's environmental conservation activities do not reduce all the impacts its business operations may cause, which places an impact on the environment. Because of this, third parties which may have no direct ties can be subjected to adverse impacts, such as harm; to health, output of agricultural products and the fishing industry outputs – this may attract incurrence of social cost.

### **Functions and Roles of Environmental Accounting**

The functions of environmental accounting are divided into internal and external functions.

**Internal Functions:** As one step of a company's environmental information system, internal function makes it possible to manage environmental conservation cost and analyse the cost of environmental conservation activities against the benefit obtained, and promotes effective and efficient environmental conservation activities through suitable decision-making. Internal functions are carried out within a company and help in gaining an understanding of what impacts such activities might have on business operations.

**External Functions:** By disclosing the quantitatively measuring results of its environmental conservation activities, external functions allow a company to influence the decision-making of stakeholders, such as consumers, investors, and local residents;

External functions are effective in conveying information about a company's environmental activities to stakeholders. Environmental accounting data is made public through environmental reports, and is said to cover a company's stance on environmental conservation activities and

concrete measures being taken by the company. By disclosing such information, society's trust and confidence in the company improves and aids in achieving a better public assessment that give rise to competitive advantage;

By using environmental accounting as an environmental information system, it plays the role of a tool to be employed by management and related business segments;

Therefore, environmental accounting not only fulfils a company's accountability to people outside the company, such as consumers, investors and local residents, but also facilitates attaining a fairer corporate assessment, not just from the standpoint of environmental conservation.

### **Subfields of Environmental Accounting**

Environmental accounting is organized in three sub-disciplines: global, national, and corporate environmental accounting, respectively. Corporate environmental accounting can be further subdivided into environmental management accounting and environmental financial accounting.

**(a) Global environmental accounting** is an accounting methodology that deals in areas including energetics, ecology and economics at a worldwide level. Internationally, environmental accounting has been formalised into the System of Integrated Environmental and Economic Accounting, known as SEEA. SEEA grows out of the System of National Accounts. The SEEA records the flows of raw materials (water, energy, minerals, wood, etc.) from the environment to the economy, the exchanges of these materials within the economy and the returns of wastes and pollutants to the environment. Also recorded are the prices or shadow prices for these materials as are environment protection expenditures. SEEA is used by 49 countries around the world.

**(b) National environmental Accounting** is an accounting approach that deals with economics on a country's level.

**(c) Corporate environmental accounting** focuses on the cost structure and environmental performance of a company.

**(i) Environmental management accounting** focuses on making internal business strategic decisions. It can be defined as the identification, collection, analysis, and use of two types of information for internal decision making: Physical information on the use, flows and fates of energy, water and materials (including wastes) and monetary information on environmentally related costs, earnings and savings.

**(ii) Environmental financial accounting** focuses on making external business strategic decisions.



### **Basic Environmental Accounting Elements**

**Major environmental accounting Policies:** The principle underpinning environmental accounting is that the goals of such environmental accounting activities should be made clear and conform with the overall company's managerial policies and targets as related to environmental conservation. Some of these policies include;

**Target period:** Essentially, information pertaining to the company's financial accounting, environmental activities and environmental accounting should all be coordinated to match the said company's business financial year.

**Aggregation scope:** Basically, scope should be companywide, however scope can be adjusted as deemed necessary to collect data for a corporate group or individual business site. It is best to extend the scope of accounting successively to conform to a company's actual business conditions.

**Company-wide:** In principle, information pertaining to financial accounting, environmental conservation activities, and environmental accounting should be coordinated to use identical reporting units for the entire company.

**Corporate Group:** Business activities do not only take place at the parent but also involve subsidiaries, such as when the parent transfers production to a subsidiary therefore, it is necessary to employ environmental accounting to the entire group, so to understand the scope of the environmental impacts of the corporate group in the fiscal year. The scope of the corporate group should be in accordance with the scope of the company's consolidated financial statements. This will make it easier to understand the correlation between the corporate group's economic activities and the environmental accounting data. Moreover, another method to determine the importance of environmental conservation activities is to look at the amount of environmental impact caused by the corporate group and its ratio of environmental conservation costs.

**Business Site (An individual business site):** This is where the scope of environmental accounting may be directed at just one business site from which the company can obtain information that can facilitate effective environmental conservation activities aimed at resolving the local community's environmental issues. In addition, the disclosure of results can aid in promoting communications between the company and the local community, which is the major stakeholder (Abubakar 2020).

### **Basic Measurements of Environmental Accounting Disclosure**

**Relevance:** This measurement characteristics is said to portray the fact that environmental accounting should provide valid information related to a company's environmental conservation costs and benefits from associated activities which contributes to the decision making of stakeholders – that, environmental information should be relevant to the goal; the goal is to provide information beneficial to stakeholders in their decision making. Relevant information



must have **predictive and confirmatory value** Consideration should also be given to the materiality and significance of information.

**Materiality:** In environmental accounting, materiality is placed on the aspects of quantity and **significance** is placed on the aspects of quality. From the standpoint of the materiality, consideration is given to the quantitative impact of environmental accounting data that is expressed in monetary value or physical units. The significance on the other hand, focuses on the quality of information from the standpoint of environmental conservation or the future impact that it carries.

**Prudence:** In order to achieve the quality of relevance, vague or unclear information should be handled carefully, furthermore; the nature, scope and grounds on which such information is based should be clarified. In the aspect of **Careful Handling** - Careful selection is necessary in regard to projected results and predicted comprehensive impact. If these results or impacts are disclosed then the premises and reasoning behind this information should be clearly stated to prevent any misunderstandings by stakeholders.

**Faithful Representation (Reliability):** Environmental accounting should eradicate completely inaccurate or biased data and aid in building the trust and reliability of stakeholders. Faithful Representation, as one of the fundamental qualitative characteristics of useful information advocates, that when disclosing environmental accounting data, it should be accurately and faithfully represented. In addition to the fact that the information must be accurate and without error, it must represent the costs and benefits that could be reasonably expected from the entity's operation as well as its impact in the environment without deception. This characteristic of information disclosure reflects the following;

**Substance over Form:** This advocates that information disclosure should not just be a mere formality of following steps laid out within these guidelines. When necessary, the company should determine an appropriate method of disclosure which conforms to and accurately describes the actual environmental activities being conducted. Substantiality should be prioritised –that is, in the event that the substantiality of the information is not fully communicated when following the format set out by the principles/guidelines, necessary supplementary information should be provided to better explain reality.

**Neutrality:** Information that is disclosed should take a fair and impartial stance - a fair and impartial stance is when the company avoids the arbitrary/subjective selection of information or intentionally direct readers toward a given conclusion.

**Completeness:** The scope of environmental accounting should extend to all material and significant information for all environmental conservation activities.

**Understandability:** Enhancement of understandability of disclosed environmental accounting data demands that environmental accounting should eliminate any possible mistaken judgment about the company's environmental conservation activities. To ensure that the disclosed

information is easy to understand for stakeholders, wordings should be made as simple as possible. No matter how complex the content might be, it is necessary to disclose all essential information.

**Comparability:** Environmental accounting makes it possible for a company to make periodic comparisons. Information provided should be comparable with different companies in the same sector. When disclosing environmental accounting data, it is important to assure that comparability to avoid misconceptions by stakeholders. Methods of comparison is said to include comparisons of results between different fiscal years for the same company or comparisons for the same fiscal year with a company in same industry. Currently, in certain cases comparisons may be difficult even if all companies follow same guidelines, as methods have yet to be established for certain areas. In the case where there are several methods to choose from, we are careful to clarify the approach taken.

**Verifiability:** Environmental accounting data should be verifiable from an objective standpoint. Verifiable information is said to be data for which the same results can be obtained when using evidences, standards, and methods identical to those used by the party which created the data.

### **Basic Environmental Accounting Elements**

**Significant Environmental Accounting Policies:** The principle underpinning environmental accounting is that the goals of such environmental accounting activities should be made clear and conforms with the company's managerial policies and targets as related to environmental conservation. Some of these policies include;

**Target period:** Essentially, information pertaining to the company's financial accounting, environmental activities and environmental accounting should all be coordinated to match the said company's business financial year.

**Aggregation scope:** Basically, scope should be companywide, however scope can be adjusted as deemed necessary to collect data for a corporate group or individual business site. It is best to extend the scope of accounting successively to conform to a company's actual business conditions.

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### **Measuring Costs and Benefits**

**Environmental Conservation Cost:** Environmental conservation cost is said to be the investment and costs, measured in monetary term incurred in the prevention, reduction, and/or avoidance of environmental impact as well as concerned the removal and restoration of such impact, following the occurrence of a disaster, and other activities. This is classified into two namely; investment amounts and Cost amounts:

Investment here means expenditures on depreciable assets for the purpose of environmental conservation. This information is related to capital injected into environmental conservation activities where environmental conservation activities generate long-term benefits. Expense amounts are the proportion of the company's overall expenses used for the purpose of environmental conservation other than investment in assets. Tracking expense aids in obtaining information related to cost accrued to the current period to achieve benefit from environmental conservation activities. Whether or not a specific cost is classified as an environmental conservation cost depends on the objective standards where objective standards are those criteria for extracting cost that has been spent for the purpose of environmental conservation.

**Environmental Conservation Cost Categories:** Based on the relationship between business activities and environmental impact, information is categorised based on key business operations, administrative, R&D, social and other activities. Key business operations are the series of activities covering the purchase of materials and services, manufacturing and distribution, sales and supply, but exclude administrative, R&D and social activities.

**Business Area Cost:** This cost is for activities to reduce environmental impact which occurs within the business area due to key business operations. The business area is the region where the company can directly manage environmental impacts. Business area cost associated with environmental conservation is divided into three categories, pollution prevention cost, global environmental conservation cost and resource recycling cost.

**Pollution Prevention Cost:** Pollution is defined as the creation of harmful impacts by business or other activities which damage public health or degradation of the living environment. Specific

types of pollution include air, water, ground, noise, vibration, odour, and ground sinkage. Pollution prevention costs are those costs related to the reduction of a production facility's environmental impact or spending for end-of-pipe solutions, facilities or equipment attached to the end of production facilities.

These include; Cost for preventing air pollution (including acid rain); Cost for preventing water pollution; Cost for preventing ground contamination; Cost for preventing noise pollution; Cost for preventing vibration pollution; Cost for preventing odour pollution; Cost for preventing ground sinkage; Cost for preventing other types of pollution. Characteristic of Pollution prevention cost is that it does not only involve end-of-pipe solutions but also incorporate spending for clean production. Moreover, this includes compliance cost used to maintaining compliance with legal regulations.

**Global Environmental Conservation Cost:** Global environmental conservation costs are those costs associated with negative environmental impacts on the global environment or a wide portion of it, resulting from human activities. Costs are allocated for the prevention of global warming, to prevent the ozone depletion and other global environmental conservation efforts. These include;

Cost for preventing global warming and energy conservation; Cost for preventing the ozone depletion; Cost for other global environmental conservation activities and the likes. Cost connected with the prevention of global warming includes expenses for curbing the emission of greenhouse gases, and also absorbing and solidifying such gases.

**Resource recycling Cost:** Resource circulation refers to the circulating use of reusable resources, whether valuable or not. Resource circulation cost is the cost incurred for sustainable resource recycling. These include; Cost for the efficient utilization of resources; Cost for recycling industrial waste; Cost for recycling municipal waste; Cost for disposal of industrial waste; Cost for disposal of municipal waste; Cost contributing to resource circulation.

**Upstream/Downstream Cost:** Costs incurred upstream and downstream of the business area, or any related costs for the purpose of curtailing environmental impact. Upstream refers to operations prior to the provision of goods or services. Downstream entails all activities that take place once the products or services have left the business site, associated with a company's production and sales of products, and consumption and disposal of containers and packaging. These include;

The difference between the cost of conventionally purchased materials or services and the cost of those materials and services procured through green purchasing (i.e. goods and services which contribute to reducing environmental impact); Additional cost for supplying environmentally conscious products; Additional cost for reducing the environmental impact of containers and packaging; Cost for the collection, recycling, resale and proper disposal of used products; Other upstream and downstream costs.

**Administration Cost:** These costs are defined as those costs spent for administering environmental conservation activities and which indirectly contribute to curtailing environmental impacts stemming from business operations and also spending for external communications, such as disclosure of environmental information. These include; Cost for the implementation of an environmental management system; Cost for disclosing environmental information and environmental advertising; Cost for monitoring environmental impacts; Cost for training employees on environmental issues; Cost for environmental improvement activities, including nature conservation, planting of greenery, beautification, and landscape preservation, at or in the vicinity of the business site.

**R&D Cost:** The cost is spending for research and development activities allocated to environmental conservation. These include: R&D cost to develop products that contribute to environmental conservation; R&D cost to curtail environmental impact at the product manufacturing stage; Other R&D cost associated to the curtailment of environmental impact at the distribution stage or the marketing stage of products

**Social Activity Cost:** These are costs which are related to environmental conservation activities that a company may carry out as a part of its social activities but not directly related to its business activities which includes; Cost for environmental improvement activities including (nature conservation, planting of greenery, beautification and landscape preservation, with the exception of the business site or surrounding vicinity); Cost related to donation or financial support of environmental groups; Cost associated with various social activities, such as the financial support of a local community's environmental conservation activities and the disclosure of information to the local community.

**Environmental Remediation Cost:** These contingent costs are allocated for recovery of the environmental degradation due to business activities which include; Cost to restore the natural environment back to its original state; Cost to cover degradation suits connected with environmental conservation; Provisions or insurance fees to cover degradation to the environment.

Characteristic of Environmental Remediation Cost: Costs to restore the natural environment back to its original state are those expenses incurred for the removal of environmental impacts; Provisions or insurance fees are expenses evenly spread out a company's financial burden for dealing with environmental degradation after-the-fact, or as a means of hedging against such risks. These costs do not directly contribute to the mitigation of environmental impact. Costs for degradation suits represent those expenses incurred after some type of damage has occurred and do not directly contribute to the mitigation of environmental impact. It is best for the company not to incur any environmental remediation costs. They can be reduced through the proper implementation of environmental conservation activities.

**Other Cost:** These are costs that do not fall under the category of costs enumerated thus far. In the event that costs related to other environmental conservation activities are disclosed, the content, boundary and basis for cost categories must be clearly defined (Elshabasy *et al.*, 2021).

#### **Environmental Conservation Benefit**

Environmental conservation benefit is measured in physical units and is the benefit obtained from the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities. By assessing the economic value of environmental conservation benefits which are measured in physical units, results are described in monetary values by some cases. Currently, in the field of environmental economics, a number of valuation methods are being developed for the purpose of determining the environment's economic value. However, there is no established valuation method suitable for environmental accounting. It has been pointed out that there are a wide variety of potential uses for integrating various environmental impacts into a single indicator as monetary value by valuating the economic benefits of environmental conservation activities. The advances in the development of such a method are expected (Kuti, 2021).

#### **Categories of Environmental Conservation Benefit**

Categories of environmental conservation benefits should correlate with the classification of environmental conservation cost in order to identify the expense incurred to the benefit received. However, in certain cases it is difficult to ascertain which environmental cost categories apply to the environmental conservation benefits received, therefore a company may only disclose the portion for which there is a clear relation or simply apply the amount of all environmental conservation benefits related to entire costs. In addition, environmental conservation benefits are broken down into the following four categories in relation to business operations.

#### **Theoretical Review**

This work is anchored on the stakeholder's theory and Legitimacy theory as they have much bearing on the contemporary environmental accounting and information disclosure.

#### **Stakeholder's Theory**

Stakeholder theory is the work of Dr Edward Freeman (1984). It was first the theory is highly interrelated with the legitimacy theory. Whereas the legitimacy theory focuses on communication with society, the stakeholder theory focuses on the communication with different stakeholder group(which involves government bodies, public interest groups, employees, creditors, customers, customers and stock holders). According to the stakeholder theory, society consists of various stakeholder groups. Those groups have unequal power to influence the activities of an organization, but all groups are concerned with the environmental performance of the company. The going concern of an organization requires the stakeholders' support and therefore the corporate activities should be adjusted to the stakeholders' demands.

The more power stakeholders have, the more a company must adjust its activities to stakeholders' demands, because stakeholders have the ability to control resources that are critical for the activities of an organization. It was observed that disclosure is part of the dialogue between the company and its stakeholders for negotiating the social contracts.

This theory elaborates on companies' responsiveness to trust, building relationships and complex regulations, drawing of favourable attention or interest and constructive dialogue with their stakeholders in order to develop a competitive advantage or edge. Environmental disclosure relating to the firm's performance will help stakeholders to be better acquainted and reliably informed about how companies can effectively contribute to a more just and sustainable world. Stakeholder theory has contributed to considering stakeholders impacts on organization's actions and how organizations respond to these impacts. Stakeholders regularly seek to impact their organization's attitude and practice on sustainability reporting. When viewed as such, the conventional view that the success of the firm is dependent solely upon maximizing shareholders wealth is not sufficient because the society is perceived to be a nexus of explicit and implicit contracts between the firm and its various stakeholders. Literature documented that disclosure is part of the interaction between the company and its stakeholder for negotiating the social contracts. The dynamics of the contemporary business world has propelled companies to provide sufficient information relating to companies' interactions with their society in excess of the monumental traditional financial statements.

Limitations of stakeholder theory include;

Limitation in numbers – which is impossibility of the management to please or satisfy all stakeholders at the same time since stakeholders may have slightly dissimilar interests.

Limitation in power discrepancy – this the inability of the stakeholders to always influence management decisions. Some group of stakeholders has very little control over management decisions owing to differences in power levels or sphere of influence within an organization. Even though a stakeholder may have the ability to secure good interactions with organization(Kipngetich 2020).

### **Legitimacy Theory**

Legitimacy theory was originated by Max Weber (1947) but was further developed by Lindblom (1994) and Suchman Mark in (1995). Legitimacy theory explains and considers the relationship between organization and society - that legitimacy as a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within the same socially constructed system of norms, values, beliefs and definitions. Legitimacy theory in the research can be divided into strategic and institutional. Strategic legitimacy consists of resources and control which an organization uses to achieve social support over managerial performance. Strategic legitimacy explains organizations' desire and motivation for Environmental Accounting and Reporting (EAR) and Sustainability issues. From the legitimacy perspective EAR reporting is



an influential utensil of a company to communicate with society. Legitimacy is important for every organization to manage its strong and reputed position and status in the society and to know the reactions of respondents from the society. For the legitimacy concern companies are interested in disclosing positive information rather than negative information. Organizations in both developed and developing countries use publications and reports to mitigate pressure on controversial environmental decisions by which legitimacy is threatened. Nowadays, organizations are very concerned about public perception of their prevailing environmental activities for that they consider EAR reporting is an emerging tool to gain societal support and reputation. Therefore, legitimacy comprises social systems, norms, rules and meaning that can ensure companies responsibility and accountability on EAR. Moreover, legitimacy can create opportunities and attraction of economic resources to ensure the social and political support. Prior research on legitimacy has documented the use of social disclosures in annual reports as tools to legitimize organizations. Many studies have found that EAR disclosures are commonly positive and self-praising, with a little bad and neutral news disclosed. It is another well received theory that describes firms' social reporting practices.

### **Voluntary Disclosure Theory**

The legitimacy theory and stakeholder theory might be useful in explaining 'what' an organization disclosed, but it might not be useful in explaining 'how much' is disclosed. Therefore, a supplementary theory is needed to explain the level of disclosure practices. Voluntary disclosure theory is based on the agency theory perspective. According to Voluntary disclosures are attempts to remove informational asymmetries between the firm and external agents, primarily agents in the investment community. The voluntary disclosure theory predicts that organizations, which have a good environmental performance do not hide the environmental impact of their operations and are willingly informing stakeholders about their environmental activities. Voluntary disclosure predicts that the information risk for current and potential investors will be lowered. First, voluntary disclosure can lead to a competitive advantage because it highlights the environmental programs and the impact of activities on the natural environment. Second, stakeholders receive bad news from the company along with good news. Investments in environmental management or programs are costly and, for the short term, they will not result in higher returns. If disclosure is absent or low, stakeholders will assume that the current environmental strategy adopted by the firm is inferior. Superior environmental performers truly disclose issues regarding environmental affairs, the quality of their disclosures is superior to the quality of the weak environmental performers. The superior firms believe that their strengths will outweigh the weaknesses and do not fear the reaction of any stakeholder.

### **Empirical Review**

This section reviews the literature of various related works done on this topic by different scholars in the past with their results and recommendations, which included but not limited to:

Magara *et al*, (2022) reported evidences on effect of environmental accounting on company financial performance in Kisii County. The purpose was to investigate the impact of environmental accounting on financial performance of corporate organisations in Kisii County. The study used descriptive research design. Findings revealed that the perceived financial performance of the corporate organization in general was in good status as perceived by the employees. Analysis of individual perceived financial performance parameters shows that revenue generation Constructs of EA application (environmental information, environmental evaluation, compliance of environmental laws and tracking of environmental cost savings) are significantly positively related to perceived financial performance of the corporate organizations. has been improving, cash flows are seen to be in a good state and profitability has been on the increase.

Shojaie *et al*, (2022) investigated New Empirical Evidence on the Determinants of Capital Intensity: An Adaptive Comparison of Iran and China. The purpose empirically compares the effective factors with capital intensity in Iran and China. For this purpose, auto regressive distributed lag model was use. The results show that for Iran's economy in the short run, trade openness degree is the most effective factor in capital intensity. In the long run, the relative cost of production factors to capital-labour ratio, has the largest effect. The results also show that, for China's economy, participation rate of production factors has the largest effect on capital intensity. Iran's economy is labour intensive. Finally, the results show that Iran's economy has more saving in capital factor but China's economy has more saving in labour factor. Since Iran has advantages in producing labour-intensive goods, so the more increase in trade openness degree happens, the more labour would be employed. Then, investment in labour intensive goods would increase and it causes an increase in employment and growth. China can use its capacities and more capital in production in order to move toward economic prosperity. China needs to expand free trade based on comparative advantages.

Elshabasy (2021) examined the impact of corporate characteristics on environmental information disclosure: an empirical study on the listed firms in Egypt. This paper aims to assess the impact of several Corporate Characteristics on environmental information disclosure of the listed firms in a developing country. It selects the 50 most active firms in the Egyptian stock exchange and the analysis is done using the financial statements from the disclosure book for the period 2017-2021, prior the revolution, along with the firms' annual reports. The final count for the firms is 45, after excluding banks and insurance companies, for having different disclosure requirements and different corporate governance code. The tests for this research are done using the multiple regression model applied using the SPSS. Findings found that there is an insignificant relationship between two factors of firms' characteristics (Firm Size and Firm Financial Leverage) and EID, while Firm's age showed a negative significant relationship with EID and finally Firm's Profitability showed a positive significant relationship with EID.

Abubakar (2020) investigated the influence of firm attributes on environmental disclosures in listed brewery companies in Nigeria. The aim of this study was to investigate the influence of firm

specific attributes on environmental disclosure of listed breweries companies in Nigeria. Multiple regression technique was employed to analyse the data. Profitability, firm size, leverage and board size were used as proxies to measure the firm attributes. While contents analysis was maintained to measure environmental disclosure. The study found board size has negative but significant influence on environmental disclosure with value 0.0089, leverage has negative and insignificant influence on environmental disclosure with value 0.8229. Where firm size has positive insignificant influence on environmental disclosure with value 0.1951, profitability has positive significant influence on environmental disclosure of listed breweries companies in Nigeria. The study recommended that breweries companies should disclose more environmental information as it leads to increase in profit.

Kipngetich (2020) examined the effect of firm-specific attributes on environmental accounting disclosure in Kenya. The study was driven by legitimacy theory and a longitudinal research design was adopted. Findings showed that asset tangibility ( $\beta=.10$ ,  $p<.05$ ) and capital intensity ( $\beta=.42$ ,  $p<.05$ ) had a positive and significant effect on environmental accounting disclosure. The study concluded that asset tangibility, capital intensity and ownership concentration are key predictors of environmental accounting disclosure. Therefore, firms need to diffuse ownership concentration and increase asset base, so as to increase the level of environmental accounting disclosure.

Kipngetich (2020) disclosed that it is from the profit that companies do carry out corporate social responsibility and maintain its environment, it is also, out of profit that dividend are paid to the shareholders. He concluded that without profit, the aforementioned are not made possible. Therefore, profitability of a company is said to be very crucial in determining company's strength to disclose environmental information.

Kipngetich (2020) studied effect of firm-specific attributes on environmental accounting disclosure. Evidence from firms listed in the Nairobi securities Exchange, Kenya. The study examined the effect of firm-specific attributes on environmental accounting disclosure in Kenya. The study was driven by legitimacy theory and a longitudinal research design was adopted. Findings showed that asset tangibility ( $\beta=.10$ ,  $p<.05$ ) and capital intensity ( $\beta=.42$ ,  $p<.05$ ) had a positive and significant effect on environmental accounting disclosure. The study concludes that asset tangibility, capital intensity, and ownership concentration are key predictors of environmental accounting disclosure. Therefore, firms need to diffuse ownership concentration and increase asset base, so as to increase the level of environmental accounting disclosure.

## **RESEARCH METHODOLOGY**

### **Research Design**

This study adopted the survey method which is an investigation of prior extant literature from scholars who did some work on the topic and related topics. Theoretical examination was also considered.

## **CONCLUSIONS AND RECOMMENDATIONS**

The study investigated capital intensity and environmental information disclosure. The aim of the study was to examine the effect of capital intensity on environmental information disclosure. The theoretical foundation of the study is on the predictive power of stakeholders' theory, Legitimacy theory and voluntary compliance theory. The study made the following conclusion; That,

- (i) That there is a positive relationship between capital intensity and environmental information disclosure.
- (ii) Profitability has positive significant influence on environmental disclosure.

The study concluded that capital intensity and Profitability are key predictors of environmental accounting disclosure. This conclusion is in agreement with those of Kipnetich (2020) and Elshabasy (2021).

Based on the above findings therefore, the following recommendations are made based on the result and conclusion discussed above;

- (a) The study recommended that entities should disclose more environmental information as it leads to increase in profit;
- (b) Management should ensure compliance with the environmental laws of the nation to promote sustainability.

## **REFERENCES**

- Abubakar, A. A. (2021). The influence of firms attributes on environmental disclosure in listed brewery companies in Nigeria, *Research Journal of Finance and Accounting*, 8(21), 20-35.
- Kipnetich, 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 (41), 6-30.
- Kipnetich, T. J. (2020). Effects of capital intensity on firm performance: U.S. restaurant industry. *The Professional Refereed Journal of the International Association of Hospitality Financial Management Educators Volume*, 18 (1), 12-35.
- Kuti, A. J. (2021). Influence of firms attributes on environmental disclosure in listed brewery companies in Nigeria. *Research Journal of Finance and Accounting*, 8(21), 13-30.

- Magara, R., Aming, N. & Momany, E. (2022). Effect of environmental accounting on company financial performance in Kisii County, *British Journal of Economics, Management & Trade*. 10(1), 1-11.
- Shojaie, T. & Tehranchian, A.M. (2022). New empirical evidence on the determinants of capital intensity: An adaptive comparison of Iran and China. *International Journal of Economics and Financial Issues*, 8(2), 94-100.
- Yousra N., & Elshabasy, Y. H. (2021). Impact of corporate characteristics on environmental information disclosure: Empirical study on the listed firms in Egypt. *The Business and Management Review*, 8(5), 15-35.