

Sustainable Capital Reporting and Financial Performance of Quoted Manufacturing Firms in Nigeria

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Abstract Sustainability accounting for corporate capital and its influence on corporate performance is becoming a global issue. The study is an empirical examination of sustainable capital reporting (SCR) and performance of quoted manufacturing firms in Nigeria. The specific objectives were to; examine the influence of environmental/natural capital reporting (ECR), social and relationships capital reporting (SRCR), human capital reporting (HCR) and intellectual capital reporting (ICR) on listed manufacturing firms' profitability as proxied by Return on Assets (ROA). Five hypotheses were formulated in line with the objectives of the study. Ex-post facto research design was adopted in the study. The study population was made up of the 28 quoted industrial and natural resources manufacturing firms in Nigeria. Sample size of 23 was determined using Taro Yamane's formula while purposive sampling technique was used to select the samples. Secondary sources of data were collected through content analysis method based on sustainability index with 28 items in line with International Integrated Reporting Council (IIRC, 2013) from 2012 – 2021. The data obtained were analysed using descriptive statistics and multiple regression analyses. Results showed that environmental/natural capital reporting (ECR) and social and relationships capital reporting (SRCR) have significant negative influence on ROA; human capital reporting (HCR) and intellectual capital reporting (ICR) have significant positive influence on ROA. Findings also revealed that the manufacturing firms' sustainable capital reporting level in the annual reports as at December 31, 2021 was averaged 26.5% (ECR – 4.5%, SRCR – 11.0%, HCR – 6.3% and ICR – 4.7%). It was concluded in the study that inspite poor level of reporting by the manufacturing firms, sustainable capital reporting (ECR, SRCR, HCR and ICR) has significant positive influence on profitability. It was recommended among others that there is serious need to improve SCR by the firms in Nigeria through stringent mandatory integrated reporting and firms should give more priority to ECR, SRCR, HCR and ICR while tax incentives/reliefs and awards should be given to encourage the reporting firms.

Keywords: *sustainable capital reporting, financial performance, Return on Assets (ROA), quoted manufacturing firms*

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1. Introduction

Over the decades, numerous listed businesses globally, always consider reporting more of economic (financial) perspective than sustainable (non-financial) perspective. This reporting system is not only seen as narrow and one-sided corporate information disclosures but also cannot guarantee corporate sustainability nor reflect true performance. This one-sided reporting might lead to the firms' inability to balance the corporate actions and activities with performance and sustainable perspectives, especially with the recent shift in reporting focus from stakeholder-returns or traditional (financial) accounting to sustainability reporting [1].

Nwoke [2] and Udo [3] opined that companies should at all times produce all-inclusive reports, that is, information which covers financial and non-financial issues, and that it is only when companies begin to adopt this new reporting system that the needs of diverse stakeholders will be met. Buitendag, Fortuin and Da Laan [4] disclosed that there is a great pressure from markets enforcing accountability by more detailed disclosures and even beyond sustainable capital reporting to integrated reporting (IR). Turker and Sayar [5] as well as Umoren, Udo and Geroge [6] stressed that financial reporting focuses on a portion of the company's position and is unable to disclose the effects of environmental factors, social factors and other sustainable issues. In addition, it is unable to show quantitative information in relations to the risks and opportunities within the environment, or

improve entity image and appraise the performance of the company in line with the regulations and customs of the society. Recently, companies in developed countries are less interested in reporting only financials as many companies are providing stakeholders with diverse reporting approaches which are integrated in approaches such as Environmental, Social and Governance (ESG) disclosures, sustainability reporting among others [7]. Suttipun [7] disclosed that all the aforementioned reporting frameworks are still voluntary in many countries and without generalised frameworks; as such, giving companies an avenue to only report positive information to the stakeholders. Morros [8] stressed that organisations disclose to diverse interest groups who might not only be interested in financial information but would be more interested in where, why and how corporate entities create value and the strategy companies employ to carry out sustainable capitals reporting.

Today, many countries are mandatorily practicing integrated reporting (IR). Although Nigeria is yet to make IR, a mandatory practice, but the Nigerian Stock Exchange (NSE) and Central Bank of Nigeria (CBN) as well as Financial Reporting Council of Nigeria (FRCN) have made it clear to firms to start producing sustainability reports (sustainable capital reporting) along with their year-end corporate reports and accounts [9,10]. GRI [9] defined sustainable capital reporting as the recognition, measurement, presentation and disclosure of various corporate capitals and their corporate performance towards achievement of sustainable resources development. Turker and Sayar [5] as well as Oladipupo, Mathias and Mohammed [11] opined that sustainable capital reporting being a key part of IR is: to bring all-inclusive and operational approach to reporting; to provide facts for investment decision; to promote accountability and servitude; to improve firms' profitability and performance; and to support a more integrated thinking of sustainable capital.

Global Reporting Initiative endorses the use of sustainable capital disclosures as a way for firms to become more committed to sustainability development and contribute to economic growth. GRI's task is to create sustainable capital reporting as a high-grade practice that will enable all firms and entities to report their integrated performance and, also to produce Sustainability Reporting Guidelines [9]. In order to avoid firms from likely considering the minimum reporting, the Nigerian Stock Exchange (NSE) brought-out sustainable reporting principles in December 2016, seeking to improve corporate reporting after Sustainable Development Disclosure Discussion on 8 June, 2016, with interested parties concerning the sustainability reporting guides. The disclosures pattern, coupled with the factual value system of reporting as well as the commencement of mandatory sustainability reporting were to take effect from financial year ended December 31, 2018. The level of sustainability performance of quoted companies and its influence on the companies' performance are yet to be established in Nigeria. Corporate sustainable capital reporting and firms' performance have risen as imperative concerns for researchers in contemporary studies. According to Michael and Oluseye [12], sustainable capital reporting relates to the reporting of the utilised resources -

environmental/natural, social and relationships, intellectual and human capital footprints of organisation in the annual reports linking the impact of the firms on the capitals with the performance such that the interest of the present and future generations.

Furthermore, studies on sustainability reporting conducted in United States of America (USA), Australia, New Zealand, South Africa, India and many of the European countries have pointed out that sustainable capitals (environmental/natural, social, human and intellectual capital) accounting and reporting is an important ingredient of corporate success and that it can contribute much more to firms' performance. Researchers observed that, environmental capital reporting improves pricing and profitability, assist managers in targeting cost reduction, reduces wastes and improves eco-efficiency [3,13]. Social and relationship enhance values and corporate image as well as creating a sustainable base for improved earnings and operations in the future [14]. Human capital is the most vital asset of any firm as represented by the employees, because all activities of the firm that determine performance depend on the efforts of the employees [15] while intellectual capital helps organisations formulate their strategies, to assess strategy executions, to assist in diversification and expansion decisions, as well as to use as basis for compensations and to communicate measures to external stakeholders [16,17]. To the best of the knowledge of the researcher, these have not been considered holistically in Nigerian context. These issues are of great concern to researchers. Therefore, in this study, the influence of sustainable capital reporting (environmental/natural capital reporting, social capital reporting, human capital reporting and intellectual capital reporting) on performance of quoted manufacturing firms in Nigeria is examined.

1.1. Statement of the Problem

The growing diverse reporting approaches without conscious reporting of non-financial information in the annual reports have made the reporting of business performance more problematic and doubtful [1]. This is because, not all the capital employed by the firms in creation of values are linked with how the capital influences firms' performance. It is obvious in corporations that financial capital and manufactured capital (financial information) have traditionally dominated economic models and business thinking. One may wonder whether these two capitals are the only corporate capital deployed by the firms to create values (performance) over time; but the fact is that, this is done at the expense of sustainable capital, namely; environmental capital, social and relationship capital, human capital and intellectual capital. Researchers are of the opinion that the benefits offered by sustainable capital reporting cannot be over-emphasised [18]. These benefits include; value preservation and creation, cost savings and productivity, access to raw materials/products, reputation/brand protection, product/servicing costing and pricing, and improved performance among others [3,6,19,20]. Advocates of sustainability reporting opined that failure to engage in SCR would deny firms and their stakeholders of these perceived benefits as well as hurting the business

community and the environment while proponents of shareholders' wealth maximisation are of opinion that the firms were to create wealth primarily for their shareholders and not necessary for sustainability development of others [1].

In Nigeria, some firms published or reported a lot of stand-alone information and this information are often insufficiently integrated and lack interconnectivity with their sustainable capital performance. This practice as a drive for modern corporate reporting has been appreciated by few firms in Nigeria while some do not even make attempt to report in details on the sustainable capital alongside with the annual reports [3]. Prior studies in countries like India, Indonesia, Thailand, Singapore, United States of America, Bangladesh, China, Brazil, among others with voluntary reporting practices of sustainability reporting have showed that sustainable capital reporting impacted firms' profitability [7,17,21,22,23] whereas others confirmed that there is no influence of sustainable capital reporting on firms' profitability but that they are all costs burden [24,25]. Above all, of the empirical studies reviewed, it seems none has clarified how environmental/natural capital reporting, social and relationship capital reporting, human capital reporting as well as intellectual capital reporting would influence firms' performance and how these will be of benefits to the stakeholders in the Nigerian context to the best of the limited knowledge of the researcher. Therefore, these issues in relations to the chosen quoted manufacturing firms in Nigeria were examined.

1.2. Objectives of the Study

The main objective of this study is to examine sustainable capital reporting and financial performance of quoted manufacturing firms in Nigeria. Specifically, to

- i. Examine the influence of environmental/natural capital reporting on profitability of the listed manufacturing firms in Nigeria.
- ii. Evaluate the influence of social and relationships capital reporting on profitability of the listed manufacturing firms in Nigeria.
- iii. To determine how human capital reporting influences profitability of the listed manufacturing firms in Nigeria.
- iv. To assess how intellectual capital reporting influences profitability of the listed manufacturing firms in Nigeria.
- v. To examine the aggregate influence of natural/environmental capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting on profitability of the listed manufacturing firms in Nigeria.

1.3. Research Questions

For the objectives of the study to be accomplished, these questions were raised:

- i. What is the influence of environmental/natural capital reporting on profitability of the listed manufacturing firms in Nigeria?

- ii. How do social and relationships capital reporting influence profitability of the listed manufacturing firms in Nigeria?
- iii. How does human capital reporting influence profitability of the selected listed firms?
- iv. What is the influence of intellectual capital reporting on profitability of the listed manufacturing firms in Nigeria?
- v. What is the aggregate influence of natural/environmental capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting on profitability of the listed manufacturing firms in Nigeria?

1.4. Hypotheses of the Study

These subsequent null hypotheses were framed to guide the research in line with the Objectives:

- H₀₁: Environmental/natural capital reporting does not significantly influence profitability of the listed manufacturing firms in Nigeria.
- H₀₂: Social and relationships capital reporting do not significantly influence profitability of listed manufacturing firms in Nigeria.
- H₀₃: There is no significant influence of human capital reporting on profitability of the listed manufacturing firms in Nigeria.
- H₀₄: There is no significant influence of intellectual capital reporting on profitability of the listed manufacturing firms in Nigeria.
- H₀₅: There is no aggregate significant influence of natural/environmental capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting on profitability of the listed manufacturing firms in Nigeria.

1.5. Review of Related Literature

The notion of sustainable capital reporting is professed to identify with firms' integrated reporting thinking that describe disclosure of facts on financial and non-financial issues relating to environmental, social and relationship, human and intellectual capitals. Michael and Oluseye [12] disclosed that sustainability capital reporting relates to the reporting of utilisation of resources to meet the economic, social and environmental needs of human beings, such that the interest of the present and future generations is served. Garg [26] stated sustainability reporting involves the practice of measuring, disclosing and being accountable for organisational performance while working towards the goal of sustainable development. In essence, sustainability reporting is to disclose the organisation's commitment and achievement towards all aspects of sustainability, from both internal and external stakeholders' perspectives. Sustainable capital reporting is a form of value reporting where an organisation publicly communicates its economic, environmental and social performance [27].

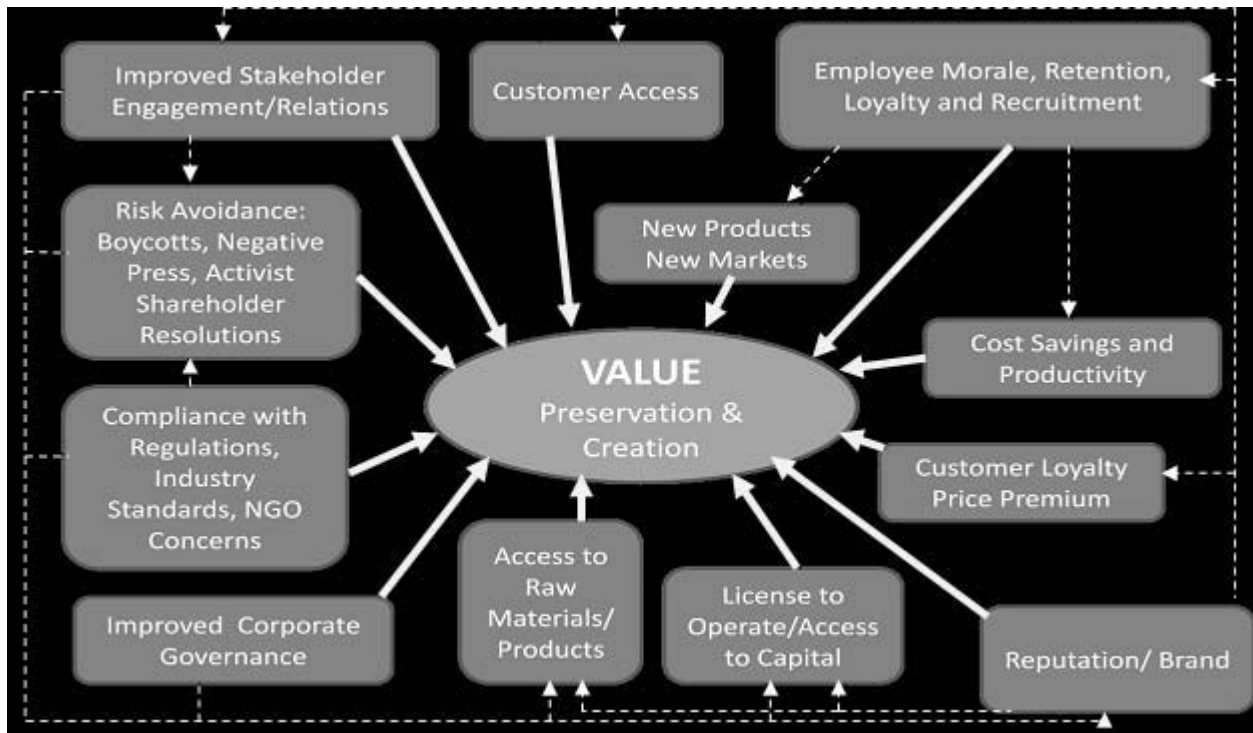


Figure 1. Perceived Benefits of Sustainable Capital Reporting. Source: Warren and Thomsen [19]

Sustainable reporting provides a balanced and reasonable representation of the sustainability performance of the reporting organisation, including both positive and negative contributions. Caesaria and Basuki [28] defined sustainability reporting as a communication that contains information of financial performance and non-financial performance. Disclosures on the sustainable capitals were initially described by the concept of the Triple Bottom Line (TBL) proposed by Elkington [29]. Based on this conception, there were three facets that needed to be disclosed by companies in their sustainability report: economics (performance), environment (planet), and social aspect (people). GRI [9] opined that a sustainable capital report is a publication by an entity about the economic, environmental and social impacts caused by its everyday activities. A sustainable capital report also presents the entity's values and governance model and exhibits the link between its strategy and its obligation to a sustainable global economy. GRI [9] argued that there is a range of advantages an organisation stands to benefit from publishing its sustainable performance. These advantages include promotion of shareholder assurance, trust and employee loyalty to the firm. It is widely assumed and alleged by researchers that in today's dynamic and complex business environment, sustainable capital reporting is likely to influence corporate profitability and overall performance [21]. Sustainable capital reporting places a basis for promoting and enhancing value of the firm. The summary of numerous benefits of sustainable capital reporting are shown in Figure 1 as construed by Warren and Thomsen [19].

The four types of corporate sustainable capital from where business firms create values for their goods and services but not likely forming an integral part of annual reports and accounts of firms in Nigeria are:

(a) **Environmental/Natural Capital Reporting.** Udo [30] opined that environmental capital reporting is a

framework for organisations to identify and account for past, present environmental assets, costs and benefits as well as provisions for contingent liabilities and assets to support managerial decision-making, control and for public disclosure. Environmental capital can also be described as a monetary representation for the limited stocks of physical and biological resources found on earth, stock of natural endowments or environmental assets (such as earth, water, atmosphere, ecosystems) which provide raw materials, now and in the future and of the limited capacity of ecosystems to provide ecosystem services [18,31]. Benefits of practising environmental accounting reporting include; provision of better estimates or the standard costs to the firm for producing a product. Thus, improves pricing and profitability; allocation of costs to the appropriate product, process, system or facility and thus reveals costs to the responsible managers; assist of managers in targeting cost reduction, improving environmental quality and in reinforcing quality principles; motivates staff to search for creative ways to reduce environmental costs; encourages changes in processes to reduce waste, reduce resources use, recycle waste or identify markets for waste; increase employee awareness of occupational health and safety issues; and increases the likelihood of the company having a competitive advantage and greater customer acceptance of the firm's product or service. Environmental accounting programs provide the expected cost of environmental and workforce hazards which is added to the supply cost of the input to get the real cost of that output [3].

(b) **Social and Relationships Capital Reporting** concerns with the dialogue of social concerns, relations and responsibilities of the firm to wider stakeholders. Social capital also involves with the institutions and business communities that help to maintain and develop human capital in partnership with others; examples, families, communities, businesses, trade unions, schools,

and voluntary organisations. Social capital is friends, colleagues, and more general contacts through which one receive opportunities to use his financial and human capital [32]. It provides information relating to collective well-being of the society. Social capital includes durable assets such as awareness, institutions, culture, religion, among others [18,33].

(c) **Human Capital Reporting** involves the disclosures of all labours/employees and managerial efforts to the firm and the value created or decreased overtime to all interested users. Human capital includes the knowledge, efforts, capacities, skills, competencies and attributes embodied in the employees which facilitate the creation of personal, social and economic well-being [18,34]. Human health is a key component, as it enables individuals to remain competent in applying their knowledge and skills optimally for generating economic value for themselves, for the firm, for society and for the nation. Oko [35] stated the importance, aims and benefits of human resource accounting and reporting to include, to: provide useful information to the management, financial analysts and employees; helps the management in the employment, locating and utilization of human resources; helps in deciding the transfers, promotion, training and retrenchment of human resources; provides a basis for planning of physical assets, vis-à-vis human resources; assists in evaluating the expenditure incurred for imparting further education and training in employees in terms of the benefits derived by the firm as well as provides evidence of 10% local content compliance in Nigeria.

Intellectual Capital Reporting: Intellectual capital concerns with intangible non-current assets. A report to the European Commission by the High Level Expert Group on Reporting Intellectual Capital to Augment Research, Development and Innovation (RICARDIS) [36] presented some comprehensive viewpoints on the notion of intellectual capital (IC), that it involved research and development (R and D), logical thinking created property assets created through intellects or goodwill of the firms. IC is knowledgeable capital and knowledge of management has garnered interest in corporate and academic settings. Intellectual capital is a set of non-financial and non-physical resources that procures a competitive advantage for the firm. It is economic value of the sum total of human, structural and relational capital [37]. Structural Capital encompasses the hardware, software, database, systems, work processes, business models, organizational structure, patents, trademarks, trade secrets, copyrights, licenses and all other codified knowledge. Relational capital is defined as all resources linked to the external relationships of the firm, with customers, suppliers, or partners in research and

development. It comprises that part of human and structural capital involved with the companies' relations with stockholders (investors, creditors, customers, suppliers) as well as the perceptions that they hold about the company. By creating transparency, it helps management to allocate resources, to monitor development and to create strategy. Intellectual capital reporting will facilitate decision making for companies. Disclosure of intellectual capital will raise some benefits for the organization. Among of the benefits of reporting intellectual capital are; it will enhance transparency in term of more disclose on intangible information rather than tangible information, it will helps inspire a sense of faith among the workforce other major stakeholders and it will support long term vision of the organization. Intellectual capital disclosure also is cost burden, such as the cost of gathering, processing and interpreting the necessary data. Vergauwen and Vanalem [38] identify three other opposing factors for intellectual capital disclosure, these are; the transparency drawback in competitive markets, regulatory barriers and auditor conservatism.

1.6. Firms' Financial Performance

The concept of firms' financial performance has to do the level of success or failure of a firm. Generally, the common financial ratios used in measuring firm's financial performance are revenue growth, return on equity, return on assets, profit margin, sales growth, capital adequacy, liquidity ratio, and stock prices. Firms' performance is mostly evaluated in terms of profitability since it measures the efficiency of the managers and the firms' returns/profit for their investors. Profitability ratios or measures therefore provide an insight to the degree of success in achieving this primary objective [39]. The most common profitability measures or ratios are return on capital employed (ROCE), gross profit margin, net profit margin, return on equity (ROE) and return on assets (ROA).

In summary, ROCE measures the overall returns from all investments. Return on equity (ROE) indicates the extent of profit on equity shareholding investment based on profit while return on assets (ROA) is the extent of profit earned on every ₦1 invested on or utilised of total assets. ROA is sometimes called return on total assets. ROA is considered in this study as measure of firms' performance as it takes into consideration total assets or all capitals in the generation of the firms' profitability or returns. In summary, the variables indicate the statistics that are related to this study, as displayed in Figure 2.

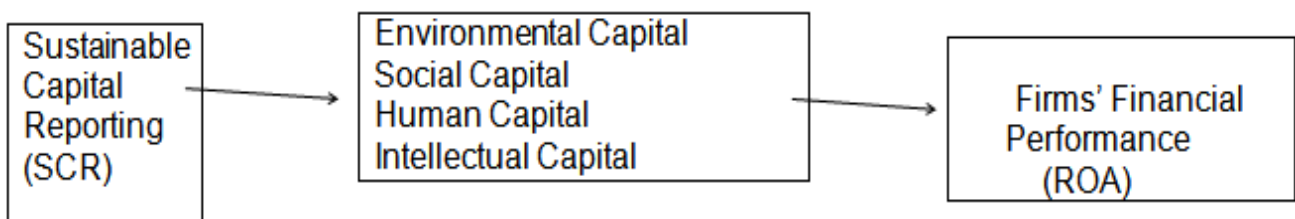


Figure 2. The Conceptual Framework, *Researcher's Conceptualisation (2022)*

1.7. Theoretical Framework

Stakeholder theory was developed by Freeman R. [40]. Stakeholder theory is of opinion that, organisation would try to satisfy the concerns and aspirations of powerful interested party, and some of the responses will be in the form of strategic reporting. The theory implies that disclosures of sustainability information by organisation are as a result of the pressure from interested parties. Stakeholders' theory offers an in-depth understanding of the factors that encourage decision-making and performances in relation to the social and environmental disclosure practices of business organisations. Businesses are thus responsible to these stakeholders and depend upon their continued support to sustain a successful operating environment [41]. Stakeholder theory focuses upon defining factors encouraging the continued existence of corporations. The theory would ensure that the firms consider all interest groups in their decision making when deploying the sustainable capital. Stakeholder theory is also to help to postulate the influence of firms' financial characteristics on reporting of sustainable capital of the selected listed firms in the manufacturing sector in Nigeria.

Institutional Theory. Philip Selznick [42], a sociologist propounded institutional theory. Institutional theory is of the opinion that organisational behaviour is conditioned by the expectations stemming from the institutional environment. It relates in scrutinising and enlightening how established norms and pressures affect social changes among organisations. The institutional framework emphasises the importance of regulatory, normative, and cognitive factors that affect firms' decisions to adopt a specific organisation practice. This theory has been the most regulatory pillar for external management practices. Institutional theory explores different means/mechanism through which information about legitimate and socially accepted organisational behaviour can be transmitted and such behaviour institutionalised in organisations [43]. The theory would help to ensure that business firms operate in line with the regulatory and the institutionary authorities which are structured within the norms and social needs of the society.

Accountability Theory can be traced to Tetlock, P. E. [44]. According to Tetlock and Lerner [45], accountability is a mechanism and as a practice in which a person has a potential responsibility to explain his or her actions to another party who has the right to pass judgment on the actions as well as to subject the person to potential consequences for his or her actions. It was later developed by Gray R. in [46]. It concerned with how firms response to the associations, groups, persons, firms and the rights to information that such interactions bring about.

Accountability theory emphasises that act of being accountable or liable for one's own choices of actions with the anticipation of explanation and vindicating them when asked to do so. In other words, it is the obligation to offer an explanation of the actions for which one is held responsible. This theory helps businesses to be accountable to their activities that affect the society and business communities as a whole and how to relate with all stakeholders concerned as well as having corporate integrated thinking for sustainable development.

Resource Dependence Theory (RDT). This Theory was developed by Jeffrey Pfeffer and Gerald R. Salancik [47]. Resource dependence theory (RDT) is concerned with how business organisation actions is affected by external resources the organisation utilises, such as raw materials. The theory is significant to this study because it reveals an organisation's ability to gather, modify and exploit raw materials faster than competitors, which is fundamental for performance and success. The fundamental assumption of RDT is that dependence on critical and important resources influence the actions of organisations and those organisational decisions and actions can be explained depending on the particular dependency situation.

Resource dependence theory is buttressed by the idea that sustainable capitals are keys to business performance and that access as well as control over the resources forms a basis of power for sustainable development and competitive advantage. This theory would be relevant to business organisations to know how to manage the scarce resources owing to the fact that effective and efficient utilisation will guarantee high performance of the firms. In summary, the study is guided by legitimacy theory, stakeholder theory, institutional theory, accountability theory and resource dependence theory. These five theories are adopted as the main thrust of the research because the theories explained how corporate capital reporting is utilised to bridge the breach between business firms' actions and social aspirations as well as postulating the influence of sustainable capital reporting on firms' performance.

1.8. Empirical Review

Evidence-based empirical studies that examine sustainable capital reporting on firms' performance studies are:

Udo [3] examined environmental accounting disclosure practices (EADP) in annual reports of listed oil and gas companies in Nigeria. *Ex-post facto* research design was adopted in the study. The ten (10) oil and gas companies listed on the Nigerian Stock Exchange (NSE) was the population as census sampling technique was used in the study. Secondary sources were the main sources of data for the study. The data obtained were analysed using descriptive and inferential statistics. The findings revealed that EADP has significant negative influence on profitability and significant positive influences on leverage and liquidity while having insignificant positive influence on long-term capital. Nor, Bahari, Adnan, Qamarul, Kamal and Ali [48] examined the effects of environmental disclosure on financial performance among top 100 companies with market capitalisation in Malaysia for the year 2011. The objectives were to examine the existence of environmental disclosure practices in Malaysia and financial performance and to evaluate the relationship between environmental disclosures and profitability (using profit margin). Data were collected from secondary sources by reviewing the annual reports to gather the information regarding the environmental disclosures. The result indicated that environmental disclosures have a significant negative relationship with profit margin. It was concluded in the study that

environmental disclosures of companies significantly influence financial performance in Malaysia. Makori and Jagongo [13] established a significant relationship between environmental accounting and profitability of selected firms listed in India. The data for the study were collected from annual reports of 14 randomly selected quoted companies in capital market in India. The data were analysed using multiple regression models. The findings of the study showed that there is significant negative relationship between Environmental Accounting and Return on Capital Employed (ROCE) and Earnings Per Share (EPS) and a significant positive relationship between Environmental Accounting and Net Profit Margin and Dividend per Share. Based on this, it was recommended that government should give tax credit to organizations that comply with its environmental laws and that environmental reporting should be made compulsory in India so as to improve the performance of organizations and the nation as a whole. Grigoris, George, Eleni and Xanthi [23] examined the impact of environmental, social and governance (ESG) reporting on the financial performance of the United States (US) companies. The results suggested that the involvement in social and environmental initiatives have a significantly positive effect on financial performance.

Oko [35] investigated influence of human asset inclusion in the financial reports of firms in Nigeria. The specific objectives of the study were to study the nature and characteristics of human resource investment/expenditure in quoted Nigerian companies, to determine the relevance of human asset accounting model in relation to the quality of financial reporting of quoted companies in Nigeria, to investigate the relationship between human asset accounting and corporate performance (Profitability), and to investigate the relationship between Human Asset Accounting measurement and corporate financial position. The study adopted the survey research design. The instrument of data collection was questionnaire designed on a four step Likert Scale. The hypotheses were tested using simple regression model. The result of the analyses confirmed that there is a significant relationship between human asset accounting and corporate profitability and there is positive significant relationship between human asset accounting measurement and corporate financial position. It concluded that capitalizing human assets would positively impact on performance and financial position of organizations and recommended its disclosure as intangible asset in the statement of financial position. Okpako, Atube and Olufawoye [49] determined the relationship between human resource accounting and firm performance. The aim of the study was to conduct a survey on seven (7) companies quoted on the Nigeria Stock Exchange. The study used primary data and secondary data. Two hundred and sixty (260) questionnaire were distributed and 246 questionnaires were retrieved on the companies targeted at the staffs of human resource, accounting, and audit/internal control departments which were considered to be the relevant departments for this study. The results revealed that human resource reporting impacted positively to the level of firm performance. Perera and Thrikawala [50] carried out an investigation on the impact of investment in human

capital on financial performances of the companies in Sri Lanka. *Ex-post facto* research design was used. The population of the study was 284 listed firms representing 20 sectors of Sri Lanka and sample size of the study was selected as 40 companies using Taro Yamane's formula as well as random sampling. Financial statements of listed companies for the period of 2009 to 2010 was used for dependent variables while Value Added Intellectual Coefficient (VAIC) was used a measurement of human capital of the firms. Correlational and multiple regression data analysis were used. Findings revealed that there is a significant relationship between investment in human capital and firm financial performances (0.021) and that human capital investment impacted firm financial performances. It was concluded that human capital has a strong positive impact on financial performances. Mansaray, Yuanyuan and Brima [51] examined the impact of corporate social responsibility disclosures (CSRdisc) on financial performance of firms in Africa. Specifically, to evaluate the impact of CSR disclosures (CSRdisc) on the financial performance of firms in Africa for both short and long terms. 158 listed companies were selected from six African countries (South Africa, Kenya, Nigeria, Morocco, Egypt and Mauritius) as six industries were considered. CSR disc were in terms of keywords counting (content analysis). Measures of financial performance of firms used were return on assets [ROA] for short-term, and return on equity [ROE] for long-term. Multiple linear regression analysis was done with a sample of panel data for a period of 11 years (2005 - 2015). With respect to long-term (ROE) financial performance, majority of the results suggested positive but no significant economic benefits for the firms. Although, there is positive relationship between CSRdisc and financial performance of some firms in the long-run, the financial performance of firms in Africa does not depend significantly on their CSR practices but rather on other factors, such as their previous performance, leverage, volume of capital, and size. From the numerous benefits of CSR, it is recommended that firms continue to give priority to this practice.

Ewereoke [17] evaluated the influence of intellectual capital reporting on profitability ratios of companies' quoted on the Nigerian capital market. The specific objective was to determine the extent to which intellectual capital reporting influence corporate profitability. Hypothesis was formulated and tested of a sample of forty (40) companies. 213 companies listed on Nigeria Stock Exchange were selected from using multi-stages sampling technique. *Ex-post facto* research design and secondary data sources from annual reports and accounts of sampled firms as well as Nigeria Stock Exchange Fact Book were all employed in the study. The result showed that intellectual capital reporting significantly influence Company Process measured by ADM/OPA and market to Book value ratio of companies listed on Nigeria Stock Exchange. It was concluded in the study that intellectual Capital reporting significantly affects performance of the firms. Sidharta and Affandi [16] examined the effect of intellectual capital on financial performance in banking sector in Java, Indonesia. Causal and exploratory research methods were used the designs for the study. The population of the study and the sample size was the 205 rural banks for the year 2011 – 2013. Pulic 1998 research

model was used-VAICTM. Data were analysed using multiple regressions with the aid E-views 7 and Micro Excel 2007. The results showed that the intellectual capital significantly influence financial performance of the banks.

Aggarwal [21] investigated the effect of sustainable capital reporting of company on financial measures, a case study of quoted firms owned by Indians. The main purpose of the study was to attest to sustainable companies' profitability and to study the effect of sustainable capital reporting of firm on its business indicators in an Indian setting using secondary data. *Ex-post facto* research design was used in the study. Four main constituents of sustainable capitals reporting namely; Community, Employees, Environment and Governance were used on profitability. Further investigations showed that the four constituents of sustainable capital reporting have significant but varying effect on profitability of the companies. Ching, Gerab and Toste [24] examined as to how sustainability capital reporting relates to the financial performance of Brazilian quoted companies. The sample is composed of all firms listed on ISE for the period 2008 to 2014. This study considered accounting and market-based indicators and control variables. There is no clear consensus as to whether the financial performance of companies listed in sustainability indices relates to their sustainability performance. Ezejiofor, John-Akamelu and Chigbo [52] assessed the influence of sustainability accounting measures on the performance of corporate organizations in Nigeria for the period, 2009 – 2013 using two (2) mega listed firms (Guinness Plc and Mobil Oil). *Ex-post facto* research design and time series data were adopted in the study. Based on the analysis, the study found that environmental cost impacted negatively on revenue of corporate organizations in Nigeria, also that environmental cost impact positively on profit generation of corporate organizations in Nigeria.

2. Methodology

Ex-post facto research design was used in the research also referred to as causal-comparative design as it permits the evaluation of independent variables in retrospect for their possible influence on the dependent variable. The design was considered best for the study as it allows for the use of existing data as well as not permitted the control and manipulate of variables since the subjects were selected on the basis of naturally occurring characteristics. The population is the twenty-eight (28) firms in the manufacturing industry (the industrial and natural resources companies) quoted and actively traded stocks on the floor of the Nigerian Stock Exchange from 2012 financial year to December 31, 2021. The selection of this population was centred on the point that, the firms belonging to the sector of the Nigerian economy that deploy greater sustainable capitals for value and wealth creation. Taro Yamane's sample size formula was used to determine twenty-three (23) firms out of the total population of twenty-eight (28) firms at an error term of 8.755%. Purposive sampling technique also known as judgemental sampling technique was applied in the research to select the twenty-three (23) sampled firms. This technique was used on the basis of the easiness with which the data can be collected from the firms' websites

as actively traded listed companies. The study employed data from the twenty-three (23) manufacturing (industrial and natural resources) firms covering ten (10) years' period from 2012 to 2021. The period between 2012 and 2021 was used based on the fact that the prior years of the sampled firms, financial and non-financial information were not available due to non-trading of active stocks or delisting by NSE. Secondary sources of data were used and consisted of the annual reports and accounts of the selected firms and formed the main sources of data used in this study. Specifically, data from directors' reports, sustainability reports, financial statements and NSE compliance reports. The data were financial and non-financial in nature and were available both in soft copies and hard copies. The data were pooled from the twenty-three (23) sampled companies listed in the capital market. Both online and hard copies of annual reports and accounts of the sampled firms were collected from Lagos and Port Harcourt Branches of Nigerian Stock Exchange (NSE) for the period, 2012 to 2021 using content analysis method. Financial statements and sustainability reports of the selected firms were extracted, examined, coded, questioned and computed for the needed data. Secondary data were also obtained through reviewing relevant text-books, journals, and IIRC guidelines (2013). A multiple linear regression model was fitted to determine how the dependent variable, performance (Perf) measured by profitability as proxied by Return on Assets (ROA) is explained by the independent variables sustainable capital reporting (SCR). In order to test the research hypotheses, multiple regression models (functional form, econometrical form and conceptual model equation) were used:

$$FP_{it} = f(SCR_{it})$$

Functional Relationship Equation

$$Y_{it} = \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \alpha_3 X_{3it} + \alpha_4 X_{4it} + \varepsilon_{it}$$

Econometric Equation

$$ROA_{it} = \alpha_0 + \alpha_1 ECR_{it} + \alpha_2 SRCR_{it} + \alpha_3 HCR_{it} + \alpha_4 ICR_{it} + \varepsilon_{it}$$

Conceptual Model Equation

Where; FP. = Financial Performance, measured as Profitability and proxied by Return on Assets (ROA); ECR = Environmental Capital Reporting (X_1); SRCR = Social and Relationship Capital Reporting (X_2); HCR = Human Capital Reporting (X_3); ICR = Intellectual Capital Reporting (X_4)

$\alpha_1, \alpha_2, \alpha_3, \alpha_4$ = estimated coefficients of the independent variables; α_0 = constant term; ε = error term; i, t = company I in year t.

The theoretical specification of models and descriptions or measurement as well as their expected signs or *apriori* expectation exception of the dependent variable (the Predict), that is performance is discussed as follows. Financial Performance (FP) is measured by profitability as proxied by Return on Assets (ROA) and sustainable capital reporting, that is, the independent variable (the Predictors) were; environmental/natural capital reporting (ECR), social and relationships capital reporting (SRCR), human capital reporting (HCR) and intellectual capital reporting (ICR) as presented in Table 1, thus:

Table 1. Theoretical Framework of Sustainable Capital Reporting and Financial Performance

Variables	Types	Measurement/Definition	<i>A priori Sign</i>	Source
Fin. Perf., (Profitability)		Profit before interest & tax (PBIT)		
Return on Assets (ROA)	Dependent	Total Assets (TA)		Annual Report
Environmental/Natural Capital Reporting (ECR)	Independent	$\sum_{it}(\text{Scores of ECR per firm})$ $\sum_i \sum_t (\text{Scores of all possible cases of all the firms' ECR for the year})$	-	Annual Report
Social and Relationships Capital Reporting (SRCR)	Independent	$\sum_{it}(\text{Scores of SRCR per firm for the year})$ $\sum_i \sum_t (\text{Scores of all possible cases of all the firms' SRCR for the year})$	-	Annual Report
Human capital reporting (HCR)	Independent	$\sum_{it}(\text{Scores of HCR per firm for the year})$ $\sum_i \sum_t (\text{Scores of all possible cases of all the firms' HCR for the year})$	+ +	Annual Report
Intellectual Capital Reporting (ICR)	Independent	$\sum_{it}(\text{Scores of ICR per firm for the year})$ $\sum_i \sum_t (\text{Scores of all possible cases of all the firms' ICR for the year})$		

Source: Compiled by Researcher (2022).

Descriptive and inferential statistics were used to analyse the data. In order to determine the level of sustainable capital reporting engaged by the selected listed manufacturing firms in Nigeria as well as to obtain sustainable capital reporting score/value, a checklist of 28 items in line with International Integrated Reporting Council [53] was carried out using content analysis. Each firm was scored “1” for full disclosure, “1/2” for partial disclosure and “0” for non-disclosure under content analysis, which is presently the most widely used technique for analysis of accounts in annual reports. Annual reports of the selected manufacturing firms from 2012 to 2021 were examined and analysed using content analysis for the level (quality) of sustainable capital reporting was determined using probability disclosure score/index and based on IIRC [53] sustainable disclosure index with 28 points checklist. It is to be noted that the Sustainable Capital Reporting (SCR_{it}) score for each firm was computed by using the probability index based method as given thus:

$$SCR_{it} = \frac{\sum_{it} \left(\frac{d_{it} \text{ disclosed of each capital's issues per firm for the year}}{\sum_i \sum_t \left(\frac{d_{it} \text{ all possible cases of all the firms' capital disclosures for the year}}{\dots} \right)} \right)}{\dots}$$

where, i,t = company i in year t (pooled data), Σ = summation
 $\sum_{it} (d_{it} \text{ disclosed of each capital's issues per firm for the year})$ = Summation of disclosure scores of all the four categories of the capital of each sampled firm in a given year.

$\sum_i \sum_t (d_{it} \text{ all possible cases of all the firms' capital disclosures for the year})$ = Summation of the grand totals of all the possible disclosures of all four categories of capitals' issues of all the firms in a given year.

Disclosure score of 1= Full disclosure, that is, both quantitative and qualitative for each issue considered on human, intellectual, social and environmental capitals respectively provided in the annual report of the firm in line with IIRC [53] guidelines;

Table 2. Level of Human, Natural, Social and Intellectual Capital Reporting in each of the Selected Firms in the Annual Reports from 2012 – 2021

S/N	Firm name	n	HCR		ECR		SRCR		ICR	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Aluminum	10	0.037	0.009	0.026	0.002	0.024	0.051	0.019	0.023
2	AUSTINLAZ	10	0.085	0.045	0.070	0.017	0.056	0.117	0.012	0.036
3	Bata Glass	10	0.054	0.032	0.039	0.012	0.088	0.098	0.074	0.025
4	Berger Paint	10	0.077	0.026	0.055	0.020	0.149	0.136	0.076	0.014
5	BOC Gases	10	0.054	0.038	0.039	0.011	0.037	0.069	0.050	0.015
6	CAP PLC	10	0.126	0.099	0.066	0.012	0.100	0.062	0.091	0.022
7	CCNN Plc	10	0.061	0.037	0.036	0.013	0.086	0.106	0.063	0.021
8	CUTIX	10	0.061	0.048	0.031	0.012	0.092	0.126	0.035	0.023
9	Dangote	10	0.077	0.035	0.052	0.024	0.223	0.269	0.088	0.027
10	DNM	10	0.045	0.046	0.049	0.035	0.113	0.088	0.063	0.019
11	First Allu	10	0.055	0.035	0.041	0.012	0.071	0.052	0.014	0.026
12	FTNCOCOA	10	0.038	0.028	0.045	0.013	0.095	0.201	0.022	0.024
13	Greif	10	0.035	0.013	0.023	0.008	0.122	0.164	0.047	0.062
14	Lafarge	10	0.161	0.041	0.104	0.023	0.187	0.236	0.086	0.037
15	Livestock Feeds	10	0.058	0.030	0.034	0.012	0.035	0.077	0.008	0.024
16	Multiverse	10	0.048	0.039	0.044	0.017	0.114	0.197	0.029	0.031
17	NOTORE	10	0.062	0.043	0.040	0.020	0.161	0.055	0.058	0.024
18	Okomu Oil	10	0.064	0.025	0.041	0.013	0.058	0.139	0.055	0.009
19	PCMN	10	0.033	0.015	0.023	0.006	0.061	0.033	0.023	0.024
20	PP&P Nig	10	0.068	0.044	0.043	0.016	0.097	0.114	0.061	0.020
21	Premier	10	0.023	0.020	0.043	0.065	0.191	0.186	0.015	0.018
22	Presco Plc	10	0.055	0.028	0.045	0.013	0.075	0.088	0.051	0.031
23	THOMASWY	10	0.064	0.028	0.045	0.018	0.071	0.104	0.044	0.029

Source: Computation by Researcher (2022) using SPSS version 20.0. HCR- Human capital reporting, ECR- Environmental/Natural Capital Reporting, SRCR- Social and Relationships Capital Reporting, ICR= Intellectual Capital Reporting.

Disclosure score of $\frac{1}{2}$ = Partial disclosure, that is, only qualitative information or only quantity information are provided in the annual report of the firm on the item considered of each capital; and Disclosure score of 0 = Non-disclosure, if both quantitative and qualitative environmental information are not provided in the annual report of the company on the item considered. Multiple regression models were used to examine the influence of sustainable capital reporting on profitability. This was carried out with the help of Statistical Package for Social Sciences (SPSS) Version 20.0 at 5% level of significance in order to reach valid conclusions for the study.

In this section, the data collected for the study, results of data analysis and discussion of the findings were presented. The computation of the sustainable capital reporting scores to show the level of reporting of human, natural, social and intellectual capital in each of the selected Firms' Annual Reporting from 2012 – 2021.

Result in Table 2 shows the average level of HCR, ECR, SRCR and ICR capitals reporting in each of the manufacturing firms in the annual reports. From the results, it can be deduced that Lafarge reported the highest human capital reporting (HCR) with about 16.1%, Lafarge reported the highest value of environmental/natural capital reporting with about 10.4% while Dangote reported highest social and relationship capital reporting (SRCR) with 22.3%. Results also reveals that in terms of intellectual capital reporting CAP PLC shows the highest value of 9.1% compared with other firms. From these results, it has been found that the sustainable capital mostly reported in the annual reports of the manufacturing firms is SRCR followed by HCR and ECR while the least was ICR.

The findings of the study indicate that HCR, ECR, SRCR and ICR are still under-developing and those firms operating in the manufacturing sector were reporting very little information about their performance on the sustainable capitals in Nigeria. This finding is not quite

surprising as most multinational manufacturing firms operating in Nigeria are not quoted on the NSE, as such were not included in the study. The hypotheses of the study were tested and results were analysed to achieve the objectives of the study. It was carried out using inferential statistics with the help of Statistical Package for Social Science (SPSS) Version 20.0 at 5% level of significance.

Result in Table 3 presents the descriptive statistics for the research variables. Result shows mean of 0.045, 0.100, 0.063, 0.047 and 0.110 with standard deviation of 0.026, 0.138, 0.047, 0.037 and 0.207 for environmental/natural capital reporting, social and relationship capital reporting, human capital reporting, intellectual capital reporting and ROA respectively. The skewness of 2.333, 2.363, 2.192, 0.581 and 3.561 were obtained for environmental capital reporting, social and relationship capital reporting, human capital reporting, intellectual capital reporting and ROA respectively. The skewness obtained for all the variables were greater than 0 which means that the variables were all skewed to the right. This is an indication that within the period under study, the values of these variables increased more than it decreased. Result also yielded kurtosis of 10.870, 6.472, 10.851, 0.861 and 23.716 for environmental/natural capital reporting, social and relationship capital reporting, human capital reporting, intellectual capital reporting and ROA respectively. The kurtosis obtained for the variables were all greater than 3.00 which is the kurtosis of the normal distribution which indicates that the research variables were all leptokurtic (excess kurtosis). The normality of these variables were examined using Shapiro-Wilks test and the results presented in Table 4.

Table 4 reveals that all the research variables have probability values of 0.0000. The probability obtained for all the research variables were all less than 0.05 ($p < 0.05$) which indicates that the distribution of the data obtained from these variables are not normally distributed.

Table 3. Descriptive Statistics for the Research Variables

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Environmental capital reporting	230	0.000	0.228	0.045	0.026	2.333	0.160	10.870	0.320
Social and relationship capital reporting	230	0.000	0.778	0.100	0.138	2.363	0.160	6.472	0.320
Human capital reporting	230	0.000	0.398	0.063	0.047	2.192	0.160	10.851	0.320
Intellectual capital reporting	230	0.000	0.212	0.047	0.037	0.581	0.160	0.861	0.320
ROA	230	-0.516	1.732	0.110	0.207	3.561	0.160	23.716	0.320

Source: Researcher's Computation (2022) using SPSS Version 20.0.

Table 4. Summary of Normality Test using Shapiro-Wilk test for the Research Variables

Variables	Shapiro-Wilk		
	Statistic	Df	P-value
Environmental capital reporting	0.808	230	0.000
Social and relationship capital reporting	0.711	230	0.000
Human capital reporting	0.840	230	0.000
Intellectual capital reporting	0.928	230	0.000
ROA	0.724	230	0.000

Source: Researcher's Computation (2022) using SPSS Version 20.0.

Table 5. Regression summary showing the influence of ROA with ECR, SRCR HCR and ICR of the listed manufacturing firms in Nigeria

Model	R	R Square (R ²)	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	0.684	0.548	0.532	0.193	2.039

Source: Researcher's Computation (2022) using SPSS Version 20.0.

Table 5 presents summary result of the influence of environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting on profitability of the manufacturing listed firms. From Table 5, a regression square (R²) coefficient of determination of 0.548 was obtained, which means that 54.8% was the overall contribution of all independent variables (environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting) on the dependent variable (profitability). Result shows adjusted coefficient of determination of 0.532. This implies that 53.2% of the variation in profitability (performance) of the selected listed firms was explained for by environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting. The Durbin Watson statistic of 2.039 was obtained which is greater than 1 and less than 3.00 meaning that there is no evidence of autocorrelation [54]. Result of Analysis of Variance (ANOVA) showing whether there is a regression relationship between the dependent variable (profitability) and the independent variables (environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting) is presented in Table 5.

From Table 6, the F-calculated of 9.735 was obtained with P-value of 0.000 as against the F-critical of 2.412 at 0.05 level of significance. Result shows that the F-calculated (9.735) is greater than F-critical (2.412) at p-value of 0.000, which means that there is a significant regression relationship between the dependent variable (profitability of the listed manufacturing firms) and the independent variables (environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting). This result also indicates that environmental/natural capital

reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting jointly accounted for significant variation in the profitability of the listed firms. Parameter estimates of the multiple regression model were as presented in Table 6.

In Table 7, the regression coefficient for the model parameters were computed showing the influence of the independent variables on the dependent variable. The result shows that as environmental/natural capital reporting, ECR ($\beta = -0.168$, Std Error = 0.598, t-calc. = -2.222, p = 0.027), social and relational capital reporting, SRCR ($\beta = -0.135$, Std Error = 0.096, t-calc. = -2.105, p = 0.036) have negative significant influence on profitability (ROA). This implies that as ECR and SRCR increase, ROA decreases and vice versa. This implies that as ECR and SRCR increases respectively, ROA decreases and vice versa. But human capital reporting (HCR) and intellectual capital reporting (ICR) have positive significant influence on profitability (ROA). The result also reveals standardized beta coefficient of -0.168 for ECR, which implies that if other variables are held constant, for every ₦1 increase in environmental/natural capital reporting, the profitability (ROA) of the listed manufacturing firms will decrease by ₦0.168; and that standardized beta coefficient of -0.135 for SRCR, which indicates that if other variables are held constant, for every ₦1 increase in social and relationships capital reporting, the profitability of the selected listed firms will decrease by ₦0.135. It was found that the standardized beta coefficient of 0.187 for HCR, which implies that if other variables are held constant, for every ₦1 increase in human capital reporting, the profitability of the listed manufacturing firms will increase by ₦0.187, and 0.323 standardized beta coefficient was obtained for HCR, which implies that if other variables are held constant, for every ₦1 increase in intellectual capital reporting, the profitability of the listed manufacturing firms will increase by ₦0.323.

Table 6. ANOVA result summary of ROA, ECR, SRCR, HCR and ICR of the listed manufacturing firms in Nigeria

Model	Sum of Squares	df	Mean Square	F-calc.	F-crit.	p-value
Regression	1.453	4	0.363	9.735	2.412	0.000
Residual	8.396	225	0.037			
Total	9.849	229				

Source: Researcher's Computation (2022) using SPSS Version 20.0.

Table 7. Coefficients of the regression of ROA with ECR, SRCR, HCR and ICR of the listed manufacturing firms in Nigeria

Model	Unstandardized Coefficients		Standardized Coefficients	t-calc.	P-value	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.053	0.029		1.840	0.067		
Environmental capital reporting (ECR)	-1.329	0.598	-0.168	-2.222	0.027*	0.666	1.502
Social and relational capital reporting (SRCR)	-0.202	0.096	-0.135	-2.105	0.036*	0.927	1.079
Human capital reporting (HCR)	0.818	0.325	0.187	2.518	0.013*	0.689	1.452
Intellectual capital reporting (ICR)	1.832	0.366	0.323	5.009	0.000*	0.911	1.097

*significant at 5% (P<0.05), t-critical = 1.97, Source: Author's computation (2022).

Also, the presence of multicollinearity was checked using Variance Inflation Factor (VIF) and tolerance level. From Table 7 results, tolerance of 0.666, 0.927, 0.689 and 0.911 for environmental/natural capital reporting, social and relationship capital reporting, human capital reporting and intellectual capital reporting and VIF values of 1.502, 1.079, 1.452 and 1.097 respectively. The tolerance levels were all greater than 0.1 while the VIFs were all less than 10 indicating that there is no evidence of multicollinearity.

The estimated model therefore is:

$$ROA_{it} = N0.053 - N0.168ECR - N0.135SRCR + N0.187HCR + N0.323ICR + \varepsilon_{it}$$

3. Discussion of the Findings

Hypothesis One was tested and the result from the regression analysis showed that, ECR has a significant negative influence on firms' profitability (ROA) as shown by the results in Table 7. This is confirmed as the p-value (0.027) for the influence of ECR on ROA is less than 0.05 level of significant. The t-calculated of -2.222 indicated that ECR has significant negative influence on firms' profitability. The result obtained is in support of the views of other researchers. Udo (2019) examined environmental accounting disclosure practices in annual reports of listed oil and gas companies in Nigeria as Makori and Jagongo (2013) examined an empirical analysis environmental accounting and firm profitability of listed firms in Bombay Stock Exchange, India. Similarly, Nor *et al.* [48] examined the effects of environmental disclosure on financial performance among top 100 companies' with market capitalisation in Malaysia for the year 2011. The results all indicated that environmental capital reporting (ECR) has a significant influence on firms' profitability (ROA). That means, the higher the firms' engagement in ECR, the lower the firms' profitability (ROA) and vice versa. This implies that firms that involved in ECR do make lesser profitability while firms that do not involved in ECR make higher profitability. Although ECR has significant negative influence on ROA, firms still report ECR for the following reasons; to fulfil their mission and vision statements as well as ethical policy; to avoid additional penalty from regulators and to avoid jeopardising their image. The result is contrary to the findings of Ezejiofor, John-Akamelu and Chiogbo [52] on the influence of environmental reporting on the firms' performance in Nigeria on two mega listed firms as well as Ahmad, Waseer, Hussain and Ammara [55] in Pakistan, who all found a significant positive influence of environmental reporting on firms' profitability.

Hypothesis Two was tested and the result from the regression analysis showed that SRCR has a significant negative influence on firms' profitability (ROA). This is confirmed as the p-value (0.036) for the influence of SRCR on ROA is less than 0.05 level of significance. The t-calculated of -2.105 indicated that SRCR has significant negative influence on firms' profitability. The result is in support of Mansaray, Yuanyuan and Brima [51] that examined impact of social and relationship (corporate social responsibility disclosures) on financial performance (ROA). Results all indicated that social and relationship

reporting impacted the firms' ROA negatively. This result is also a fulfilment of the shareholders'/stockholder wealth maximisation and not any other stakeholder. The extra costs from SRCR include costs/expenses donations and charitable gifts, community supports, contributions to the authorised bodies among others. These costs/expenses must be recognised in the financial statements of the firms, of which eventually decrease the firms' profitability. Although, SRCR has significantly negative influence on profitability, firms still involve in SRCR for the following potential benefits. These include; giving back to some stakeholders, better brand recognition, positive business reputation, increased sales and customer loyalty, operational costs savings, better financial performance in a long run, greater ability to attract talent and retain staff, organisational growth, and easier access to capital.

Hypothesis Three was tested and the result from the regression analysis showed that, HCR has a significant positive influence on firms' profitability (ROA). This is confirmed as the p-value (0.013) for the influence of HCR on ROA is less than 0.05 level of significant. The t-calculated of 2.518 indicated that HCR has significant positive influence on firms' profitability. The result obtained agrees with views of other researchers. Oko [35], Okpako, Atube and Olufawoye [49] as well as Perera and Thrikawala [50] found significant positive influence of HCR on firms' profitability (ROA). The authors opined that the result ought to be so as human capital (employees) is the vital asset of any firm that all other capital of the firm depends on it to function. It is believing that HCR will make people/customers to patronise the businesses the more bearing in mind the calibres of human resources at the disposal of the firms, thereby increasing the firms' profitability. Also, many customers will become loyal to the firms' products/services due to best hands of staff deployed and the firms' human capital friendliness.

Hypothesis Four was tested and the result from the regression analysis showed that ICR has a significant positive influence on firms' profitability (ROA) as shown by the results in Table 7. This is confirmed as the p-value (0.000) for the influence of ICR on ROA is less than 0.05 level of significant. The t-calculated of 5.009 indicated that ICR has significant positive influence on firms' ROA. This result agrees with the views of Ewereoke [17], Sidharta and Affandi [16] as well as Zehri, Abdelbaki and Bouabdellah [56]. The authors found significant positive influence of ICR on ROA. The authors added that intellectual capital contribute to creation of value added by the company, thereby increasing the firms' profitability.

The Hypothesis Five was tested and the result revealed that there is a significant positive aggregate influence of Sustainable Capital Reporting (environmental/natural capital reporting, social and relationships capital reporting, human capital reporting and intellectual capital reporting) on profitability (ROA). This is confirmed as the p-value (0.000) for the aggregate influence of SCR on ROA is less than 0.05 level of significance. This is confirmed as F-calculated of 9.735 is greater than F-critical of 2.41, meaning that, there is significant positive aggregate influence of Sustainable Capital Reporting (environmental/natural capital reporting, social and relationships capital reporting, human capital reporting

and intellectual capital reporting) on profitability (ROA). This agrees with view of Aggarwal [21], Churet and Eccles [22], Grigoris, Gerorge, Eleni and Xanthi [23] as well as Suttipun [7] found a significant positive influence of sustainable capital reporting across different financial measures. The authors disclosed that the promotion of corporate image and companies' performance are connected to human, intellectual capital, economics, social and environmental performance. Ching, Gerab and Toste [24] is of contrary opinion, that there no clear consensus as to the significant aggregate influence of sustainable capital reporting (environmental/natural capital reporting, social and relationships capital reporting, human capital reporting and intellectual capital reporting) on profitability as sustainability capital reporting scores are still low, although is improving over the years but cannot guaranteed profitability in a short run.

4. Conclusion and Recommendations

Based on the findings on the level of sustainable capital reporting, it has been revealed that many of the twenty-three (23) listed manufacturing companies operating in Nigeria were reporting little while some reported non on all the aspects of the sustainable capitals - social and relationships capital, scanty, qualitative or non-financials; ad-hoc information and mostly positive news regarding environmental/natural capital, human capital and intellectual capital in annual reports. The level of sustainable capital reporting as at December 31, 2021 stood at an aggregate average of 26.5%. It is concluded that the four constituents of sustainable capital reporting (environmental/natural capital, social and relationship capital reporting, human capital and intellectual capital reporting) significantly influence performance of the manufacturing firms in Nigeria. On the basis of the conclusions, the following recommendations are made:

- i. The regulatory authorities in respect of sustainability capital reporting (human capital, social and relationship capital, environmental/natural capital and intellectual capital) should not only make reporting alone mandatory but with stringent penalty on failure so as to enhance the quality and the level of SCR of the manufacturing firms in Nigeria. The firms should give priority to annual sustainable capital reporting by giving each constituent a section in the sustainability reports. Sustainability auditing should be carryout on a yearly basis to ensure compliance.
- ii. Uniform and yearly environmental capital impact assessment/audit should be carried out by the regulators to ensure that the manufacturing firms comply with the national sustainability guidelines and International Integrated Reporting Council (IIRC) on environmental accounting and reporting guidelines as well as preparing and submitting of their environmental financial reports alongside with their annual reports. Based on the results, it is requested of government to give some tax reliefs to those firms which work for the environmental protection and restoration as well as comply with

the environmental regulations to salvage their profitability.

- iii. The manufacturing sector should continue to give priority to social and relationships capital practices and reporting. Efforts should be made by private and governments as well as donors to reward, honour and rank-best-performance in relation to social and relationships. This would boost and salvage the firms' profitability negatively influence by involvement SRCR.
- iv. The manufacturing firms should invest more on human capital by implementing the 10% local contents policy of the Federal Republic of Nigeria and following the IIRC (2013) reporting Guidelines. The professionals with best skills and talents should be employed through good human resources management for productivity.
- v. The manufacturing firms should invest more up to 32% of their yearly profit on the current intellectual capital made of artificial intelligence in where it can be affordable for more profitability. The firms should trade-off between labour- and capital-intensive method of production bearing in mind the cost implication.
- vi. Nigerian manufacturing firms should get set for adoption and implementation of integrated reporting.

5. Business Implications of Findings

The major business implications of the findings are as follows:

- i. The manufacturing firms' management and practicing accountants are expected to have national guidelines and motivated from the findings to report their performance regarding environmental/natural capital, social and relationships capital, human capital and intellectual capital matters.
- ii. The researchers in sustainability reporting would make use of the issues raised in this study for more comprehensive studies in integrated reporting and sustainable capital reporting.
- iii. The regulatory bodies (NSE, FRCN, MoE, MoP&L among others) are expected to realise the level of sustainable capital reporting in the annual reports as well as how the reporting of environmental/natural capital, social and relationships capital, human capital and intellectual influence manufacturing firms' profitability in Nigeria.
- iv. Investors and creditors are expected to realise whether the companies are environmentally, socially, humanly and intellectually friendly as well as financially and ethically responsible in meeting the needs of all the stakeholders.
- v. The implication of this study is a formal call for the regulatory authorities to support and institute integrated reporting (IR) in Nigeria.

6. Limitations of the Study

Examined in this research work is sustainable capital reporting of the selected listed manufacturing firms in

Nigeria from 2012 - 2021 financial years in the annual reports using IIRC [53] disclosures index in relations to the sampled firms. The industry of study is manufacturing (industrial and natural resources) firms in Nigeria. This industry was selected based on the fact that the firms employ high use of all the categories of sustainable capital (natural/environmental capital, social and relationship capital, human capital and intellectual capital) of which sustainability accounting/reporting is expected to be high so as to give more meaning to their annual reports and for sustainable development. In addition, the samples of the study only contain the selected manufacturing firms listed and actively transacted on the Nigerian Capital Market up to December 31, 2021.

The performance of quoted manufacturing firms in Nigeria is limited to financial performance in particular, profitability (Returns on Assets, ROA). Data for the research were limited to the period between 2012 and 2021, because some selected firms' annual reports were not available outside this period. This study is only based on one sector with focus on the manufacturing sub-sector. Accordingly, the findings would not be generalised to other sectors of the Nigerian economy. Data were obtained through pooled-data technique for ten financial years' period for the twenty-three (23) selected listed sampled firms under study. This gives a total of two hundred thirty (230) observation data base. The sustainable capital scores were based on 28 items/issues of the 2013 International Integrated Reporting Council (IIRC) Disclosures Index.

7. Suggestions for Further Study

The main aim of this study was to examine sustainable capital reporting and performance of quoted manufacturing firms in Nigeria using a time frame of ten (10) years. The researcher suggests that further studies should be made on:

- i. Sustainability accounting and firms' profitability (using other sectors in Nigeria, with more financial years and more firms both listed and non-listed for more concrete conclusions) in Nigeria.
- ii. Integrated (financial and non-financial capital) reporting and listed firms' performance in Nigeria.

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Appendix II: IIRC (2013) Sustainable Capitals Disclosures Index

- A. NATURAL CAPITAL REPORTING**
- 1 Carbon emissions
 - 2 Energy consumption per energy source
 - 3 Quantity of waste
 - 4 Ecological accidents
 - 5 Recycled waste
 - 6 Environmental protection investment
 - 7 Animals/specimens purchased for trials
- B HUMAN CAPITAL REPORTING**
- 8 Number of employees/employment
 - 9 Diversity in board management
 - 10 Total investment/cost in staff training
 - 11 Average staff age
 - 12 Employee survey results
 - 13 Injuries per million working hour
 - 14 Minimum wage ratio
- C. SOCIAL AND RELATIONSHIP CAPITAL**
- 15 "Great place to work" ranking
 - 16 Litigations
 - 17 Involvement in social actions
 - 18 Involvement in cultural projects
 - 19 Customer satisfaction index
 - 20 Provision for social projects
 - 21 Social investment (money spent on philanthropy)
- D. INTELLECTUAL CAPITAL**
- 22 Number of patent applications /initiatives filed
 - 23 Money spend on R&D
 - 24 Number of tests with new technology
 - 25 Brand awareness and potential efforts
 - 26 Number of new products developed
 - 27 Sales generated by R&D developed
 - 28 Expenditure on software/change/process development



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