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ASSESSMENT OF THE SUSTAINABILITY PRACTICES OF NIGERIAN UNIVERSITIES

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ABSTRACT: *Historically, Nigerian universities have always maintained an international outlook which has enabled them to embrace, though often as late adopters, global trends such as education for sustainable development. Based on content analysis of materials sourced from universities' websites, this study assessed the sustainability practices of thirty universities selected from the three strategic groups of federal, state and private. Both ANOVA and independent t-test were used in testing the hypotheses. The findings showed that the embrace of sustainability has been slow and piecemeal rather than whole-institution focused. Equally, there was a significant difference among the three groups in their uptake of education for sustainable development. In addition, membership of education for sustainable development networks has significant effect on a university's propensity to integrate sustainability. One of the policy implications of the findings is that there is need for government intervention in terms of incentives and support through the National Universities Commission and TETFUND as a means of strengthening the resolve of universities to adopt a whole institution approach to sustainability integration.*

1.0 INTRODUCTION

The integration of sustainability in the education enterprise under such banners as education for sustainable development (ESD), higher education for sustainable development (HESD) and higher education for sustainable development in Africa (HESDA) has gained global momentum. This is traceable to a number of factors. Firstly, educational institutions, particularly, Higher Education Institutions (HEIs) play a key role in fostering social transformations that are critical for facilitating the transition to a sustainable future (Gamage et al, 2022). Blasco (2022), Elton (2003), Lozano(2011), Cortese (2003), and Tilbury et al (2005) argue that given the history of higher education, universities and colleges have been at the forefront of creating as well as deconstructing paradigms and have led social changes not only through scientific breakthroughs but also through the education of intellectual leaders and future makers. In fact, Sáez de Cámara et al (2021) succinctly note that Universities, whose mission is to create and disseminate knowledge, have a vital

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role to play in addressing the planet's greatest challenges and achieving the SDGs of the 2030 UN Agenda for sustainable development. Secondly, HEIs are organizations and their activities contribute to environmental degradation and distortions in social milieu. As a matter of fact, Tilbury (2011) notes that the paradigm deeply embedded in our higher education knowledge systems and relationships are contributing to unsustainable development. No wonder Vogt and Weber (2020) argue that it is the responsibility of free and autonomous science to act as agents of change towards sustainability, given that universities are part of the problem and part of the solution.

In other words, the university is a key element of the sustainability complex equation. Expectedly, HEIs have taken up the sustainability challenge as shown by the growing numbers of declarations/charters, partnerships and performance awards on ESD. At the same time efforts at tracking the progress made by HEIs in their sustainability trajectory have yielded sustainability assessment tools (SAT) developed by HEIs, public and private funding agencies, accreditation agencies, international organizations and charitable organizations (Findler et al, 2018). But it is widely acknowledged that because sustainability challenges the current paradigms, structure, as well as predominant practices across social sectors including higher education (Calder & Clugston, 2002) it often engenders a situation where institutions that have committed to sustainability are struggling to meaningfully contribute to it (Lozano et al, 2010; Su & Chang, 2010). This is so because leading sustainability change, Tilbury (2011) has noted, is complex, confusing, time consuming and difficult to implement and this is due to the series of internal and external barriers (Brandli et al, 2015) that lie on the sustainability change path.

Interestingly, a number of measures and mechanisms geared towards assisting HEIs to overcome the barriers have emerged. These measures include certification, environmental management systems (Avila et al, 2017), policies, plans and programmes (Pereira et al, 2014), quality assessment (Ryan & Tilbury, 2013) and support from government. However, even with these developments, many of which have not manifested in strong terms in developing countries, the actualization of ESD remains very challenging for HEIs in developing countries. Historically, Nigerian HEIs, particularly, universities have maintained a global outlook which enables them to embrace, though often as late adopters (Rogers, 1995), global trends in education such as ESD. But as has been widely acknowledged, embedding sustainability into education for sustainable development is fraught with great challenges that hinder the needed change and Nigerian universities, like their African counterparts, face a litany of challenges that seem to overshadow the global pressures for the embrace of ESD. These problems include the seemingly intractable issue of funding, interminable tension between university staff unions and the government which often lead to strikes in public universities, understaffing in the face of admission explosion, limited and dilapidated infrastructure (Salako, 2014), persistence on the traditional model of university governance and the absence of a national innovation system with the attendant disconnect with industry. In the face of these problems the concern for ESD often lacks strong convictions. For instance, universities are so desirous of getting enough buildings for classrooms, hostels, offices and laboratories that the concern for green buildings and landscaping is considered a luxury. In the face

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of frequent disruptions in academic calendar, the call for curriculum innovation is often overshadowed by the pressure to cover the existing curriculum within the limited available time. Against the backdrop of poor power supply from the national grid, the consciousness of climate change is often dulled by the desperation to keep the system functioning with worn out generators and other fossil fuel sources of energy. Similarly, the appeal for campus greening does not command the necessary zeal because due to inadequate campus accommodation for both staff and students and the attendant trend towards private off-campus accommodation, the campuses of many Nigerian public universities are losing the population that stimulate the communal dynamics that qualify campuses as living labs (Evans et al, 2015). In fact, Nigerian universities are regularly faced with a situation
where in the absence of the desirable, the available becomes desirable.

Against this background, the search for an in-depth knowledge of the state of ESD in Nigerian universities and how it can be enhanced becomes imperative. This is even more so given that there is limited research on the sustainability practices of Nigerian universities.

2.0 LITERATURE REVIEW: The educational sector perspective of sustainability is prone to definitional controversy. UNEP (2013) defines ESD as actually just a higher stage of development within the very powerful and inclusive realm of environmental education. While Chiong et al (2016) describe it as concerned with education that confers knowledge about SD, the Sustainable Development Education Network (n.d) defines ESD as the process of acquiring the knowledge, skills and attitudes needed to build local and global societies that are just, equitable and living within the environmental limits of our planet, both now and in the future. These definitions are anchored on the recognition that there is sustainable education and education for sustainability. Education for sustainability focuses on the role of educational institutions in the achievement or actualization of SD and that is the direction of this study.

Essentially, the engagement of higher education in sustainability is justified in that HEIs have not only been in the forefront of creating, as well as deconstructing paradigms (Tilbury, 2011) but are also involved in improving society through continuous transformation and development in knowledge conveyance, education, research and expertise provision (Evangelinos & Jones, 2009) or in more specific terms are involved in shaping the mindsets and values of future leaders in spheres of life (Findler et al, 2018 and Lozano 2006a). In addition, Baker-Shelley et al (2017) note that public universities have a moral obligation to embrace sustainability because they are recipients of public funds, have non-profit status and are expected to serve the interest of society. Equally of note is the fact that as organizations, universities and colleges are currently seen as contributing to the sustainability crisis and reproducing the paradigms which underpin our exploitative relationships with people and environment (Sanusi & Khelgat-Doost, 2008). Hence the need for HEIs to lead the movement for a sustainable society.

Nevertheless, the consolidation of ESD is traceable to a number of declarations/charters and partnerships. The declarations/charters and partnerships are designed to provide guidelines or frameworks for HEIs to better embed sustainability into their system (Lozano, 2011). Specifically, the declarations/charters and partnerships emphasize that universities have a moral

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obligation to work towards sustainable societies, focusing on environmental degradation, threats to society and sustainable production and consumption for this and future generations (Lozano et al 2011).

2.1 WHAT DOES ESD ENTAIL? UNESCO (2012) identifies the essential characteristics of education for sustainable development to include principles and values that underline sustainability and that education must be locally relevant, fulfilling the local needs and global concern at large. Mader *et al* (2013, p.275) point out that "the focus of sustainability can be on any one or a mix of the four pillars of social, cultural, economic or environmental sustainability in any one or mix of the key activities of a university – education, research, engagement, operations and the design of facilities". The integration of sustainability in the core functions of a university will lead to the emergence of a sustainable university which Velazquez et al (2006) describe as one that holistically or partly addresses, involves in and promotes on a regional or global level the minimization of negative environmental, economic, societal and health effects generated by the flow of resources through the system in order to fulfill its functions of teaching, research, outreach & partnership and stewardship. While a number of authors – Cortese (2003), Wright (2002), Fien (2002) Yuan et al (2013) agree on the dimensions of HESD to include teaching, research, engagement or outreach and campus operations, Lozano, et al (2013) expanded the items to seven through the addition of institutional framework and assessment & reporting. On their part, Lambrechts et al (2018) categorized these dimensions into two groups – educational approaches which focus on curriculum, competence, pedagogies, learning and instructions and intervention in campus operations which address issues of waste minimization, energy consumption, development of low carbon buildings, protection of biodiversity and natural spaces, sourcing sustainable goods & services and model sustainability to influence behaviours of staff, students and local communities (Tilbury, 2011). Interventions in campus operations which engender eco-efficiency result to campus greening which Tilbury (2011) notes is the preoccupation of the majority of universities engaged with sustainability. Interestingly, Shriberg (2002) points out that interventions in campus operations promote only incremental change unlike the entire process of sustainability that promotes incremental and systemic change simultaneously. In line with the educational approach, UNESCO (2011) notes that curriculum and pedagogy, which are at the core of higher education experiences, need to be transformed if universities and colleges are to make a meaningful contribution to sustainable development. It has equally been argued that the integration of sustainability into curriculum ensures constant exposure of students to sustainability in their learning process and thus contributes to the overall integration of sustainability into institutions of higher education (Chiong et al, 2017).

Another core HEI activity where sustainability should be integrated is research. Lozano (2006) and Peet et al (2004) observe that sustainability should be incorporated into research process which will eventually lead to innovation and behavior. To this end, Chiong et al (2006) add that researches have shown that innovation is a tool to integrate sustainability into higher education as a whole and such researches should not only be locally concerned and discipline specific but be cross-disciplinary and in line with global needs. Tilbury (2011) further adds that the features of research for sustainability in higher education should

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include interdisciplinarity, social impact, transformative and involvement of people.

The third area of educational approach to sustainability integration is community outreach. The critical role of community outreach and partnerships in sustainability integration in higher education is aptly captured in the observation that the initial reports of sustainability in higher education would suggest that the issues and solutions for progressing sustainability lay with universities and the sector itself; however, through experience and overtime, the sector has learnt that it must reach beyond the university walls to address sustainability within the communities of practice which they serve (Tilbury, 2011; Ryan et al, 2010; Lotz-Siskita 2011). A typical example of this activity is the United Nations University (UNU) Regional Centres of Expertise (RCE) which focus on partnership learning and action for sustainability (Tilbury, 2011) and which are found in eight Nigerian cities of Kano, Zaria, Lagos, Port-Harcourt, Yenogoa, Ilorin, Ogun and Minna (RCE Saskatchewan, 2014).

Institutional framework covers the policies, structure, culture, control measures, staff development, signed declaration/charter and leadership that drive and engender commitment to sustainability efforts of an institution. Avila et al (2017) describe those instruments as internal political instruments which Pereira et al
(2014) argue are critical to strengthening sustainable initiatives because they provide a legal backing. Clarke & Kouri (2009) equally note that these instruments should help a firm or institution to overcome challenges by creating a sense of identity for the university community. In fact, Merriman et al (2016) observe that a sustainability program cannot succeed unless it is consistent with and embedded within the organization's culture.

The last aspect of ESD as identified by Lozano et al (2013) – assessment and report - addresses the need for HEIs to measure, audit, benchmark and communicate their SD efforts (Shriberg, 2002) in economic, environmental, social and inter-linking issues in the entire HEI system (Findler et al, 2018). ESD assessment and reporting are increasingly gaining importance even though they are still in a developmental stage (Ceulemanns et al, 2015). Integrating all of these and more elements is needed to achieve what UNESCO (2014) described as transforming learning and training environments through a'whole-institution approaches' (WIA) to ESD in schools and all other learning and training settings. Holst (2022) elaborates that WIA, which emphasizes that all learning is embedded within its socio-physical contexts, focuses on seven highly integrated areas of action - governance, curriculum, campus, community, research, communication and capacity building. Expectedly, a number of sustainability assessment tools (SAT) have emerged and have been put to use by universities particularly in developed nations. Shriberg (2002) has equally added that SATs provide a foundation for strategic planning by identifying important issues as well as methods to set and achieve prioritized sustainable goals. The SAT are equally useful in placing an institution on the sustainability maturity stages as developed by Vargas et al(2019).

However, it is widely recognized that a university that is seeking to go towards a more sustainable path is bound to face a series of internal and external barriers (Brandli et al, 2013, Lozano et al, 2011, Barbieri et al, 2010, Elliot & Wright, 2015). However, Avila et al (2017) note that the largest number of barriers are within the area of management followed by the areas of policies, infrastructure, resources, capacity and institutional culture. From these

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broad areas, the researchers singled out lack of support from the university administration as the biggest obstacle and that it has a direct influence on the other barriers. But in terms of overcoming the barriers, Lozano et al (2011) point out that one means of ensuring that universities become sustainability leaders and change drivers is to ensure that university leaders and staff are empowered to catalyze and implement new paradigms and ensure that SD is the golden thread throughout the entire university system. Accordingly, a number of studies – Morland-Painter et al (2015), Tilbury (2011), Rademaekers et al (2012) and Sterling (2012), have isolated incentives as very critical to the success of ESD initiatives and innovations in HEIs.

3.0 AIMS OF THE STUDY

There is no doubt that Nigerian universities have shown some commitment to the issue of education for sustainable development as shown by such research works as GUNI, IAU & AAU (2011), Eheazu, (2019) and Abdul-Azeez (2018). However, apart from the GUNI et al study which addressed the main elements of ESD, the rest focused on specific dimensions of ESD. But given that sustainability is a journey and not a destination (Behjati & Othman, 2014) it is expected that overtime there should be improvements in the uptake of sustainability by the universities. In addition, given the diversity in university ownership, age, resource endowment and governance approaches of the institutions, this study assessed the sustainability practices of Nigerian universities. In specific terms, the first objective of the study was to ascertain if differences exist among the three strategic groups of universities in their sustainability practices. The second objective hinged on the role of ESD networks/partnerships in the uptake of sustainability principles and therefore focused on whether membership of an ESD network makes a difference in a university's propensity to embrace sustainability. The third objective is to rank the universities on the basis of their sustainability performance. Based on these objectives, the following hypotheses guided this study:

1. The propensity to embrace sustainability does not differ significantly among Nigerian universities.
2. There is no significant difference between ESD-networked and non ESD-networked universities in their propensity to embrace sustainability.

Given the focus of the hypotheses, the study was situated within the framework of Roger's (1995) theory of innovation diffusion.

4.0 METHODS

The study relied on secondary data sourced from the websites of the universities and relevant Federal government agencies. The reliance on website data was informed by the fact that websites represent a reliable and critical means by which organizations communicate with their stakeholders. In fact, a good number of organizations, including universities, capitalize on the visibility offered by websites to project their involvement in such global trends as sustainable development. It is even more so for universities given the implications of their websites for webometric ranking. As a result, websites were considered a reliable source of data on the sustainability practices of universities. It should be pointed out that some of the documents that were obtained from the websites were further subjected to content analysis. As a research technique, content analysis is used to focus on actual contents (Miles & Huberman 1994) and to capture data from reports or any other document and to quantify the presence or absence or extent of the required information (Gray et al, 1995; Kothari et al, 2009). Content

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analysis has been widely applied in researches on CSR, social and environmental reporting (Adams & Frost 2008; Pistoni et al 2018; Landrum & Ohsowski 2018).

4.1 MEASURES: There are several methodological frameworks for assessing a university's sustainability performance. Findler et al (2018) and Shrieberg (2002) identify 27 sustainability assessment tools (SATs) which are grouped into three categories – institutional, national and global. However, only one of these lots – the Unit-based Sustainability Assessment Tool (USAT) is of African descent. The SATs vary greatly in terms of purpose, scope, function (Shrieberg, 2002) and also in terms of construct indicators. As a result, we adapted some of the tools to generate thirty-one measures that were deductively derived from the seven core elements of ESD earlier identified. The measures were used in assessing the universities' sustainability practices through the calculation of their sustainability integration index (SUITINDEX). The coding of the measures was binary with 1 indicating availability and 0 showing non-availability. In order to ensure the reliability of the coding, the process of coding was reviewed by an independent person.

4.2 SAMPLE SIZE DETERMINATION: As at October 30, 2022, Nigeria had 221 universities categorized into three strategic groups based on ownership – Federal (n=50), State (n=60) and private (n=111) (National Universities Commission, 2022). However, the study focused on the ten oldest universities from each group to give a sample size of thirty. This selection was informed by the finding of GUNI et al to the effect that age, size and type of institution affect the embrace of sustainability by an institution. The age factor recognizes the fact that these universities are well established in a number of areas including tradition, location and collaborations. It is however, necessary to point out that in the course of the web search, the universities which websites failed to open were replaced with the next university on the chronological list of the NUC.

4.3 STATISTICAL TECHNIQUE: the two hypotheses focused on the differences that exist among groups of Nigerian universities in their propensity for the integration of sustainability into their processes. As a result, ANOVA and independent t-test were used in testing the hypotheses. While ANOVA was used in confirming the first hypothesis which focused on three groups, independent t-test was used for hypothesis two which involved two groups.

5.0 RESULT

A brief review of the performance of Nigerian universities on the seven elements of ESD highlights a number of trends. Under institutional framework, the existence of an office responsible for sustainability activities was traced to only three universities – one State and two private universities. This obvious lack of sustainability structure which indicative of a lack of governance approach to ESD was earlier identified by Franco et al (2018) in their study involving African universities where they observed that the lack of governance approach to ESD resulted in a plethora of scattered activities. In terms of ESD networks/partnerships, the following are the ones that Nigerian universities belong to: Mainstreaming Environment and Sustainability in African Universities Partnership (MESA), Nigerian Sustainable Development Solution Network (NSDSN) and its international parent body Sustainable Development Solution Network (SDSN), Higher Education Sustainability Initiative (HESI), Global University Network for Innovation (GUNI), and International Sustainable Campus Network (ISCN). Related

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to the networks are university associations and the ones housing some Nigerian universities are Association of African Universities (AAU), International Association of Universities (IAU), Association of Commonwealth Universities (ACU), and Association of West African Universities (AWAU) which surprisingly has only federal universities. The identification of the declarations/charters was a bit tricky because there was no information on declarations/charters on the websites of the universities. As a result, we searched for Nigerian universities in the list of signatories or members on the websites of the originating associations of the declarations/charters. It should be pointed out that institutional affirmation or acceptance of a declaration can be by default as a member or through formal endorsement. On the basis of membership, some Nigerian universities subscribed to the following declarations: Abuja 2009 (AAU), Kyoto 1993 (IAU)) and Swansea 1993 (ACU). On the other hand, only UI and ABU endorsed the 1990 Talloires declaration.

The second item focused on campus operations and the records show that Nigerian universities are yet to mainstream sustainability into daily campus operations. For majority of Nigerian universities, sustainable campus operations do not exceed daily campus clean-up and tree planting. The core issues of renewable and efficient energy, waste management, water conservation and green building/landscaping are not critical. In fact only Pan-Atlantic University has a green building and only American university has a renewable energy facility. Among the federal universities, only ABU has taken steps to launch a renewable energy facility. In the area of research, 16 (53%) universities have research groups, some based on grants on SD thematic areas. One of the outstanding cases is UNILAG that won a grant for Sustainable Procurement, Environment and Social Standards Centre of Excellence in 2019. There are six such centres set up in 2019 by the World Bank and the Federal Government in federal universities (www.unilag.edu.ng).

The third area education is the most patronized in that all the universities have one programme or the other relating to sustainable development. At the undergraduate level, OAU, Al-Hikmah, American University and Pan-Atlantic have to an extent integrated sustainability into the curricula. But it is at the post-graduate level that many universities have programmes focused on SD or an aspect of it. The areas include gender, peace, conflict, housing, energy, environment, etc. With regard to outreach/collaboration, 15 (50%) universities belong to at least one ESD network as earlier identified. In addition, 8 (27%) universities are members of the UN Regional Centre of Expertise (RCE). Two private universities, Pan-Atlantic and American University have community-based initiatives. In the area of on-campus experience, there is very little involvement by the universities. For instance, only 4 (13%) universities indicated that they have students' environmental clubs and 11(37%) had carried out SD sensitization within the campus. In the area of assessment/reporting, only one university, Pan-Atlantic issues annual sustainability report. Understandably, given the fragmented approach to ESD coupled with the absence of a mandatory sustainability assessment, many universities are contented with uploading snippets of sustainability activities rather than a comprehensive or standalone report of their sustainability journey.

A one- way Analysis of Variance (ANOVA) was used to examine the question of whether Nigerian universities differ in terms of sustainability practices. The independent variable – universities – was grouped into

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federal, state and private. On the other hand, the dependent variable, propensity for the integration of sustainability was measured based on the SUITINDEX scores. Table 1 shows the descriptive statistics for the three groups of universities in terms of sustainability performance. The most critical requirements of ANOVA – normality of data and homogeneity of variances were first ascertained. While the Shapiro test of normality (.062) showed that the data were statistically normal, the outcome of Levene's test of homogeneity of variances indicated that this requirement was not met. As a result, the Welch ANOVA was used. Table 2 is the ANOVA output which showed that there is a statistically significant difference between groups – F(2,27)=12.533, p=.000.

The robust test of equality of means (table 3) equally revealed a statistically significant main effect: Welch's F(2,16.52) =27.904, p=.000) which means that not all categories of universities had the same average SUITINDEX score which is in line with the alternate hypothesis.

Table 2: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4092.752	2	2046.376	12.533	.000
Within Groups	4408.572	27	163.280		
Total	8501.324	29			

Table 3: Robust Tests of Equality of Means

	Statistic[a]	df1	df2	Sig.
Welch	27.904	2	16.523	.000

a. Asymptotically F distributed.

A post-hoc comparison based on Games-Howell procedures was carried out to determine which pairs of university groups' means differed significantly. The results of the multiple comparison as contained in table 4 (appendix A) show that federal universities (M=55.32, SD=8.23) had a significantly higher SUITINDEX mean than private universities (M=31.13, SD=19.37) and State universities (M=30, SD=6.85). Consequently, we ascertained the effect size of these two significant categories and the outcomes were 3.09 for Federal against State and 1.48 for Federal versus private universities. Based on Cohen's interpretation, the effect sizes are large. It should be pointed out that the difference in SUITINDEX means of State and private universities was not significant. Table 5 shows the group statistics (independent t-test) for hypothesis two which predicted that there would be no significant difference between ESD-networked and non ESD-networked universities in their propensity for sustainability integration. The output shows a higher SUITINDEX score for ESD networked universities (M=50.42, SD=13.36) to that of non-ESD networked universities (M=27.20, Sd=11.82).

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Table 5: Group Statistics

	Engagement with ESD partnership	N	Mean	Std. Deviation	Std. Error Mean
Suitindex score for engagement with ESD partnerships	ESD partnership engaged universities	15	50.4240	13.35660	3.44866
	Non-ESD partnership based universities	15	27.2033	11.81920	3.05171

The outcome of the independent t-test of t (28) =5.042, p=.000<.05 as contained in table 6 confirms that the difference between the two groups is significant. Consequently, the alternate hypothesis to the effect that the propensity to integrate sustainability is greater among ESD-networked universities was accepted.

Given the difference in mean values and the significance of the differences, we calculated the effect size which yielded a value of 1.71.

Figure 1(appendix B) based on web chart shows the ranking of the universities based on their SUITINDEX scores. University of Ibadan topped the list with a SUITINDEX score of 66.13 and is closely followed by a private university, PAN-ATLANTIC with a score of 64.52. Of the top 12 universities that had a minimum SUITINDEX score of 50, nine are federal universities and three are private universities. Unfortunately, no State university made the top 12 group.

Table 6: Independent Samples Test

			Suitindex score for ESD partner universities	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		.383	
	Sig.		.541	
t-test for Equality of Means	T		5.042	5.042
	Df		28	27.591
	Sig. (2-tailed)		.000	.000
	Mean Difference		23.22067	23.22067
	Std. Error Difference		4.60501	4.60501
	95% Confidence Interval of the Difference	Lower	13.78772	13.78143
		Upper	32.65361	32.65991

5.1 DISCUSSION OF FINDINGS

The SUITINDEX scores clearly show, on a general note, that Nigerian universities are committed to ESD. From the endorsement of ESD declarations/charters, engagement with ESD networks/partnerships to membership of regional and international university associations committed to SD, there is no doubt that Nigerian universities have demonstrated visible commitment to the

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ideals of ESD. However, at the individual level as captured in the ranking there are obvious differences in the uptake of sustainability principles as explained by Roger's (1995) diffusion of innovation theory. Equally of note is the fact that of the ten universities that participated in the GUNI et al (2011) study in 2010, four of them – UNILAG, UNILORIN, BUK and Olabisi Onabanjo University – featured in this study and the three federal universities were in the top 12 of the ranking. Even though Olabisi Onabanjo University missed the top 12 slot, it led the pack of State Universities. This attests to some consistency though the progress has been slow in that after ten years of the first study, these universities are still at the second stage of Vargas et al's (2019) four stage maturation process of sustainability incorporation. This stage is characterized by ad-hoc, piecemeal and incremental approach and initiatives. An interesting high point of the ranking is the performance of private universities as shown by their three slots in the top 12. This clearly points to the high sense of purpose of the leadership of some private universities.

However, beyond these points, the outcome of the test of the first hypothesis revealed that there is a significant difference between federal universities and the other two groups. However, there was no significant difference between State and private universities. The performance of federal universities over and above the other two groups can be explained based on the four factors that affect commitment to ESD – age, size, type of institution and leadership commitment - identified by GUNI et al (2011). Apart from their strong financial muscle they are both older and bigger than the State and private universities. While as public universities, federal universities share the third attribute – type of institution with State universities, the fourth attribute – leadership commitment - undoubtedly applies also to the three early adopters in the private universities category.

The outcome of the second hypothesis is that there is a significant difference in the uptake of sustainability principles between ESD-networked universities and non ESD-networked universities. Understandably, ESD-networked institutions leverage on the assistance, experience and technical support of the network to improve their sustainability drive. In addition, the pressures to honour the obligations of the partnership ensure that the institution maintains the momentum of the sustainability change. Perhaps it is necessary to point out that there is no visible and direct support or incentive from the government to universities for sustainability integration.

6.0 POLICY IMPLICATIONS

It has earlier been noted that the level of sustainability integration into the campus operations of Nigerian universities is very low and the focus is mainly on the education area of ESD. In other words issues of carbon footprint, sustainable waste management, energy efficiency and water conservation which relate to campus operations have not been prominent in the sustainability programmes of Nigerian universities. Without addressing these issues it will be difficult for Nigerian universities to achieve a whole-institution integration of sustainability. At the same time, there are no indications of strong support and incentives from the government as is the case in such places as UK, Finland and Canada and relying on voluntary initiatives by universities will lead to a slow and tortuous sustainability journey for a select few. There is therefore need for some measure of government support and incentives through the relevant agencies such as NUC and TETFUND. For instance, the NUC should:-

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- Include ESD parameters in programme and institutional accreditation. In fact the seven areas of ESD should be incorporated into the requirements for institutional accreditation.
- Universities should be made to go beyond the single SD GST course in the 2017 NUC benchmark and include more courses in Environmental education.

The NUC should institute an annual sustainability assessment and reporting by universities. In fact, sustainability reporting should be made a basic requirement for purposes of ranking. In this direction, universities should be made to adopt U-SAT sustainability assessment tool which reflects the peculiarities of African HEIs.

On its part, TETFUND should be made to provide incentives to universities in terms of SD-based research and specific green projects. As a matter of fact, a specific percentage of the existing research portfolio should be devoted to SD issues. In addition, all TETFUND sponsored buildings must meet very clear green building specifications.

Although this study has contributed to the literature on ESD, it has two key limitations relating to generalizability and the fact that the extent of disclosure the universities made in their websites undoubtedly affected the findings.

REFERENCES

Adams, C.A., & Frost, G. R. (2008). Integrating sustainability reporting into management practices. *Accounting Forum* (Elsevier), *32*(4), 288-302.

Avila, L. V., Filho, W. L., Brandli, L. Macgregor, C., Molthan-Hill, P., Ozuyar, P. G,. & Moreira, R. M. (2017). Barriers to innovation and sustainability at universities around the world. *J. of Clean Prod. 164*, 1268-1278. Doi.org/10.1016/j.jclepro.2017.07.025.

AAU (2009). Abuja declaration on sustainable development in Africa: The role of higher education. Retrieved 15 March, 2020 from http://www.aau.org/announce/docs/Abuja_Declaration_Rev.pdf.

Abdul-Wahab, S. A., Abdulraheem, M. Y. Hutchitson, M. (2004). The need for inclusion of environmental education in undergraduate engineering curricula.*Int. J.Sustain High Educ*, *4*(2), 126-137.

Baker-Shelley, A., van Zeijl-Rozema, A. & Martens, P. (2017). A conceptual synthesis of organizational transformation: How to diagnose and navigate pathway for sustainability at universities? *J. clean Prod. 145*,262-276. Doi.org/101016/j.jclepro.2017/01.026.

Barbieri, J. C., Vasconcelos, L.F. G. de, Andreassi, T.&Vasconcelos,F.C.G. de.(2010). Innovation and sustainability: New models and propositions. *RAE 50*(2), 146-154.

Blasco, N., Brusca, I., Labrador, M. (2021). Drivers for universities' contribution to the sustainable development goals: An analysis of Spanish public universities. *Sustainability*, 13, 89. https://dx.doi.org/10.3390/su13010089.

Brandli, L. L., Leal Filho , W., Frandoloso, M.A.l., Korf, E. P., & Daris, D. (2015). The environmental sustainability of Brazilian universities: Barriers and pre-conditions. In *Integrating Sustainability Thinking in Science and Engineering Curricula.*

Advance Journal of Management and Social Sciences
Adv. J. Man. Soc. Sci
Volume: 7; Issue: 02,
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ISSN: 2383 – 6355
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Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ajmss/index

Gewerbestrasse: Springer International Publishing, pp. 63-74.

Bekessey, S. A., Samson, K. & Clarkson, R. E. (2007). The failure of non-binding declarations to achieve university sustainability: A need for accountability. Int. J. Sustain High Educ. http://dx.doi.org.org/10.1108/14676370710817165.

Calder, W., & Clugston, R. M. (2002). International Efforts to Promote Higher Education for Sustainable Development. *Planning for Higher Education*, *31*, 30-44.

Ceulemans, K.; Molderez, I.; Van Liedekerke, L. (2015). Sustainability Reporting in HigherEducation: A Comprehensive Review of the Recent Literature and Paths for FurtherResearch. *J. Clean. Prod. 106*, 127–143.

Chiong, K.S., Mohamad, Z. F. & Abdul Aziz, A. R. (2016). Factors encouraging sustainability integration into institutions of higher education. *Int. J. Environ. Sci.Technol.* 1-12. Doi 10.1007/s13762-016-1164-3.

Clarke, A. & Kouri, R. (2009).Choosing an appropriate university or college environmental management system. *J. Clean. Prod. 17*,971-984.

Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning Higher Education,* (Mar-May), 15-22.

Eheazu, C. L.(2019). Environmental literacy education as a necessary pedestal for domestication of the green campus concept: The challenge for Nigerian universities. International *Journal of Environment and Pollution Research*. *7*(4), 29-45.

Elliot, H. & Wright, T. (2015). Barriers to sustainable universities and ways forward: A Canadian Students' perspective. *The 3rd World Sustainability Forum*, 1-30.

Elton, L. (2003). Dissemination of innovations in higher education: a change theory approach.

Tertiary Education and Management 9, 199e214.

Evans, J., Jones, R., Karvonen, A., Millard, L., & Wendler, J. (2015). Living labs and co-production: University campuses as platforms for sustainability science. *Current Opinion in Environmental Sustainability*, *16*,1–6.

Evangelinos, K. I. & Jones, N. (2009). An analysis of social capital and environmental management of higher education institutions. *Int J. Sustain High Educ*, *10*(4),334-342.

Fien, J. (2002). Advancing sustainability in higher education: Issues and opportunities for research. *Higher Education Policy*, *15*,143-152.

Findler, F., Schönherr, N., Lozano, R. & Stacherl, B.(2018). Assessing the Impacts of Higher Education Institutions on Sustainable Development: An Analysis of Tools and Indicators. *Sustainability*, *11*(59), 1-19.

Franco, I., Saito, O., Vaughter, P., Whereat, J., Kanie, N. & Takemoto, K.(2018). Higher education for sustainable development: Actioning the global goals in policy, curriculum and practice. *Sustainability*

Advance Journal of Management and Social Sciences
Adv. J. Man. Soc. Sci
Volume: 7; Issue: 02,
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ISSN: 2383 – 6355
Impact Factor: 5.12
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ajmss/index

Science.Doi.org/10.1007/s11625-018-0628-4.

Gamage, K.A.A., Ekanayake, .Y.,Dehideniya, S.C.P.(2022). Embedding sustainability in learning and teaching: Lessons learned and moving forward—approaches in STEM higher education programmes. *Educ. Sci*, 12, 225. doi.org/10.3390/educsci12030225.

Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting: a review of the literature and longitudinal study of UK disclosure. *Account Audit Account J. 8*(2),47–77.

GUNI, IAU and AAU (2011). *The Promotion of Sustainable Development by Higher Education Institutions in Sub-Saharan Africa*. Available at http://www.iau.hesd.net.

Holst, J. (2022). Towards coherence on sustainability in education: A systematic review of Whole Institution Approaches. *Sustainability Science*, https://doi.org/10.1007/s11625-022-01226-8.

Huisingh, D. and Mebratu, D. (2000). Educating the educators as a strategy for enhancing education on cleaner production. *J.Cleaner Prod*, *8* (5), 439 - 442.

Kothari S. P., Li, X. & Short, J. E. (2009). The effect of disclosures by management, analysis, and business press on cost of capital, return volatility, and analyst forecasts: a study using content analysis. *Account Rev*, *84*(5),1639–1670.

Lambrechts, W., Liedekerke, L. V. & Petegem, P. V. (2018). Higher education for sustainable development in Flanders: Balancing between normative and transformative approaches. *Environmental Education Research*, *24*(9), 1284-1300.

Landrum, N. E., and Ohsowski, B. (2018). Identifying worldviews on corporate sustainability: A content analysis of corporate sustainability reports. *Bus. Strat. Env., 27*: 128–151. doi: 10.1002/bse.1989.

Lotz-Sisitka, H. (2011). The 'event' of modern sustainable development and universities in Africa. In: *Higher Education in the World 4, Higher Education's Commitment to sustainability: From Understanding to Action*. Barcelona:GUNI.

Lozano, R.(2006a). Incorporation and institutionalization of SD into universities: Breaking through barriers to change. *J. Clean. Prod*. 2006, *14*, 787–796.

Lozano, R. (2011). The state of sustainability reporting in universities. *Int. J. Sustain Higher Educ 12*(1), 67-78.

Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D. Lambrechts, W. (2011). Declarations for sustainability in higher education:Becoming better leaders through addressing the university system. *J. of Clean Prod. 48*, 10-19.doi:10.1016/j.jclepro.2011,10.006.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F.J., Waas, T.,

Lambrechts, W., Lukman, R., & Huge, J. (2014). Review of commitment and implementation of sustainable development in higher education:

Advance Journal of Management and Social Sciences
Adv. J. Man. Soc. Sci
Volume: 7; Issue: 02,
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ISSN: 2383 – 6355
Impact Factor: 5.12
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ajmss/index

Results from a worldwide survey. *J. Clean Prod. 108*(Part A), 1-18.

Mader, C., Scott, G. & Razak, D. A.(2013). Effective change management, governance policy for sustainability transformation in higher education. *SAMP*, *4*(3): 264-283.

Merriman, K. K., Sen, S., Felo, A. J. & Lizky, B. E. (2016). Employees and sustainability: The role of incentives. *Journal of Managerial Psychology 31*(4);820-836.

Moorland-Painter, M, Sabet, E. Molthan-Hill, P., Goworek, H., De Leeuw, S. (2015). Beyond the curriculum: Integrating sustainability into business schools. *J. Bus. Ethics*, *139*, 737-746. Doi.org/10.1007/s10551-015-2896-6.

NUC (2019). Nigerian universities. Accessed on 10 May, 2020 from http:/www.nuc.edu.ng.

Pereira, G.D.S.M., Jabbour, C., Oliveira, S.V.W.B. De., Teixera, A. A. (2014). Greening the campus of a Brazilian university: Cultural challenges. *Int. J. Sustain. High. Educ. 15*(1), 34-47. doi.org/10/1108/IJSHE-10-2011-0067.

Pistoni, A., Songini, L. & Bavagnoli, F. (2018). Integrated Reporting Quality: An Empirical

Analysis. *Corporate Social Responsibility and Environmental Management 25*(2),23-41. Doi.10.1002/csr.1474.

Rademaekers, K., Williams, R., Ellis, R., Smith, M., Svatikova, K. & Bilsen, V. (2012). *Study of incentives driving improvement of environmental performance of companies*. Final report prepared by ECORYS for European Commission – DG Environment.

RCE Saskatchewan. (2014). Regional Centres of Expertise on Education for Sustainable Development: RCEs around the world. http://www.saskrce.ca/system/files/RCE_world_map_poster %20Jan%202014.pdf.

Rogers, E. M. (1995). *Diffusion of Innovations*. 4th ed. Free Press: New York.

Roorda, N. (2000). Auditing sustainability in engineering education with AASHE. *ENTRÉE 2000 proceedings*. EEE Network, Brussels, pp. 13-30.

Ryan, A., Tilbury, D., Corcoran, B.P., Abe, O. & Nomura, K. (2010). Sustainability in higher education in the Asia Pacific: Developments, challenges, and prospects. *Int. J. Sustain. High. Educ. 11*(2), 106-119.

Ryan, A. & Tilbury, D. (2013).Uncharted waters: Voyages for education for sustainable development in the higher education curriculum. *Curriculum J*. 24 (2).272-294.

Salako, C. T. (2014). Challenges facing university education in Nigeria: The way forward. *J. Educ Found, 4*, 93-98.

Sanusi, Z. A. & Khelgat-Doost, H. (2008). Regional centre of expertise as a transformational platform for sustainability: a case study of Universiti Sains Malaysia, Penang. *Int. J. Sustain Higher Educ*, *9*(4), 487-497.

Sáez de Cámara, E.; Fernández, I.; Castillo-Eguskitza, N. A (2021). Holistic

Advance Journal of Management and Social Sciences
Adv. J. Man. Soc. Sci
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March-April, 2023
ISSN: 2383 – 6355
Impact Factor: 5.12
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ajmss/index

approach to integrate and evaluate sustainable development in higher education. The case study of the University of the Basque Country. *Sustainability*, 13, 392. https://doi.org/10.3390/su13010392.

Shriberg,M.(2002).Institutional Assessment Tools for Sustainability in HigherEducation:

Strengths, weaknesses and implications for practice and theory. *Int. J.Sustain. High. Educ. 3*(3), 254–270.

Sterling, S. (2012). *The future fit framework – an introductory guide to teaching and learning for sustainability in HE.* Heslington: The Higher Education Academy.

Sustainable Development Education Network (n.d). Embedding sustainable development in the curriculum. Accessed on May 23, 2020, from http://www.eauc.org.uk/sorted/embedding sustainability development in the curric.

Tilbury, D. (2011). Higher education for sustainability: A global overview of commitment and progress. In T. Wright and H. Elliot (Eds). *Higher education in the world 4, Higher Education's commitment to sustainability: From understanding to action*. Barcelona: GUNI.

Tilbury, D., Keogh, A., Leighton, A. & Kent, L. (2005). *A national review of environmental education and its contribution to sustainability in Australia: Furtherand higher education*. Canberra: Australian Government Department of the Environment and heritage and Australian Research Institute in Education for sustainability(ARIES).

UN (United Nations). Higher Education Sustainability Initiative (HESI). Available online: https://sustainable development.un.org /sdinaction/hesi (accessed on 11 June, 2020).

UNESCO (2012). Education: Understanding sustainable development. Available at www.unesco.org/new/en/education/themes/leading-the-international-agenda/education- for-sustainable - development... (Accessed 19 May, 2020).

UNESCO. (2011). Definition of ESD. Retrieved March 13, 2020, from http://www.unescobkk.org/education/esd-unit/definition-of-esd/.

UNESCO (2014) UNESCO roadmap for implementing the Global Action Programme on education for sustainable development, Paris: UNESCO.

Vargas, L., Claudia, M. & Jean, H. (2019). The maturation process of incorporating sustainability in universities. *Int. J. Sustain Higher Educ, 20*(3), 441-451.

Velazquez, L., Munguia, N., Platt, A. & Taddei, J. (2006). Sustainable university:What can be the matter? *J. Clean Prod.* 14, 810-819.

Vogt, M., and Weber, C. (2020). The role of universities in a sustainable society. Why value-free research is neither possible nor desirable. *Sustainability* 12(2811):1–21 Wright, T. S. A. (2002). Definitions and frameworks for environmental sustainability in higher education. *Int. J. Sustain. Higher Educ,*

Advance Journal of Management and Social Sciences
Adv. J. Man. Soc. Sci
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ISSN: 2383 – 6355
Impact Factor: 5.12
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/ajmss/index

3(3),203–220.
Yuan, X., Zuo, J. & huisingh, D. (2013). Green universities in China - What matters? *J. Clean Prod. 61*; 36-45.

APPENDIX A Table 4: Multiple comparison (Games-Howell)

(I) type of university	(J) type of university	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Federal	State	25.32200*	3.38564	.000	16.6565	33.9875
	Private	24.19400*	6.65506	.009	6.4677	41.9203
State	Federal	-25.32200*	3.38564	.000	-33.9875	-16.6565
	Private	-1.12800	6.49738	.984	-18.6263	16.3703
Private	Federal	-24.19400*	6.65506	.009	-41.9203	-6.4677
	State	1.12800	6.49738	.984	-16.3703	18.6263

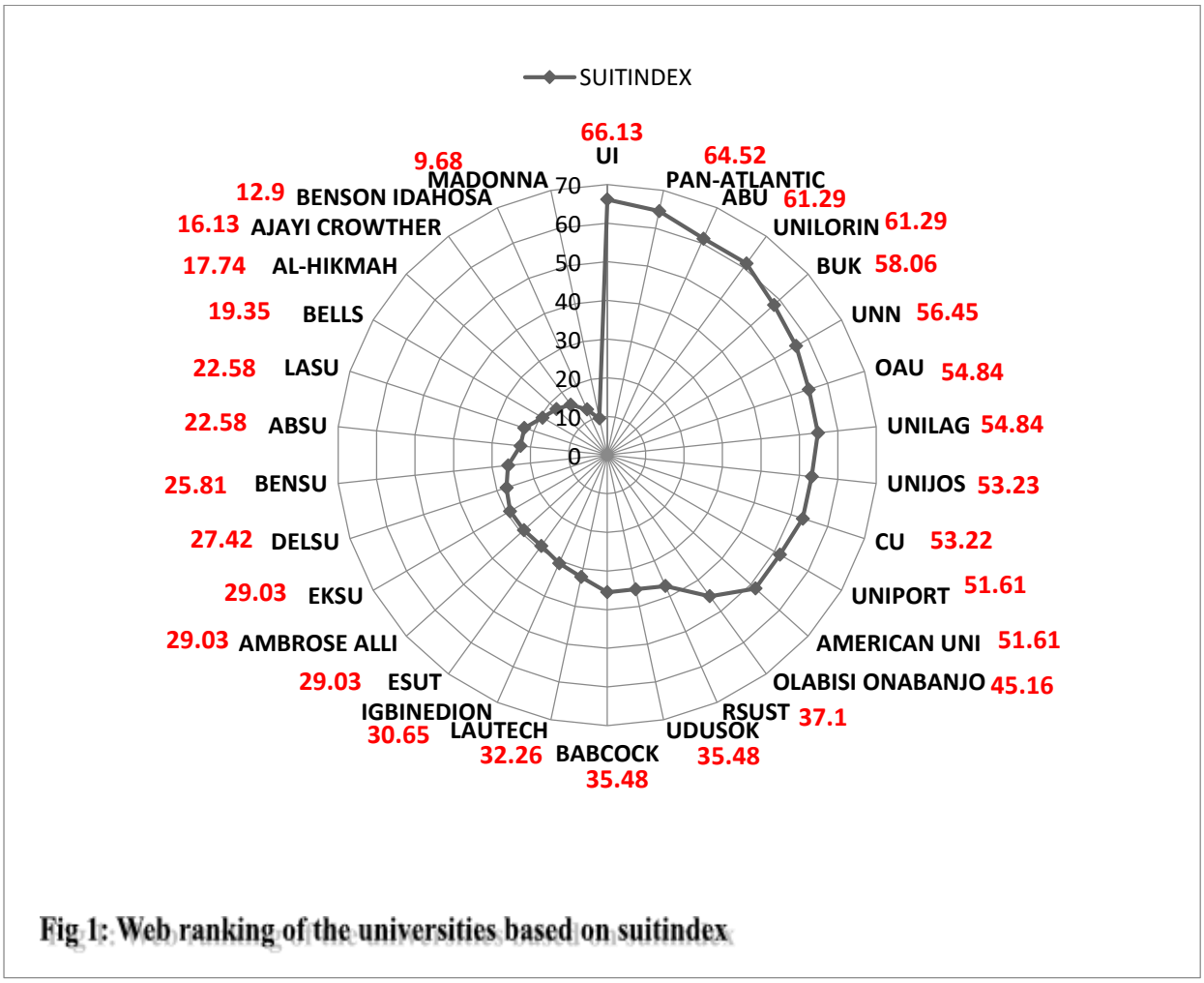

Fig 1: Web ranking of the universities based on suitindex