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A PRACTICAL APPROACH TO SUSTAINABLE COMPETITIVENESS. THE CASE OF THE OIL INDUSTRY IN NIGERIA

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Abstract. This paper explores various theoretical and conceptual frameworks on sustainable competitiveness in the energy industry’s oil sub-sector. Content analysis was employed where the author reviewed a variety of literature on the subject. Inconsistencies in the environmental and social programme implementations and ecologically unsustainable practices by operators are the significant issues with businesses in this study. This paper is essentially delimited to the hydrocarbon subsector and aims to provide a conceptual framework design for the oil industry that is sustainable and competitive in today’s market. To this end, the author recommends to the government, business decision managers, and community development stakeholders the Green initiatives as a tool for sustainability model development in the industry.

Keywords: sustainability, sustainable competitiveness, sustainable development, green business, business model, environment, oil industry, environmental degradation.

Introduction

Climate change and global warming consequences such as drought, low agricultural productivity, biodiversity loss, et Cetra have rapidly become topical issues and prominently taken the fore in global leaders’ recent discussion on developmental issues. The attendant consequences of these environmental phenomena, which are occasioned by unsustainable human practices, have far-reaching impacts on business performance and society in general! This event is so because of the interconnectivity between community and business; – one cannot exist without the other. As Lapinskiene and Mofor Ngu (2019) investigated, these interactions were utilised to invent a business model. Morioka et al. (2016) opine that Companies need to integrate *sustainability* into businesses beyond conventional social and environmental schemes. Their study noted that the existing sustainability configuration amongst actors in the system fails to guarantee an ideally sustainable business and society. This gap is the fulcrum upon which the study conceptualises a model that provides a sustainable business solution in the energy industry’s oil and gas sub-sector.

This research aims to review the term sustainable competitiveness in the broader context of sustainability and find companies’ approaches to sustainable solutions. In arriving at this goal, research focused on identifying the issues (environmental, economic, and social) subsisting within the oil firm’s drive for sustainability, opportunities for green technologies and their applications, areas for strategy development and implementation, and proffered suggestions for further research.

1. Theoretical framework

There exists a preponderance of literature on studies on the complexities that the modern-day business environment entails. One amongst so many views by different scholars is the assertion by Herciu and Ogrean (2018): “the complexity of the business environment brings together *Sustainability* (Svensson & Wagner, 2015) and *competitiveness*. Near related concepts also include *Social Sustainability* (Schwab & World Economic Forum, 2014), *Corporate Social*

Responsibility [CSR] (Söderbaum, 2009), *Environmental Sustainability* (Schwab & World Economic Forum, 2014), *sustainable development, competitive sustainability*. The integral elements linking these several phenomena revolves around the economic, social, and environmental attributes.

The following section is committed to examining scholars' various views and works on the inter-related concepts leading to the subject matter's conceptualisation.

1.1. Business sustainable competitiveness: description, models, assessment criteria

There is a growing appreciation of the challenges posed by our current economic activity in terms of the natural environment. Sustainability has been dubbed the business issue of the twenty-first century (Lakshmi & Kennedy, 2018). This perspective substantiated the claim that sustainability is a twenty-first-century issue (Ajitabh & Momaya, 2003; Lakshmi & Kennedy, 2018; Svensson & Wagner, 2015). According to scholars such as Wicks et al. (2012), people are increasingly aware of the importance of businesses being more conscious of their environmental impact and ecologically sustainable in their core activities.

Sustainability has been defined as a line of thinking about the future that balances environmental, sociological, and economic factors to achieve a higher quality of life (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2019). The plethora of literature on sustainability ideas and associated topics such as managerial frameworks, according to Svensson and Wagner (2015), is lacking in structure, measurement, and details. He also advocated a comprehensive evaluation that included a synthesis of economic, social, and environmental factors. Lapinskiene and Mofor Ngu (2019) explored the interaction between the underlying components inside this complicated notion (Herciu & Ogrean, 2018), resulting in the synthesis and subsequent construction of a sustainable business model.

Although used interchangeably, competition and competitiveness (slight distinction) is a unique phenomenon that has always been an important focus for humanity since time immemorial. In similar studies, several scholars have even attempted to articulate this notion. According to Balkytė and Tvaronavičienė (2010), it results from the ability to sell goods and services. Commercial firms and policymakers must ensure that their organisations or public institutions function at their best. "Every country must define its competitiveness level and identify ways to win its part of the global market," Lapinskienė and Tvaronavičienė (2009) stated (Balkytė & Tvaronavičienė, 2010). Solability (n.d.) noted that sustainable competitiveness is not about results but concerns a framework that ensures that firms and individuals succeed now and for so many years to follow. According to the company, the capacity to establish a framework that allows a corporation, a sector, an individual, or a nation to maintain or increase the ability to provide income while considering the existing and future wider environment and society.

Competitiveness has been described as a complex, diverse, and broad notion in various studies (Balkytė & Tvaronavičienė, 2010). It was highlighted that there are signs of several competitiveness criteria that change with time and context (Ajitabh & Momaya, 2003); hence, theories and conceptual frameworks need to flexibly integrate the changes with crucial management processes as their utility is practically sustained. According to Momaya (1998), as reported in Ajitabh and Momaya (2003), studies on industry-level competitiveness recognised the role of "processes" in increasing competitiveness. According to Arturo Bris, Professor of Finance and Director of the World Competitiveness Centre at the IMD (International Institute for Management and Development), "Competitiveness refers to an objective that determines how countries (Balkytė & Tvaronavičienė, 2010), regions, and companies manage their competencies to achieve long-term growth (World Economic Forum [WEF], 2015), generate jobs, and increase welfare, according to Arturo Bris – Professor of Finance and Director IMD (International Institute for Management and Development) World Competitiveness Centre. As a result, it is considered a step forward because there are no winners or losers in conclusion (Bris, n.d.).

This concept can be viewed on three distinct but related levels: national, industry, and firm (Ajitabh & Momaya, 2003; Balkytė & Tvaronavičienė, 2010). By identifying the optimal mix of technology and the earth's carrying capacity, we can escape the constraints that resources impose on the planet, either because they are finite or replenished at a specified physical pace (Global Competitiveness Report 2014–2015 – Reports – World Economic Forum, n.d.). According to Ajitabah and Momaya (2003), the competitiveness processes of firms are of particular interest and continue to be a critical aspect of our study. Mojarad et al. (2018), Agnihotri and Monjee (2002), Despotovic et al. (2016), conceived that "competitiveness, at the firm level, refers to the ability of a firm to utilise the resource efficiency better to meet an effective objective compared to other players" (Herciu & Ogrean, 2018). It is common to see scholarly

literature, especially environmental and business studies, adopt "competitiveness" instead. Martin et al. align with the definition of competitiveness by WEF as "those group of organisations, guidelines, and factors that determine the level of productivity of a country (WEF, 2015, p. 4). They noted that this productivity level influences the economy from the ROI (Return on Investment), which are to be considered a fundamental factor of economic growth rate. This outcome explains why the more competitive an economy is, the more likely it will grow faster over time. Meanwhile, Balkytė and Tvaronavičienė (2010), curling from 'Europe 2020. A Tactic for Smart, Sustainable and Inclusive Growth 2010 report; revealed that the European Commission (EC) had put forward a new European Union (EU) strategy for a smart, inclusive and sustainable growth, dubbed – "Europe 2020"; where three (3) growth drivers were recognised and proposed for deployment through systematic actions (Wysokińska, 2011) at EU and national levels, namely: "Smart growth (fostering knowledge, innovation, education, and digital currency), sustainable growth (making the production more efficient while boosting the competitiveness) and inclusive growth (raising participation in the labor market, the acquisition of skills and the fight against poverty).

The following competitiveness classification is based on research on the subject by Balkytė and Tvaronavičienė (2010):

- Firms' competitiveness (company, cooperatives, and factories); this can be further categorised according to size, operations, and processes);
- Sector level competitiveness (e.g., oil and gas);
- Industry-level competitiveness (energy industry comprising of several sectors, e.g., biofuels, fossil fuels, sunlight, and wind);
- National Competitiveness;
- Bloc Competitiveness;
- International Competitiveness (global, external).

From the above classification by Balkytė and Tvaronavičienė, Author further proposes an alternative variety that captures modern-day dimensions involving competitive dynamics:

1. Size and nature of firms: – number of employees, physical structure, equipment, business space;
2. Capital assets/revenue base – equity, stocks, and shares;
3. Technology: – sophistication of technology use, mode of tech application, ICT;
4. International policy; – global performance reporting, diversification, and franchising;
5. Processes: – manufacturing/production techniques, cost/management accounting, green initiatives;
6. Goals and objectives of the firm;
7. Social plans: – Corporate Social Responsibility (CSR), workshops, and social events;
8. Environmental policy and initiatives; – environmental waste management (recycling, reusing, reduction, removal)

In affixing the conversation of business into the context of the economy, society, and environment, there is the need to investigate the complexities in the relationship between competitiveness and Sustainability (Lapinskienė & Paleckis, 2009) while assessing all its social and environmental dimensions. The importance of maintaining the long-term viability of the ecosystem in resource use, according to Wade-Benzoni, helps ensure economic opportunities are available for future generations (Balkytė & Tvaronavičienė, 2010). To this end, organisations such as the World Economic Forum (WEF) continually carry out detailed studies on these crucial human and economic development aspects. Also closely related to the sustainable development module is the concept of environmental sustainability. Doyle and Perez-Alaniz (2017a), while supporting the report of United Nations [U.N] 2002, opines that, breakdown of economic development from extensive natural resource use to prevent exceeding the carrying capacity of the natural environment. Due to the gap between literature that properly interweaves, the three pillars or sub-concepts of sustainable development are economic, social, and environmental (Doyle & Perez-Alaniz, 2017b; Mensah, 2019; Purvis et al., 2019).

Sustainable competitiveness was defined as the collection of institutions, policies, and factors that contribute to a nation's long-term productivity while also ensuring social and environmental sustainability (Schwab & World Economic Forum, 2014)". On another hand, Schwab and the World Economic Forum (2014) defined ecological sustainability as "the institutions, policies, and factors that ensure the efficient management of resources to ensure prosperity for current and future generations." While Social Sustainability, according to Schwab and World Economic Forum

(2014), is a collective term that refers to the collection of institutions, policies, and other determinants that contribute to the long-term productivity of a country while also ensuring social and environmental sustainability.

Solability (n.d.) defines sustainable competitiveness as "the ability of a country to meet the needs and basic requirements of current generations while sustaining or growing the natural and individual wealth into the future without depleting its natural, intellectual and social capital." The company also notes that the full integration of sustainability data, competitive index analyses, and comparison of trends over time permits future development potential as an alternative to GDP and analyses the nation's future development prospects.

1.2. Description of sustainable business competitiveness

The divergent views and theorems by several authors on *sustainable business competitiveness* are shown below:

Table 1. List of various insights/contributions to "Sustainable business competitiveness" (source: Author)

Description	Author/year
Competitiveness with regards to business sustainability is relative but holistic, which relates to the ability to act and react by the financial strength, shareholder and customer's value within a competitive environment, the likelihood of people, and technology in implementing the necessary strategic changes	(Feurer & Chaharbaghi, 1994, as cited in Ajitabh & Momaya, 2003)
The critical importance of "adequate importance and quantitative assessment" is integral in defining "*competitiveness*" and "*development sustainability*" to be actionable	(Rutkauskas, 2008, as cited in Balkytė and Tvaronavičienė, 2010); (Wysokińska, 2012)
It Is an underlying logic phenomenon that demonstrates the interconnectivity between the environment, resource productivity, innovation, and competitiveness	(Wade-Benzoni, 1999 referenced by Lapinskienė & Peleckis, 2009, as cited in Balkytė & Tvaronavičienė, 2010)
It has also been described as a factor of the highest importance to tackle sustainability at the country's competitiveness' which is a function in risk management success	(Svensson & Wagner, 2015)
Svensson views business sustainability as those corporations' efforts or institutions managing their personal and portfolio's consequences on the "*Earth's life* and ecosystem." Here, particular emphases to actions that threaten the earth by own organisation activities and that of their affiliates are advocated for	(Svensson & Wagner, 2015)
Business sustainability should be considered a means of managing environmental and social issues and ensuring economic success. Figge and Hahn (2012), added that CSR provides 'value creation, help exploit opportunities, and promotes innovation'	(Figge & Hahn, 2012, as cited in (Schwab & World Economic Forum, 2014; Svensson & Wagner, 2015)
Organisational support, a function of the social aspect, has evolved to constitute an essential business sustainability component. Goran and Svensson posit that, without leadership support in a company, talks on business sustainability is "superficial, insignificant, and meaningless." It also takes time to mature	(World Economic Forum, n.d.; Svensson & Wagner, 2015)
Profitability (economic function) is integral here, but 'not always the dominant motivation'	
Competitiveness: it was noted here that it does not increase cost but benefits *financials*	
Carbon labelling, carbon footprint, efficiency improvement programs, *climate change, and global warming* are all functions of environmental attribute/constituents of business sustainability that advances sustainable business competitiveness	
Hydrocarbon Processing (HP) defines sustainable competitiveness in the context of sustainability within the Hydrocarbon Processing Industry (HPI), defines it precisely as those processes of dealing with existing resources, finances, and technologies to sustain and optimise operations for more excellent safety, reliability, efficiency and environmental and social awareness"	(Gulf-Energy Information, 2019)
Colabello noted in Drew (2020) that an organisation's purpose(s) is the most critical sustainability strategy and answers the following questions; why firms exist, the problems solved, and what improvement it will make in the world, society, and environment?	(Drew, 2020)
A sustainable business strategy, according to Freiberger, is that which not just cash flow, but the inward and outward flow is understood, and the tangible and intangible resources are required to create the product or service(s) (Drew, 2020)	

From Table 1, there are various perceptions to which sustainable business competitiveness can be viewed. Different scholars contributed immensely in associating business competitiveness as a precursor to environmental sustainability and vice-versa.

Consequently, it is safe to conclude that environmental competitiveness is a paramount phenomenon due to sufficient consideration and necessary implementation for all business concerns to thrive.

1.3. Business sustainable competitiveness measurement

It is critical to emphasise that when discussing sustainability, – the term "competitiveness" refers to "national or regional productivity" as opposed to "market-share or cost competitiveness," which is concerned with nations' ability to compete on an international level or with cost-efficiency (Delgado et al., as cited in Doyle & Perez-Alaniz, 2017).

According to (Doyle & Perez-Alaniz, 2017), this position suggests a narrow approach to price and labour unions. Porter pioneered it in 1990 and maps out the macroeconomic environment. Huggins (2013) as reported by Doyle and Perez-Alaniz (2017), accordingly came up with the "three-factor model" for assessing and measuring local and regional competitiveness, culminating in developing the "UK Index of Competitiveness" (Balkytė & Tvaronavičienė, 2010). This study of the city's competitiveness, it pointed, suggests a vast and diverse factor affecting the city's performances in the context of the global economy.

Under the framework established by the Organization for Economic and Cooperation Development (OECD), sustainable competitiveness measurement, market share/cost approach, or the productivity approach (Doyle & Perez-Alaniz, 2017).

1.3.1. Market share/Cost approach

According to (Doyle & Perez-Alaniz, 2017), this approach suggests a narrow path to price and labour unions. A shortfall with this measurement model is that concept tends to overlap, as Ketel in 2016 added, close ties in its inherent state resemble productivity-oriented approaches. Another shortfall is that it fails to identify the urban sources of competition.

1.3.2. Productivity approach

This approach focuses on essential components. Porter pioneered it in 1990 and maps out the macroeconomic environment. Huggins (2003), accordingly came up with the "*three-factor model*" for assessing and measuring local and regional competitiveness, culminating in developing the "*UK Index of Competitiveness*" (Balkytė & Tvaronavičienė, 2010). This study of a city's competitiveness, it pointed, suggests a vast and diverse factor affecting a city's performance in the global economy.

1.4. Business model

A business may be described as those transactions between multiple parties – usually involving exchanging goods and services. Ramon told it to refer to "real collection of people, decisions, resources, buildings, products, values, actions and any other ingredients necessary to conduct and sustain this particular human activity" (Casadesus-Masanell & Heilbron, 2015). We can extrapolate from the preceding that a business embodies some functions and components that necessitate it happening. Likewise, firms device and implement instruments to realise a group of business goals or objectives. These instruments are the framework with which the firm operates – a guide to its' goal and identified purposes. They are known as business models.

However, there have been varying perspectives, frequently contrasting stances, on the accepted definition of what constitutes a business model by various theorists, scholars, and experts in the business to even those in other disciplines. Some chose to approach the subject from the viewpoint of "strategy," others not much. For instance, Margaretta asserted that the business model might be regarded as "stories that explain how enterprises work" (Magreta, 2002, p. 4., as cited in Zilahy, 2016). Meanwhile, a much precise and substantive description than a function one is that the business model of "a firm details the decisions that a firm imposes on the agents who work for it" (Casadesus-Masanell & Heilbron, 2015). Several scholars, such as Baden-Fuller, Zott and Amit, as cited by (Casadesus-Masanell & Heilbron, 2015), have explained the business model in the context of outcomes that it sets out to achieve, particularly the value ratio.

The primary purpose of business has been described in various literature to include profit maximisation and value creation. To achieve these business goals, business managers must ensure that a detailed plan needs to be developed mapping out how these goals will be achieved. Business Model (BM) has been described to be the organisation of customer identification, monetisation instruments, customer service relationships, and value benefits which integrates these links at the business level (Baden-Fuller & Mangematin, 2013; Zott et al., 2011, as cited in De Giacomo & Bleischwitz, 2020).

The application of the BM phenomenon has widely been utilised in various contexts that cut across multidisciplinary fields. It aims to demonstrate how businesses create, organise, and allocate economic resources (Teece, 2010, as cited in De Giacomo & Bleischwitz, 2020). Zilahy (2016) opined that they have far-reaching benefits in his study of BM's research.

What makes sustainable business model work are as follows:

– Commercially profitable: firms and businesses mark an increase in business earnings.
– It extends very much for years to come.
– It uses the resources that it utilises for the long term.

Green firms are likely to be more innovative and implement advanced environmental practices, which stems from a determination to find solutions to decrease pollution and improve efficiency (Florida, 1995; Florida et al., 1999, as cited in Florida & Davison, 2001).

Table 2. Drivers of sustainable competitiveness – Productivity approach (source: Doyle & Perez-Alaniz, 2017)

Traditional drivers	Modern drivers	Complex drivers
Rules and regulation	Company sophistication and firm heterogeneity	Individuals: Culture and trust
Financial markets	Economic geography: Urbanisation and clusters	Institutions: Quality and capacity
Physical infrastructure	Economic Composition: "Economic Complexity"	Social capital and linkages
Macroeconomics policy	(Creative) skills and locational attractiveness	
Institutions and geography	Different levels of geography (within a nation)	
Size of the economy		

The Table 2 describes the different drivers or factors that are considered in the measurement and evaluation of sustainable competitiveness.

Traditional drivers explain those attributes and component that commonly influence a society; these includes public policies and legislations, the financial market activities, availability and nature of development and infrastructure, economic system in operation, presence of institutions and activities within their geography and general size and strength of the economy. More modern phenomena discuss company's sophistication, spatial and demographic variables, business firm productive capacity and production factors, etc. Lastly, the complex drivers relate to those carriable concerns that are characteristically inherent in individuals, societal or institutional dynamics.

2. Sustainable competitiveness in the oil industry

The discussion of sustainable competitiveness in the energy sector is somewhat of an oxymoron, including environmentalism and sustainability, when it involves exploits in oil and gas. However, it will come as a surprise that there is increasing awareness of the need for environmental protection, sustainable practices, and social policies by operators in the industry.

2.1. Green technology investment strategy

This term is also known as *clean technology* investing; as Relander (2019) explains, this usually involves selecting investments in companies that employ environmentally friendly and sustainable practices in their product development and service deliveries. The impact of environmental policies on productivity cannot be overstated. Correlations between ecological sustainability and a company's image or reputation have been drawn up (Global Competitiveness Report 2014-2015 – Reports – World Economic Forum, n.d.). He noted that some clean technologies provide

advancements that increase resources' productivity and efficiency while others decrease environmental impact. There have also been considerable investments and several participating countries in utilising these green technologies, as observed by Relander (2019). Bloomberg in 2018 reported that over $40 billion of investment meant that Asia-Pacific had been a leader in that regard.

Some of the goals of these green technology highlighted by Relander (2019) are as follows:

- *Source Reduction:* this concerns the reduction in wastes and pollution by changing the patterns in production and consumption.
- *Sustainability*: As earlier highlighted, the author posits that those efforts aimed at ensuring society's needs are achieved in approaches that guarantee future uses without compromising future generations' utilisation without damage to the environment or depleting the natural resources.
- Innovation: Attention is to make alternatives to approaches that are detrimental to the environment.
- *Viability*: Economic benefits and promises are paramount when considering green goals. The emphasis here is on environmentally beneficial products and technologies, which expedites how such products and technologies are applied.
- Diversification to other production processes and methods may also be included as one of the firms' goals to compete favourably in the global business environment.

On the other hand, Relander (2019) also added that the areas of opportunities for green technologies implementation are:

- *Energy*: This is the most demanding and pressing issue facing the green technology sector; hence, the need for the alternative development of environmentally-friendly fuel other than fossil or carbon sources.
- *Green Nanotechnology* involves configuring and manipulating several materials at the nanometre levels, transforming product manufacture.
- *Green Chemistry*: The activities here involve chemical processes in developing and applying results designed to reduce or eliminate the generation and utilisation of hazardous substances.

The relationship between those three concepts is firmly connected. Several examples exist, but are not limited to the following (*Global Competitiveness Report 2014-2015 – Reports – World Economic Forum*, n.d.):

- Natural Resource Efficiency: managing raw materials and utilising resources within their regenerative capacity to lower or minimise pollution.
- Climate change is also a topical issue here. Carbon reduction is the central theme here. It improves agriculture, etc.
- Improved health; quality environment reduces the incidence of environmentally-induced health issues.
- Biodiversity for Innovation; Sadly, environmental degradation can affect the way ecosystems work and reduce biodiversity.

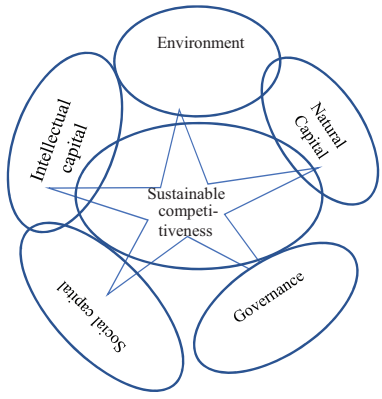

Figure 1. Concept of *Sustainable Competitiveness* by MHB (remodelled by author)

In Figure 1 sustainable competitiveness remains the pivot of the environment, capital, and governance. The various interactions of these factors and their underlying attributes result in the sustainable competitiveness of companies. Companies are encouraged, thus, to take actions that ensure resources like intellectual properties and social capital are well strategised and planned to ensure sustainability. Governance here is concerned with those public policies and regulatory framework that guides and affects business activities. Hence, the need to prioritise aspects of sustainability to be compliant according to set standards.

3. Conceptual framework

The Table 3 demonstrates a conceptual framework involving the interaction between the economic, social and environmental factors and their outcomes. Economic attributes are classified according to transactional and operational activities. The social dimensions encompass a variety of stakeholders or actors accountable for business outcomes, whereas the environmental dimensions address the impact of these activities on the environment.

Table 3. Chart of ERM strategic sustainability advice and change management model (Environmental Resources Management, n.d., as modified by author)

Economic ⟷		**Social** ⟷	**Environmental**
Transaction	*Performance & Operation Risk Management*		
– Deal negotiation support – Project finance (equator principle) – Assessment of bankruptcy – Evaluation of potential liabilities – Analysis for bankruptcy, reserves, provision, asset retirement, obligation, and financial reporting – Auditing, compliance, and verification	– Strategic & economic assessment – Best Available Technology (BAT) – Best practicable environmental option (BPEO) studies – Quantification and management of risk – Management system, – Site selection – Risk management – Safety culture transformation	– Social, stakeholder, social impact assessment, and sustainability assessment – Post-merger integration support – Reliability/Availability analysis – Sustainable remediation	– SHE due diligence, SHE culture, SHE management system – Carbon and energy owing diligence – Environmental planning, mitigation, management [EM] – Oil spillage preparedness – Biodiversity and ecosystem services – Air quality and noise – Wastewater and water management – Environmental Management Info System (EMIS)

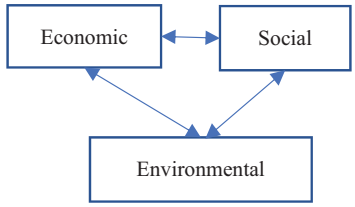

Figure 2. Basic Sustainable Development Concept from UNEP [United Nations Environment Programme] showing the association & inter-connectedness of the various factors (United Nations Educational…, 2019)

The Figure 2 represents a popular depiction of interactions amongst the three (3) main concepts/attributes in the sustainable development model by the United Nation Environmental Programme. They are inter-connected and have great influence on outcome of the other components in the system.

4. Sustainable performance in the oil and gas in Nigeria

The Niger Delta Region (NDR) – which accounts for over 95% of oil and gas (O&G) exploration and production (EP) activities – is a vast wetland that encompasses nine of Nigeria's 36 states, or 7.5 per cent of the country, and is home to over 31 million people (Olufemi, 2010, as cited in Anosike, 2017). The area has a 560km coastline which borders one of the most sensitive wetland regions in the world (Olufemi, 2010, as cited in Anosike, 2017). Annual oil spills, which average over 150 per year, have decimated the area's land and water resources (Murphy, 2013, as cited in Anosike, 2017). Although oil company revenues significantly aided in the development of social infrastructure, one of the major impediments to economic advancement in the NDR was environmental degradation (Okun Idemudia, 2011). The sustainability efforts of the oil companies' leadership had failed to reduce or eliminate poverty and hunger from the environmentally damaged communities (Ojo, 2012, as cited in Anosike, 2017).

It is very much known that the significant problem of the Niger Delta (oil-producing region) in Nigeria is predominantly pollution, social inequality, and environmental degradation. However, companies strive to improve better.

Efforts by oil companies:

- Wastewater clean-up.
- Greenhouse gas reduction.
- Building more efficient technologies.
- Reduction in gas flaring.

4.1. Measurement of environmental performance

Due to the complexity in the measurement of environmental *sustainability* with social sustainability and other related concepts, two popular approaches are adopted for this purpose (*Global Competitiveness Report 2014-2015 – Reports – World Economic Forum*, n.d.; Schwab & World Economic Forum, 2014; World Economic Forum, 2015), namely; Environmental Performance Index (EPI) developed by Yale and Columbia University; and Ecological Footprint by Global Footprint Network; Global Adaptation Index.

Conclusions

According to Freiberger, a sustainable business strategy requires an understanding of both inward and outward flow and the physical and intangible resources required to create the product or service (s) (Drew, 2020). Lia Colabello (Managing Principal, Plastic Pollution Solutions) also made a point to distinguish between sustainable business and a business model that prioritises *sustainability*. Sustainable strategies employed were the critical difference. Colabello noted in Drew (2020) that an organization's purpose(s) is the most crucial sustainability strategy and answers the following questions; why firms exist, the problems solved, and what improvement it will make in the world, society, and environment?

As a result, the study recommends that oil operators in Nigeria alter their strategies in their processes, policies, and social programmes to achieve sustainability objectives. Green technologies (nanotechnologies, biochemical engineering of hydrocarbon substances, robotics, automated drilling and operation analytics systems, etc.), environmental auditing (EIA), and waste management – recycling, reuse, reduction, and removal of pollutants – are advocated to accomplish this. Researchers in the future may examine the extent to which these modern technologies are being used and applied in new sustainability areas within the industry and their impact on the economic climate and specific geographic locations such as Nigeria's deep-water creeks and swamps.

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PRAKTINIS POŽIŪRIS Į DARNŲ KONKURENCINGUMĄ: NAFTOS PRAMONĖS ATVEJIS NIGERIJOJE

Chukwuka ONUCHUKWU, Giedrė LAPINSKIENĖ

Santrauka. Šiame darbe pateikiamos įvairios teorinės ir konceptualios tvaraus konkurencingumo energetikos pramonės naftos subsektoriuje sistemos. Sisteminė analizė buvo naudojama, analizuojant įvairią literatūrą šia tema. Aplinkosaugos ir socialinių programų įgyvendinimo nenuoseklumas ir operatorių vykdoma nedarni praktika yra išskiriamos kaip svarbios verslo problemos. Šis straipsnis yra skirtas angliavandenilių subsektoriui ir juo siekiama pateikti koncepcinį naftos pramonės pagrindą. Autoriai rekomenduoja Žalią inciatyvą kaip tvarumo modelio kūrimo įrankį pramonėje vyriausybėms, verslų vadovams ir suinteresuotosioms šalims.

Reikšminiai žodžiai: darnumas, darnus konkurencingumas, darnus vystymasis, ekologiškas verslas, verslo modelis, aplinka, naftos pramonė, aplinkos degradavimas.