An Exploration of the Impact of Organisational Culture and Social Media on the Adoption of Green Information Technology in Nigeria

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Abstract

This paper investigates the impact of Social Media on the degree of promotion of Green IT in Nigeria. It starts by exploring the concept of Social Media, looks at the nature of several Social Media platforms and then analyses the impact of Social Media on promotion of sustainable use of IT in Nigeria. The paper considers sustainable best practices of IT and the crafting and development of Information Technology systems that promote sustainability. Concerted efforts were made to determine social media impact on green IT initiatives, social media types and penetration rate in Nigeria. The paper is also able to establish a link between social media use and promotion of green IT in Nigeria. Critical analysis of organisational culture, and its impact on organisations willing to develop or implement new technologies was carried out. Finally, the paper suggested how organisations can leverage on the opportunities of social media and its reach to develop this laudable goal of green IT practices in Nigeria. The paper went on to suggest guidelines on how managers and stakeholders can manage the delicate balance of culture and change within their organisations and external to it.

Keywords: *Organisational Culture, Social media, Green information technology*

Background to the Study
Social Media use has been understood to have a connection with how organisations can promote Green IT and their Green credentials. Within a short period, Nigeria and other developing countries are catching up with the developed countries especially in the use of mobile devices and social media. (Pew research, 2013) Green IT is the effort at reducing the consumption of energy and reducing the waste linked with using hardware and

software while Green IS using of information systems to initiatives aimed at saving the environment. (Jenkin, et al., 2011) the activities of promoting Green IT, is chiefly aimed at enhancing growth and improving innovative abilities.

Today, ICT industry is responsible for at least 2% of greenhouse gas emission, almost at the same level with aviation sector (Gartner, 2007). The usage of Social Media is therefore seen as a link with the efforts of organisations in the promotion of Green IT. (Raybould, 2012) For organisations to function efficiently, organizations are likely to lean towards the cultural leanings of their operating environment and or nation. According to (Sagiv 2010), Organisations exist within the countries and nations, and they tend to carry out their activities in consonance with the prevailing national culture.

To date, Hofstede's (1980, 1983) original taxonomy explaining culture and the many perspectives of individualism-collectivism, uncertainty avoidance, power distance, and masculinity–femininity is the most general conceptualization of national culture. Similarly, Trompenaars (1996) also defines national culture as such opposites as particularism versus universalism, neutral relationships versus affective, diffuseness versus specificity, achievement versus ascription, and external versus internal control.

In a more general context, the emphasis of organizational culture is implying "how things are done here" this is a major determinant of turnover, behaviour, customer satisfaction performance, and the reputation of an organisation. In this paper, concerted effort will be made to identify and examine critically the concept of social media, use, penetration rate and the willingness of organisations to use social media to promote adoption of green IT in Nigeria. The impact of national culture on Nigeria is also discussed. At the end of the paper, guidelines will be developed. Also, simple steps of how organisations should take into consideration the impact of organizational culture, to improve and or promote their green IT credentials practices.

Literature Review
According to the UN report, recoveries of the global and sustainable development are major challenges countries and nations face today. The rising change in climatic conditions brings about the urgent need to seek a change in the growth and economic activities. Under such situation, building a green economy is a solution to challenging environmental and economic problems and moved into to the front burner of policy debate (OECD, UNEP, 2009, 2011). Murugusen (2008), defines Green IT as environmentally sound IT. It is the study, practice, designing, building, using, and disposing of computer hardware, and subsystems, devices efficiently with reduced impact on environment.

To achieve this goal, it will require a many approaches, from greening of IT system, to its promotion, adoption, and to shaping the culture.

Green IT

Green IT refers to the use of environmentally sound and use of IT practices. It is also a part of studying and practice in the designing of, manufacturing, application, and recycling of computers, and its subsystems efficiently with no effect on the environment. Green IT will take to cover the facets of environmental sustainability, achieve reduction in energy efficiency, and drastically, reduce an organisation's total cost of ownership which, will have to cover the cost of disposal and recycling (Meruguson, 2008). In another perspective, it is seen as an including all aspects of environmentally sustainable IT and its application to contribute to environment preservation (Gartner, 2008).

How does IT Contribute to Environmental Degradation?

The effects and negative consequences of IT to the environment can be felt in many and albeit, different ways. At every stage involved of the life cycle of a computer, starting from production, through use and disposition, a number of environmental problems and challenges confronts the manufacturer. The overall consumption by equipment servers, and routing equipment, and cooling technologies for data centers is on the increase. This IT expenditures have implications for the environment.

Addressing IT Contribution to Environmental Degradation

Murugusan (2008), designed and propose a strategy to address the contribution of IT to the degradation of the environment. He called it holistic approach.
They are:

1.   Green Manufacturing. The production processes of electronics, computers, and subsystems should be with minimal negative impact on the environment.

2.   Green design. Design of computers that are efficient and environmentally compliant components.

3.   Green usage. The reduction in total the energy consumption of computers and use in ways that do not, constitute harm to the environment.

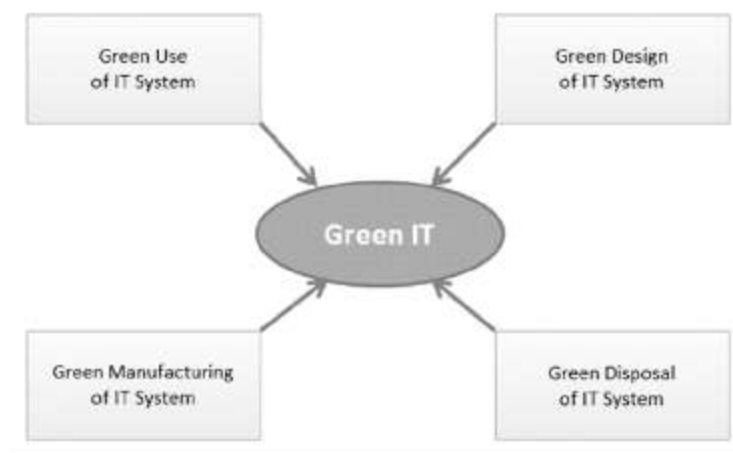4.   Green disposal. The Refurbishing and reuse of computers and recycling of surplus.

Figure 1: Holistic Approach to Green IT (Murugusen, 2008)

According to (Ratcliffe, 2012) the "green" decision has been made. There's no strategic "green" concern for companies or organisations, because the economy is well along in a shift from consuming resources to sustaining them. Therefore, Green IT and best practices can make big impact can be recorded replacing carbon-intensive activities efficient and less energy consuming technologies and practices (Makower, 2010).

Social Media, Benefits and the impact on Green IT

In recent years, the social web and applications like Facebook, Twitter, and Instant Messaging services have gained in importance, not only for private persons, but also for organisations. Today, using these applications empowers users to communicate and share information with friends, colleagues, and partners. The makeup of Social media are sociology and technology. Currently, there is one universally accepted definition of social media. Social media are digitally enabled social networks, which use electronic media to link groups of people, have proliferated in recent years with the rising popularity of social media. (Koch, 2010). Social media is the interaction of people in which they involve in the activities creating, sharing, or exchanging of information and ideas in virtual communities and networks (Heinonen, 2008). Similarly, (Kaplan & Haenlein, 2010) defined social media as Internet-based applications that enable users to create and exchange content. They also include collaborative projects, blogs, content based virtual communities, social networking websites, virtual game environments and virtual social environments.

According to a PEW research As of September 2013, 73% of online adults use social networking sites, Facebook registered more than 175 million active users. When put into perspective, this is slightly less than the total population of Brazil (190 million) and over twice the entire population of Germany (80 million). At the same time, with every minute, at least 10 hours of content were uploaded to YouTube. And, the image hosting site Flickr is providing access to more than 3 billion photographs, making the world-famous Louvre Museum's collection of 300,000 objects seem tiny in comparison. (Kaplan &Hainlein, 2010).
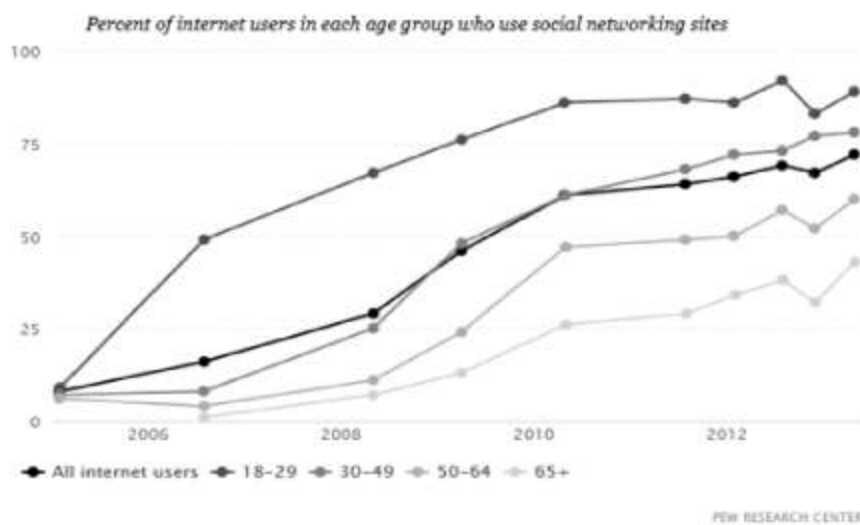

Figure 2: Internet Users Age Groupings (Pew research, 2013)

Who uses social networking sites
% of internet users within each group who use social networking sites

		% who use social networking sites
All internet users 18+ (n=5,112)		**73%**
a	Men (n=2,368)	69
b	Women (n=2,744)	78[a]
Race/ethnicity		
a	White, Non-Hispanic (n=3,617)	72
b	Black, Non-Hispanic (n=532)	73
c	Hispanic (n=571)	79[ab]
Age		
a	18-29 (n=929)	90[bcd]
b	30-49 (n=1,507)	78[cd]
c	50-64 (n=1,585)	65[d]
d	65+ (n=1,000)	46
Education attainment		
a	No high school diploma (n=243)	74
b	High school grad (n=1,238)	69
c	Some College (n=1,461)	75[b]
d	College + (n=2,144)	75[b]
Household income		
a	Less than $30,000/yr (n=1,212)	77
b	$30,000-$49,999 (n=886)	73
c	$50,000-$74,999 (n=746)	73
d	$75,000+ (n=1,600)	75
Urbanity		
a	Urban (n=1,605)	76[bc]
b	Suburban (n=2,585)	72
c	Rural (n=922)	70

Source: Pew Research Center's Internet Project Library Survey, July 18 – September 30, 2013. N=5,112 internet users ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on internet users is +/- 1.6 percentage points.
Note: Percentages marked with a superscript letter (e.g., [b]) indicate a statistically significant difference between that row and the row designated by that superscript letter, among categories of each demographic characteristic (e.g. age).

Figure 3: Who Uses Social Media (pew research, 2013)

According to Forrester Research, 75% of Internet surfers used "Social Media" in the second quarter of 2008 by using social networks, blogs, or making reviews to shopping sites; this represent a more significant rise from 56% in 2007. The growth is not limited to teenagers, either; members of Generation X, now 35—44 years old, increasingly populate the ranks of joiners, spectators, and critics. It is therefore, quite reasonable to deduce that Social Media represent a revolutionary new tool that should be of interest to organisations operating in online space or any space, for that matter.

WORLD MAP OF SOCIAL NETWORKS
December 2013

■ Facebook ■ QZone ■ V Kontakte ■ Odnoklassniki ■ Cloob ■ Drauglem

credits: Vincenzo Cosenza vincos.it   license: CC-BY-NC   source: Alexa
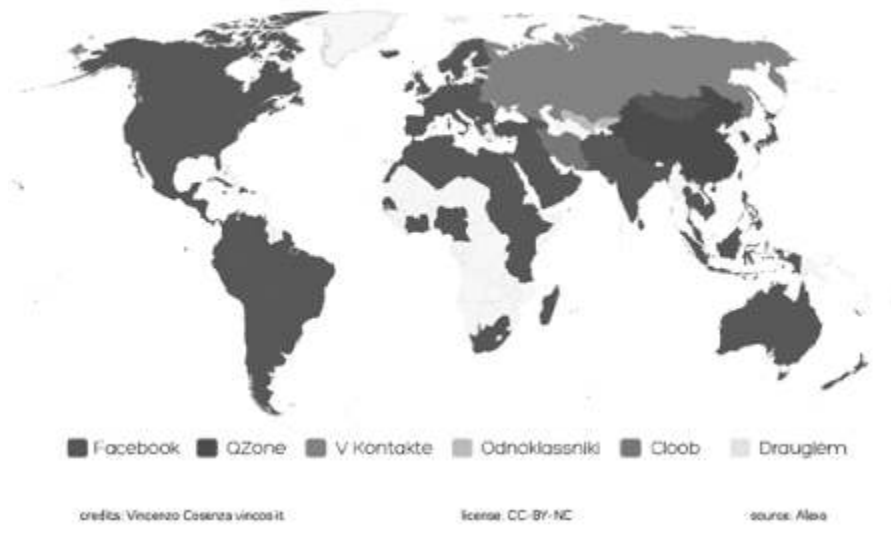
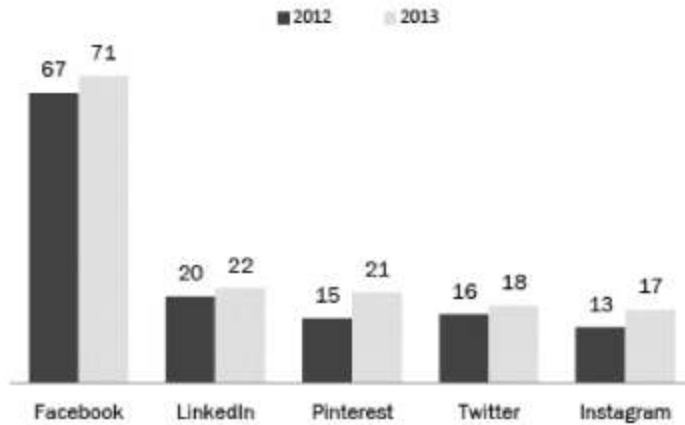Figure 4: World Map of Internet Users (Alexia, 2013)

Social Media Platforms
Facebook
Launched in 2004 as a social networking website exclusively for Harvard students, Facebook now has roughly 800 million active users, as of November, 2011 (Facebook statistics, 2014).Facebook users interact with other users, or "Facebook friends" by updating their "status", writing on other members "walls" or sending direct personal messages. Users are able to "create and join interest groups, 'like' pages, import and search for contacts, and upload photos and videos. The average user is connected to 80 community pages, groups and events.

Social media sites, 2012-2013

% of online adults who use the following social media websites, by year

■ 2012   ▨ 2013

	2012	2013
Facebook	67	71
LinkedIn	20	22
Pinterest	15	21
Twitter	16	18
Instagram	13	17

Pew Research Center's Internet Project Tracking Surveys, 2012-2013. 2013 data collected August 07 –September 16, 2013. N=1,445 internet users ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on all internet users is +/- 2.9 percentage points.
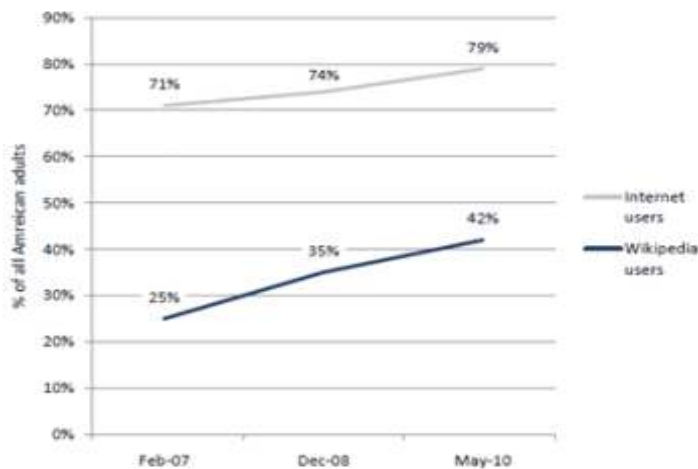
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Figure 5: Social Media Sites Usage (Pew Research, 2013)

Wikipedia

Wikipedia, the multilingual, web-based, free encyclopaedia project, was created in 2001 and celebrates its tenth year of existence on January 15, 2011. According to (Wikipedia, 2013) at 600 words a minute, in a month a single person could have read about 17 million words. In the year 2006, Wikipedia grew added to its database by at least 30,000,000 words.

Wikipedia users, 2007 - 2010

Percentages are based on all American adults age 18 and older.

Internet users: 71% (Feb-07), 74% (Dec-08), 79% (May-10)

Wikipedia users: 25% (Feb-07), 35% (Dec-08), 42% (May-10)

Figure 6: Wikipedia Users (Pew Research, 2013)

Source: Pew Research Center's Internet & American Life Project surveys.

Twitter

Twitter social networking platform was launched in 2006. It is an information sharing platform that works in real-time. It connects users to the latest information about what is of concern to them. It currently has 241 million active users a month, over 500 million tweets sent each day, and the 76% of twitter active users access it from mobile devices. 77% of accounts on twitter are outside the U.S., the platform is also supported in more than 35 languages (Twitter, 2014).

Twitter users

Among online adults, the % who use Twitter

	Use Twitter
All internet users (n= 1,445)	18%
a Men (n= 734)	17
b Women (n= 711)	18
a White, Non-Hispanic (n= 1,025)	16
b Black, Non-Hispanic (n= 138)	29[ac]
c Hispanic (n= 169)	16
a 18-29 (n= 267)	31[bcd]
b 30-49 (n= 473)	19[cd]
c 50-64 (n= 401)	9
d 65+ (n= 278)	5
a High school grad or less (n= 385)	17
b Some college (n= 433)	18
c College+ (n= 619)	18
a Less than $30,000/yr (n= 328)	17
b $30,000-$49,999 (n= 259)	18
c $50,000-$74,999 (n= 187)	15
d $75,000+ (n= 486)	19
a Urban (n= 479)	18[c]
b Suburban (n= 700)	19[c]
c Rural (n= 266)	11

Pew Research Center's Internet Project August Tracking Survey, August 07 –September 16, 2013. N=1,445 internet users ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on all internet users is +/- 2.9 percentage points.
Note: Percentages marked with a superscript letter (e.g., [a]) indicate a statistically significant difference between that row and the row designated by that superscript letter, among categories of each demographic characteristic (e.g., age).

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Figure 7: Twitter Users (Pew research, 2013)

YouTube

With a record exceeding a1 billion users visiting YouTube every month, with more than 6bn of video hours watched every month on YouTube (YouTube Statistics, 2014). That is the equivalent of an hour for every person on Earth, at the turn of every minute, 100 hours of video uploaded, nearly 80% of traffic originates from outside United States. YouTube is currently reaching 61 countries and supported in 61 languages, YouTube can reach more users in the U.S between the ages 18-34 more than any cable service (Nielsen (2012).

Weblogs

Briefly defined, weblogs are an easy-to-use content generation and management tool. Blogging means adding new content instantly to a website using a web interface. No much programming skills are necessary (Wyld, 2011). The requirement for blogging is Internet access and typing capability, and these barriers have led an explosion into personal blogs proliferating worldwide.

Benefits of Using Social Media

According to Carlton et al. (2011), in a survey from Social Media Examiner reports an increase of 89% of small and medium scale businesses reporting increased exposure and about 75% of organizations report increased significant traffic as the top two major benefits of social media. Many organizations and companies are grappling with the use of social media with only about 55% using social media to increase growth rate of their business or promote a particular cause.

Impact of Social Media on Sustainable use of IT

Social Media and Green I.T Initiatives

According to (Raybould, 2012) organisations interested in promoting or boosting their green credentials should implement these 10 Green IT initiatives. For the sake of this paper, five green initiatives will be discussed.

Profile creation and Platform Selection

Organisations should think and articulate their objectives that they want to achieve and which platforms are most effective for reaching their targeted audience. An example is, an organisation intending to reach out to businesses will have to create a platform like LinkedIn.

Relevant Content

Organisations should carefully assess what would be of relevance to the target market. However, this is to ensure that the relevant content is created and shared.

Establishing Expertise

According to (Raybould, 2012) online forums and groups enable individuals and organisations alike to engage in the discussion of specific specialist areas to establish expertise.

Listen/Respond

Social media allows for customers to interface contact with organisations. Organisations are advised to use social media to find advocates and influencers for organisation and engage.

Market Trends/Competitors

Organisations should 'Like' competitors Facebook pages, 'follow' the Twitter accounts, and 'subscribe' to YouTube channel of their competitors to acquire relevant business intelligence of what the competition is doing. However, this will help a business to meet

up with the growing demand for products and services produced with while considering the impact to the environment.

Methodology
This paper used the quantitative methodology. This approach provides generalize results of a given sample of a chosen population. A survey was administered using a web tool Qualtrics to collect and analyze data. The OCAI tool developed by Cameron and Quinn was used to understand how the culture of organisation's impacts the promotion of green IT using the social media in Nigeria.

Results and Discussions
As mentioned earlier, this paper assessed 4 areas of green IT practices, Sustainability, Social media use and organisational culture.

Section 1 - Green IT
In this section analysis of responses to each question on Green IT practice is presented. Graphical representation is used to analyse and present the data and scores to the questions on green IT assessment. Respondents made choices using a multi-choice scale.
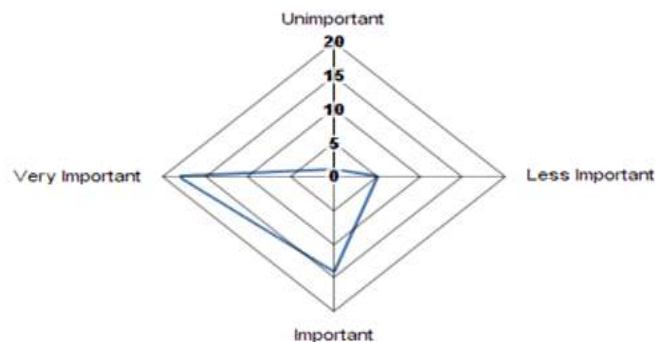

Figure 8: Response on How important is green IT

Figure 8 shows the score for how respondents responded to how important is the topic of environmental protection is to their various organisations. 3% considered it to be unimportant, 13% consider it as less important, 37% considered is as important and 47% of respondents consider it as critical. The mean average score is 3.29

Section 2 - Social Media Use
Figure 9: Social networking websites respondent have account on.
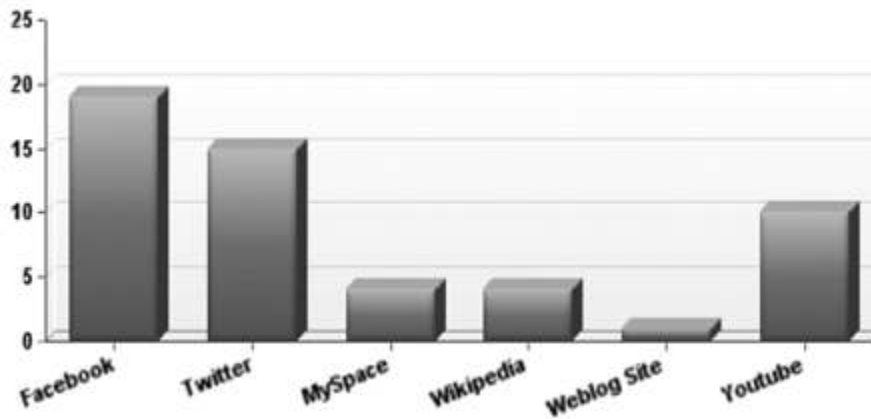

Figure 9: Social Media Networking websites respondents have account on.
Figure 9 shows the average score for social media platform they have accounts on. Facebook led with a total response of 95%. Twitter 75%, Wikipedia and MySpace having 20% each, YouTube 50% and weblog 5%. However, this proves the acceptance and relevance of Facebook and twitter platforms especially in a country like Nigeria.

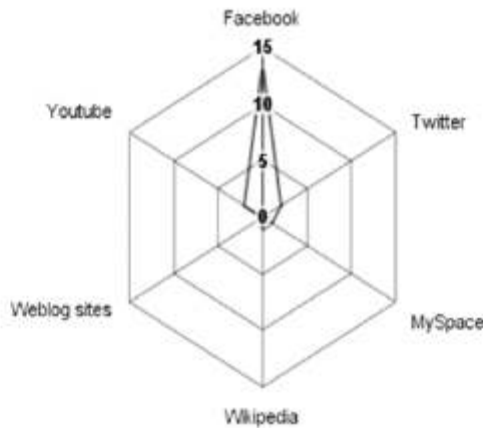Figure 10 :Social media platform with high usage in a week

Figure 10 :Social Media Platform with High Usage
Figure 10 of a spider diagram shows an average 68% of total respondents saying they are more inclined to use Facebook often, Twitter 11%, YouTube 11% and Myspace and Wikipedia 5% each.would prefer to use. Twitter 25%, YouTube 10%, Wikipedia and Myspace 5% each.

Section 3 – Culture Assessment (Organisational)
This section presents the analysis of responses to Cameron and Quinn's Organizational Culture Assessment Instrument. Spider diagram is used to show the level and degree of a dominant culture each quadrant. Other types of analysis involved are descriptive statistics shows: minimum, maximum, mean and standard deviation of the data.
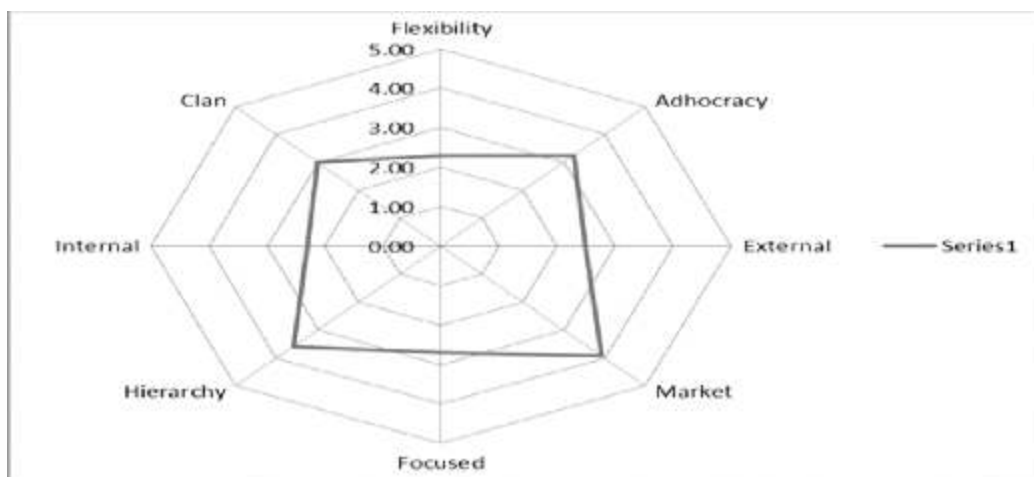

Figure 11: Organisational Culture Average
Figure 11 shows the average company culture of the sample population. The output on the spider diagram shows that the market culture is the most dominant followed by hierarchy culture.
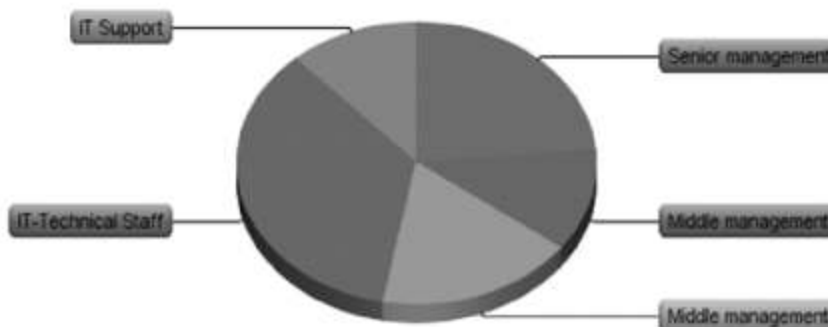
Section 4 - Demographics
Job Rank

Figure 12: Job Rank

The figure 12 shows the average score of 3.00 and distribution of respondents to the questionnaire 35% represents IT-Technical staff of targeted organisations. 24% senior management, 30 % Middle Management, and 12% IT support.

Conclusion and Recommendations

As shown from interpretations above, organisations in Nigeria need to be aware of the capabilities and reach of social media. Managers need key into that potential and showcase their green credentials and develop green IT practices. This is highly significant in Nigeria today bearing the harsh impacts of environmental or climate changes. The need to also understand organisational and national culture character when implementing this change is very key to achieving a successful change in attitudes of employees as well as various stakeholders. To this end, there are two approached to effecting change, modifying initiatives to fit national environments or changing the culture itself to accept the initiatives of organisations (Campbell, 2013).

Here is a list of area's organisations should capitalise on and utilise the social media to promote green IT in Nigeria.

1.   Social Media Policy: Organisations should come up with a social media policy and strategy that will   help guide how the social media can be used to develop green it. The policy should be able to create roles and achievable set objectives and timelines.

2.   Green IT story telling: Organisations should consider having a social media presence. With Facebook and Twitter with having combined active 1.5 billion users globally. Managers of organisations can reach beyond their immediate local geographic environment. This can help organisation communicate their green credentials and develop green IT in Nigeria.

3.   Customer/Consumer Insights: Organisations and managers can engage their customers in Nigeria via social media and communicate to them on how sustainable their business is and how they impact their operating environment positively.

4.   Competitive Advantage: Organisations can gain competitive advantage by utilizing social media that is happening in real time. This means social media engagement gives organisations the opportunity to find out what competitors are doing to promote green IT and how they can do it differently.

5.   Green Champions: Organisations and managers can use the social media to recruit local green champions to further promote Green IT practices in Nigeria. These green champions would be local people based within the local community. They can effectively communicate the companies green initiative to the community and effectively manage its delivery.

Changing Cultures

1.   Organisations should engage employees and all relevant stakeholders when initiating any green project. This will help the organisation collect credible information on how the stakeholders and employees perceive the initiative as they will be the ones to implement it.

2.   Organisation should motivate their employees to engage in their green initiatives by acknowledging and in some cases rewarding employees for helping the organisation reduce energy costs or impact of operations in the environment.

3.   Effective campaign should be carried out by the organisation to sensitise their employees or   stakeholders on their Green initiatives. Organisations need to make sure that these stakeholders key into the organisation goals and targets on green IT practice.

In this paper, concerted efforts were made to determine social media impact on green IT initiatives, social media types and penetration rate in Nigeria. The paper established a link between social media use and promotion of green IT in Nigeria. The paper was also able to investigate and establish the importance of using IT to address the challenges of environmental degradation. Critically analysis of organisational culture, national culture, IT culture conflict and their impact on organisations and nations trying to develop or implement new technologies was carried out. Furthermore, the paper suggested how organisations can leverage on the opportunities of social media and its reach to develop this laudable goal of green IT practices. The paper went on to suggest guidelines on how managers and stakeholders can manage the delicate balance of culture and change within their organisations and external to it.

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