

CONFERENCE PROCEEDINGS



**3rd INTERNATIONAL CONFERENCE ON EMERGING TRENDS FOR NATIONAL
SUSTAINABLE DEVELOPMENT AND DISASTER MANAGEMENT
(NSDDM 2016) /EXHIBITION**

**Hugh Aston Conference Hall
De Montfort University, Leicester, United Kingdom.
(Leicester is at the heart of the UK)**

August 3rd to 5th, 2016

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WELCOME WORD



WELCOMING WORD

On behalf of Ideal True Scholar/True Scholar Research Limited, I welcome you all to the 3rd International Conference On Emerging Trends For National Sustainable Development And Disaster Management taking place now in (3rd of August 2016) in Hugh Aston Room, De Montfort University, Leicester, United Kingdom.

Ideal True Scholar has a mission to bring together International Scholars as well as Practitioners and Scholars from related fields from all over the world with different intellectual traditions and expert views. It is particularly fitting that a scholarly reflection and dialogue on fundamental questions, dilemmas and challenges confronting African and the world at large as raised by the Conference theme **International Conference on Emerging Trends For National Sustainable Development And Disaster Management (NSDDM 2016)**.

We think it is a timely topic where scholars and practitioners in the different Nations can contribute significantly to the understanding of one or more contemporary issues as well as learn from numerous other colleagues.

The **NSDDM 2016** aims to bring together academics and professionals to share their ideas and recent findings on all aspects of **Emerging Trends For National Sustainable Development And Disaster Management**. The conference will discuss relevant research topics in order to provide a broad vision on sustainable development and averting disaster as currently being experienced in some countries. The conference participants are expected to take back to their various countries new ideas to enhance national sustainability.

I am convinced that the conference will open up both new debates and research agendas in the field of International Studies while advancing new methodologies and paradigms for a better interpretation of the current and future sustaining development and Disaster Management in all sphere of life.

I will not fail to thank our Lead/Keynote Speakers including **Richard Witts**, Regional Manager, Africa, Middle East & Pakistan International Office, De Montfort University, Leicester, United Kingdom; **Professor Sharon M. Kolb**, College of Education and Professional Studies, University of Wisconsin-Whitewater, USA.; **Prof. Aya Maher**, Human Resource Management, Faculty of Management Technology, German University in Cairo; **Prof. Samuel Babatope Adejuyigbe**, Mechanical and Mechatronics Engineering Department, Federal University, Oye Ekiti, Ekiti State of Nigeria; **Prof. Abhilasha Singh**, College of Education, American University in the Emirate; Dubai, UAE. Special thanks also to **Prof. Mojekwu Joseph Nnamdi**, of Actuarial Science & Insurance, University of Lagos, Akoka, Lagos, Nigeria.

Enjoy your stay in Leicester, United Kingdom,

Dr. Sam. O

Conference Convener

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FOREWARD

It is my pleasure to welcome all participants to this great Institution, the Chosen University to hold the 2016 International Conference, at the **De Montfort University, Leicester, United Kingdom**, between today, Wednesday 3rd and Friday 5th August, 2016.

The Third International Conference is organized by Ideal True Scholar/True Scholar Research Limited, based in Kemp House, 152-160, City Road, London, EC1V 2NX, United Kingdom, in collaboration with American University in the Emirate, Dubai, UAE.

The 1st International Conference took place in University of Ghana between 27th to 29th July 2014. The 2nd International Conference took place in American University in the Emirate, Dubai between 26th to 28th July 2015; and the 3rd International Conference to hold in DeMontfort University, Leicester, United Kingdom between 3rd to 5th August 2016.

NSDDM 2016 will bring the most knowledgeable researchers from all over the world, as well as leaders in the industry to explore the important topics in Emerging Trends For National Sustainable Development And Disaster Management.

NSDDM 2016 is a Three full days of **Technical Sessions, Poster Sessions, Virtual Session, Tutorials and Workshops**. Additionally, an **exhibition** will be held on parallel with the conference to show cutting edge and state-of-the-art technologies related to our industry as it will be many opportunities for networking and socializing with other colleagues.

Going by the quality of papers received and personalities presenting Keynote Papers on well researched and structured Issues, I am convinced that an extremely rich cross fertilization of ideas of experts from across the globe is assured. The Conference proceedings will serve as a compendium of intellectual property for researchers and policy maker as the material will be available online.

I wish you all very exciting an resource full deliberations and Journey mercies back to you respective destinations at the close of the conference. Scholarlink Research Institute in Conjunction with Emerging Academy Resource is immensely indebted to the dynamic planning committee, which work assiduously to make today a reality.

I sincerely thank Eleanor Wood, the Conference and Catering Assistant Manager - Estates & Commercial Services, De Montfort University, He indeed prove himself as a truth person, and was always there for us, he made us feel at home even when we were far away from home. Thanks also to Dr. Sam, the conference convener, a tireless and erudite scholar, who put his best to make the conference a success. the sky is your limit.

Thanks and God Bless all delegates here present, who, not minding the economic situation and the high increase in exchange rate, still saw the need to be physically present to attend the international conference. We look forward to meet with you again in the **NSDDM 2017** Conference. Date and Venue to be announced later, and you will be communicated.

Regards,
Don Pedro
Director, Ideal True Scholar

ENGINEERING TECHNOLOGY FOR NATIONAL SUSTAINABLE DEVELOPMENT AND DISASTER MANAGEMENT

Sam. B. ADEJUYIGBE, PhD, MNSE, MGhIE, MNIEM, COREN Regd.

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Engineering and Management.*

Administrator (Director), Works and Services, FUNAAB – 2009 - 2011

Dean, College of Engineering, FUNAAB – 2011 – 2013

*Vice Chairman, Committee of Deans of Engineering and Technology in Nigeria (CODET) –
2012 - 2013*

*Mechanical/Mechatronics Engineering Department, Federal University, Oye Ekiti
Ekiti State of Nigeria.*

PROTOCOLS

INTRODUCTION

I would like to begin by appreciating the organizers of this conference for the great efforts put into the event which have resulted into the success we are all witnessing today. I will also wish to specifically commend them for the well-thought theme chosen for this conference. Development has to be maintainable before its long term effect can be sufficiently felt most especially in the developing nations of the world which are seriously craving for emancipation from the doldrums of gross underdevelopment.

ABSTRACT

This paper revealed that the Engineering and Technology which is so vital in our Sustainable Development and which can be used for disaster management had, for long, not been given due emphasis. And also the pace of engineering and technology development is nothing to write home about, since some are already closing down some industries in Nigeria due to unforeseen circumstances as related to National Security challenges and unforeseen disaster looming around in the Northern Nigeria.

Therefore, a clarion call to Nigerian and other developing Nations to think beyond where they are and look for a way of improving engineering and technology, so as to make it attractive to the younger ones and remove all unsafe security challenges and disaster prone areas that we all witnessed presently in Developing Nations like Nigeria. If we refused to check the present unprogressive/unpractical/uneconomical trends in engineering and technological education and practice in Nigeria, the profession will be relegated and plays insignificant role in efforts geared towards sustainable development.

Keywords: Engineering, Technology, Sustainable Development, Disaster Management, and Nigeria.

SUSTAINABLE DEVELOPMENT

Sustainable Development (SD) is defined in the Brundtland Report as “development that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs”

It can also be defined as “to meet the basic needs of people today without ruining the chances of future generations to do the same”.

Thus, sustainable development is the organizing principle for sustaining finite resources necessary to provide for the needs of future generations of life on the planet. It is a process that envisions a desirable future state for human societies in which living conditions and resource-use continue to meet human needs without undermining the “integrity, stability and beauty” of natural biotic system.

It includes the following areas;

- Ecological Engineering – Relationship between humans and their natural, social and built environments
- Environmental engineering and Environmental Technology
- Agricultural Engineering

- Sustainable Energy
- Manufacturing Engineering
- Appropriate Technology
- Sustainable Transportation
- Ecological Economics
- Corporate Sustainability
- Sustainable Architecture
- Environmental politics, Environmental Governance and Sustainable metrics and Indices
- Culture

The 2030 Agenda for Sustainable Development expresses and reaffirms in multiple instances the commitment of Member States to achieve sustainable development for all, taking into account different levels of National Development and capacities, different national realities and levels of development as well as respecting national policy space for sustained, inclusive and sustainable economic growth, especially for developing states. (United Nations Department of Economics and Social Affairs, National Sustainable Development Strategies (NSDS)).

The Royal Academy of Engineering's Guiding Principles (2005) described the pivotal roles of Engineering for Sustainable Development through the coalescing of the three spheres of Techno-centric, Eco-centric and Socio-centric into one unified activity as depicted in Figure 1 with the openly recognized aim of protecting future generations from the impact of the actions of this generation.

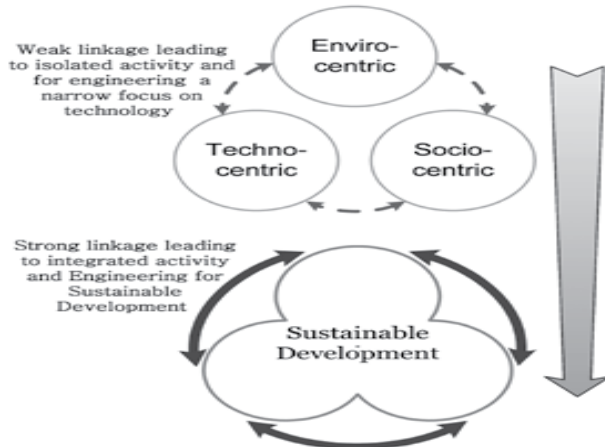


Figure 1: Engineering for Sustainable Development being achieved through integrated activity and identification within programme learning outcomes
Source: Royal Academy of Engineering's Guiding Principles (2005)

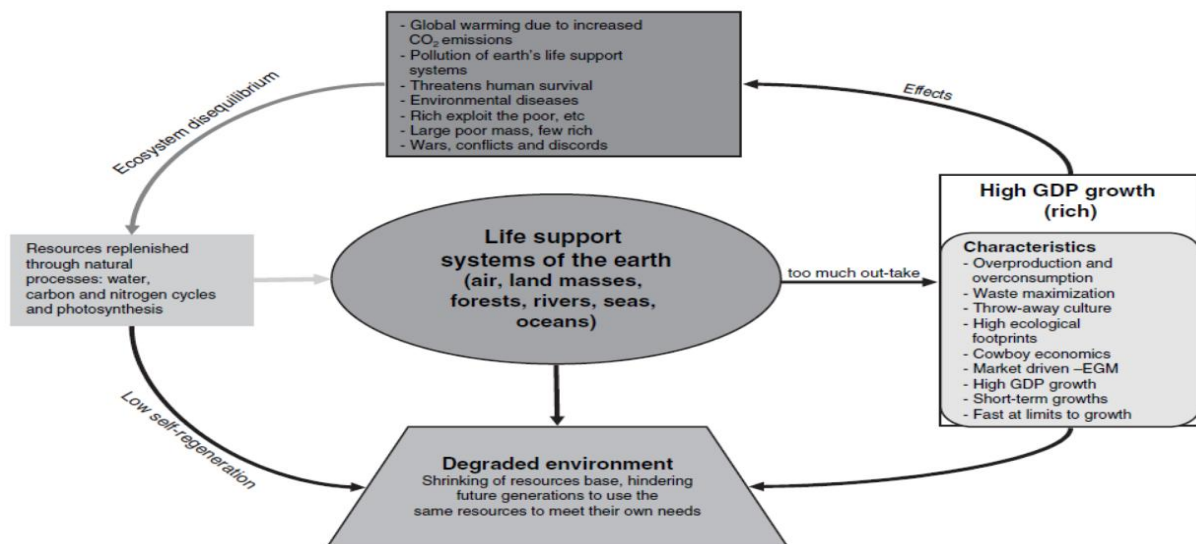


Fig. 2: Diagrammatic representation of the unsustainability in the economic growth model
Source: C.T. EYONG & I.I. FOY

Sustainable Development Goals

According to UNDP in Nigeria(www.ng.undp.org/content/nigeria/en/home/post-2015/), the sustainable Development Goals are;

- i. Eradicate extreme poverty and hunger;
- ii. Achieve universal primary education;
- iii. Promote gender equality and empower women;
- iv. Reduce child mortality;
- v. Improve material health;
- vi. Combat HIV/AIDS, malaria and other diseases;
- vii. Ensure environmental sustainability; and
- viii. Develop a global partnership for development
- ix. Combat child trafficking
- x. Child abuse

Sustainable Development in Africa

The common African position has reaffirmed poverty eradication as an overarching goal continent and has strongly emphasized the need for a structural transformation of Africa that is people-centred. It is no 1 priority to eradicate poverty in 2030.

Stating the MDG Report 2015, “Africa made great strides towards the eight Millennium Development Goals.. In many areas, especially related to health and education, the advance registered by Sub-Sahara Africa was the fastest among all developing regions. At the same time, the Northern part of the continent met many of the targets, including those on poverty and hunger reduction, universal primary education, children and mother’s health, as well as sanitation.”

DISASTER MANAGEMENT

A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material and economic or environmental losses that exceed the country’s or society’s ability to cope using its own resources. Though often caused by nature, disaster can have human origins. (International Federation of Red Cross and Crescent Societies (www.ifrc.org/en/w/)). One could not totally prevent disaster; its impact could be considerably reduced by suitable management technique in the three phases and post disaster phase. The role of Engineer was as vital in all such activities as for applied research, technology transfer and its applications were concerned.

Nigeria like any other country is exposed to a wide range of social hazard which could be natural or man-made in which the lives of the citizens as well as infrastructures may be endangered or adversely affected. Such hazards could lead to great or sudden misfortunes causing severe widespread disruption to normal pattern of life, injury, hardship and adverse effect on health. Furthermore, the event affects the social structure such as destruction damage to Governance, legal systems, buildings, communication and essential services.

National Emergency Management Agency (NEMA) manages disasters in Nigeria. (NEMA – How NEMA Manages Disaster in Nigeria, March 26, 2014 Bulletin)

All Countries required a disaster management which include the following;

- Disaster prevention;
- Disaster mitigation;
- Disaster preparedness;
- Disaster response; and
- Disaster recovery/rehabilitation

Disaster management is therefore a collective responsibility of the Federal, State, Local and other stake holders. Community based organizations and non- governmental organizations should be counted, encouraged and supported to render assistance. (Environmental Health Watches, Friday, July 27, 2012 – National Policy on Disaster Management).

The main types of disaster in Nigeria which disaster management organizations may be called upon to manage include:

- i. Floods;
- ii. Destructive storms;
- iii. Drought;
- iv. Desertification;
- v. Catastrophic gully and coastal erosion;
- vi. Disease epidemic;
- vii. Civil Strife;
- viii. Fire disasters;
- ix. Building collapse;
- x. Explosions;
- xi. Aviation disasters;
- xii. Road accidents;
- xiii. Maritime and inland waterways disasters; and
- xiv. Earth tremor/land slide

The management of the aforementioned types of disasters entails six interrelated groups of activities in Nigeria thus;

- i. National Development planning and disaster management;
- ii. Disaster prevention;
- iii. Disaster mitigation;
- iv. Disaster preparedness;
- v. Disaster response, and
- vi. Disaster recovery

These six functions which together make up disaster management shall be effectively performed by various levels of Government where Engineering and Technology played prominent roles, most especially Civil, Structural, Biomedical, Manufacturing Engineers.

Science and technology plays a vital role in man's quest to understand the mechanism of natural hazards from atmospherically, geological, hydrological, and biological origins and to analyze the transformation of these hazards into disasters. Over the year, scientific knowledge of the violent forces of nature comprises an orderly system of facts that have been learned from study, experiments, and observations of floods, severe storms, earthquakes, landslides, volcanic eruptions and tsunamis, and their impacts on humankind and his works. The scientific and technological disciplines which are involved include basic and engineering sciences, natural, social and human sciences. There has been a major progress made in the development of global meteorological models and their application to large scale weather prediction and this is largely responsible for the critical information currently being provided on global climate change and its implication on the global environment.

The development of accurate early warning systems for hurricanes, tornadoes, thunderstorms, heavy rainfall, flooding, drought, snowfall, high winds and other extreme weather hazards is undoubtedly one of the great risk-reduction achievements of the last century. It is now possible for sophisticated computer models to replicate the physics of the atmosphere and its weather systems and the behavior of water on the land due to years of public investment in scientific research and data gathering systems. From the meteorological and hydrological services that are now being routinely provided, organizations and individuals can now better prepare and protect themselves as a result of timely, detailed and more accurate forecasts.

Table 1: Example of Recent Disaster in the World

Country	Disaster	Date
USA	Florida Landslide	March, 2016
Niger	Meningitis Outbreak -414 cases including 33 death	March 2016
Morocco	Cold Wave – A cold wave affected Morocco on Saturday 27 th February, 2016	Feb 2016
Fiji, Niue (New Zealand), Tonga, Vanuatu	Tropical Cyclone Winston – 350,000 people living in the cyclone’s path could have been affected(180,000 men and 170,000 women)	Feb 2016
Taiwan	Earthquake -	Fed 2016
Togo	Meningitis Outbreak – The meningitis outbreak in Ghana has spread to Togo – 219 cases and 12 death	Feb 2016
American Samoa, Fiji, Marshall Islands, New Caledonia(France), Samoa, Tonga	Zika Outbreak –WHO declare the Zika Virus a Public Health Emergency of International Concern	Feb 2016
Haiti	Floods – Damaged hundreds of homes and killed 8 individual	Jan 2016
Angola	Yellow Fever Outbreak- 164 suspected cases and 37 death	Jan 2016
Benin/Nigeria	Lassa Fever – 82 people were reported to have died of Lassa fever.	Jan 2016
Mongolia	MongolioDzud – Experiencing very low temperatures and heavy snowfall since early November 2015, locally named Dzud	Jan 2016
Central African Republic	Monkey Pox – Rashes all over the body	Dec 2015
Philippines	Tropical Depression Twenty Nine – Landfall over municipality of Many in Davao oriental province, eastern Mindanao	Dec 2015
Argentina, Arab (The Netherlands), Barbados, Bolivia (Pluvinativral State of), Bonaire, Saint Estuatiions and Saba (The Netherlands), Brazil, Chile, Colombia, Costa Rica, Cuba, Curacao (The Netherlands), Dominica, Dominican Republic, Eastern Island (Chile), Ecuador, El Salvador, French Guiana (France), Guadeloupe (France), Guatemala, Guyana, Haiti, Honduras, Jamaica, Martini rue (France), Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico (The United States of America), Saint Martin (France), Saint Vincent and the Grenadines, Sint Maarten (The Netherlands), Surinam, Trinidad and Tobago, United States Virgin Island, Uruguay, Venezuela (Bolivarian Republic of)	Latin America and Caribbean Zika and Dengue Outbreak	Dec 2015
Tajikistan	Tajikistan Earthquake	Dec 2015
Cameroon	Cameroon Measles and Cholera Outbreak	Nov 2015
Kyrgyzstan	Kyrgyzstan Earthquake	Nov 2015
Indonesia	Floods and Landslides – Torrential rain over 12-16 Nov. 2015 causing flooding in several locations in West Java.	Nov. 2015
Liberia, Nigeria	Ebola	2015

Source: reliefweb: reliefweb.int/disasters 2016

ENGINEERING AND TECHNOLOGY

Engineering and Technology in Nigeria are looked at as the bedrock for productivity, sustainability, advancement and development in a growing economy. We need to note that there are security treats everywhere. On Thursday 13th September, 2012 the US embassy in Abuja issues warning to Americans living in Nigeria after Libya and Egypt killings, urging extra caution. From the CNN News of 17th September, 2012 it was reported that “Suicide bomb targeted van carrying foreigners, killing 9 people on main road near Kabul’s international airport. Also reported same day by CNN, that “Floods in northern Cameroon kill dozens; displace thousands.

Adejuyigbe (1998) said that everyone hopes to get a job that he will find interesting, enjoyable, and rewarding. A profession one chooses for himself may offer adventure, challenge, and accomplishment. Sometimes, it is also possible that a career chosen for one self can also present uncertainty, difficulty, and disappointment. It is necessary therefore to plan yourself for the career having the following in mind.

- **Knowing yourself; knowing your capability; your interests; Needs; Desires; Attitude; and the jobs that are available and the opportunities they offer.**

Knowing the above points will lead you to a success and happiness in your chosen career

Engineering is the profession that puts power and materials to work for man. Once a scientific principle is understood, the next is engineering which translate the scientific discoveries into software for facilitating concrete products or goods for man's comfort. **Engineers** used steel and concrete to construct buildings, dams, roads and bridges. They use metal, glass, and plastics to make hundreds of everyday products. Engineers transform water power into electricity that light our homes and run our factories. They harness the power of gasoline and other fuels that drive our airplanes, trains, ships and automobiles.

Technology is the study, mastery and utilization of manufacturing and industrial methods, systematic application of knowledge to practical tasks in industry. It is the application of scientific knowledge for practical purposes, the employment of tools, machines, materials and processes to do work, produce goods, perform services, or carry out other useful activities. It also refers to all the ways man uses his inventions and discoveries to satisfy his needs and desires. Is the systematic knowledge and action, usually on industrial processes but applicable to any recurrent activity. It is closely related to science and engineering. It also refers to all the ways man uses his inventions and discoveries to satisfy his needs and desires. Ever since man appeared on the earth, he has had to work to obtain food, clothing and shelter.

Some of the key areas where Engineering and Technology are so important to sustainable development and disaster management as identified in this write up are enumerated below thus;

- **Agricultural Mechanization**

Mechanization can be achieved by the use of the Agricultural Engineers and the agricultural equipment and implements.

- **Iron and Steel Industry**

The products obtained from Iron and Steel industry should be the function of Mechanical Engineers and should be of high standard enough so as to be worked upon by the machine tools industry. This will make the manufacturing of essential parts and products needed for diversified Nigerian Industrial set up.

- **Small Scale Industries**

With the phenomena of transfer of technology, small-scale industrial entrepreneur must play an important role in revitalising a depressed economy. This is the area of Production/ Industrial Engineers and Economists. Small-scale industries are where individuals engage in the production of a particular component, which sustain the economy.

- **Health Equipment and Accessories**

It is the responsibility of the machine tools industry to be saddled with the manufacture of modern health equipment and accessories used in our hospitals. The health equipment and accessories production is for Production / Manufacturing Engineers.

- **Defence and National Security Equipment and Artillery**

Developed countries place great emphasis on the tools industry to provide the equipment and artillery used for their defence and security.

- **Printing Industry for Educational Books**

Appropriate textbooks for the educational system is lacking seriously. The use of standard, adequate and modern printing machines, which is one of the product of machine tools industry and Engineers.

- **Automobile Industry and Spare Parts for Maintenance**

The non-availability of spare parts for maintenance of vehicles and even the inability to purchase the new one is at increase. To actually attain total dependence in Automobile Industry is the function of Automobile Engineers.

- **Change in the Trend and Operations of Manufacturing Industries and Springing up of other Industries**

At present, most of the Nigerian manufacturing industries are dominated by low technology and light industry such as food, beverages etc, but the establishment of heavy engineering industry is lacking. Which our Engineers should look at.

- **Stoppage or Gradual Elimination for Imported Machines**

Most of the machines and equipment used in Nigerian Manufacturing Industries are imported. This involves a lot of foreign exchange, which should have been conserved for Nigerian use. With the development of standard machine tools, there will be gradual phasing out of importation of machines used and its eventual stoppage.

Other Allied industries that will service the machine tools industry will also spring up, like

- Electrical industry where electric motors, electrical elements like relay, alternators, transformers are made;
- Metal bearing industry
- Belts, brake industries, etc.

THE CHALLENGES, MOTIVATION AND HUMAN DEVELOPMENT IN ENGINEERING AND TECHNOLOGY EDUCATION IN A DEVELOPING COUNTRY: NIGERIA AS A CASE STUDY

Since the introduction of Western Education in Nigeria around the year 1840, technological education has always been treated as relatively insignificant aspect of the Country's educational system (Fagbemi, 1988, Adejuyigbe, 1996, 2007). The education ordinances of 1882, 1887, 1903, and 1916 all have one major characteristic in common, that is, the relegation of technological education to the background (Fagbemi, 1988, Adejuyigbe, 1996, 2007).

In Nigeria today the production of the required science and technical personnel is not appropriate or adequate to the need of our growth. Even the growth of the Universities, Polytechnics, Colleges of Education, Research Institute are not commensurate with the rate of the production of appropriate and seasoned technological personnel needed to man various aspects of our developments.

There are so many researchers in Nigeria who have worked in the area of technical education, some of them are; Bello, Owoso, and Osinnowo, 1992, Adejuyigbe, 1996 and 2007, Fagbemi, 1988, Ivowi, 1987.

Slutzker (2016) in his analysis said, In conflict –affected and disaster prone communities, education programs cannot succeed unless they take into account the dynamics and risks associated with these unique environment said a panel of experts at the Comparative and International Education Society Conference in USA on March 7, 2016.

With massive levels of displacement and trauma often caused by these crises, “we know you cannot do business as usual in these contexts, “said James Rogan, a Principal Consultant at Exterior and a key advisor to the US Agency for International Development's Education in crisis and conflict Network”

Slutzker (2016) also said, In assessing conflict and disaster in the area of education in the Northern Nigeria, in the rural communities of Yobe States, as an example, food insecurity was already high and access to education was limited even before Boko Haram ramped up its attacks on schools in late 2013. In Yobe state alone, Boko Haram has destroyed or damaged more than 300 Schools, some 23,000 households have been displaced by the violence, and nearly 30 percent of the displaced population is between the ages of 6 to 17.

Therefore, this paper analyzes the trends in engineering and technology in Nigeria in the following areas:

- The Training of Engineering/Technical Educational Personnel (Pre- Independence) in Nigeria.
- The Training of Engineering/Technical Educational Personnel (Post- Independence) in Nigeria.
- The Development of Engineering and Technological University Education in Nigeria
- Challenges in the Areas of Turning Theories to Practical in Nigeria
- Challenges in the Midst of Security Threats in Nigeria.

The Training of Engineering/Technical Educational Personnel (Pre- Independence) in Nigeria.

Technical education pre independence era has little or nothing to write home about. There was a little attention paid to Technical Education. Training of sub professional most especially in technology was not popular.

By contrast technology, agriculture and other practical subjects did not win esteem. Even though various skills such as weaving, sculpturing, blacksmithing, carving, fishing, dressmaking, catering, dyeing and farming were taught as part of the education of Nigeria child before the advent of western education, the training was not institutionalized as such.

A few mission schools in the nineteenth century introduced farming, bricklaying and carpentry as part of their curriculum, but these skills were not seriously regarded as part of Western education and the practice died out before the turn of the century, except in the Blaise Memorial Industrial School in Abeokuta, founded by some Nigerians and West Indians, and the Hope Waddell Training Institute in Calabar, established by the Church Missionary Society (CMS) in 1895 (Fafunwa, 1974). Apart from these two schools, there were no formally organized technical or vocational educations at the post- primary or secondary school levels.

Formal vocational education in various departmental training schools began between 1908 and 1935. Engineering courses commenced at the Yaba Higher College temporarily in 1932 at the King's College premises, and later moved to its permanent buildings in Yaba in 1934. The primary objective of the institution was to supply "the needs of the various departments for Africans with the best local training available to undertake the routine duties and less responsible work of the fully qualified European officers" (Fafunwa, 1974, Elliot Report, 1945).

Some of the landmarks of technical education in the Pre- Independence are:

- The establishment of Survey School in Lagos by the Land and Survey Department in 1908.(Later moved to Ibadan in 1926 and subsequently to Oyo in 1934)
- The establishment of Departmental courses such as junior technical training course in 1931, for technical assistants by Public Works Department;
- The Nigerian Railway course engine drivers in 1936;
- Marine department's course in 1928;
- A Post and Telegraphs course in 1931;
- A School of Forestry in 1938;
- A Veterinary School in 1935;
- A School of Agriculture in 1930 with centres at Ibadan and Samaru-Zaria.
- The Nigeria Railway started its training schemes in 1901 to groom selected station staff with five years experience.
- The Nigeria Railway introduced an apprentice course in Mechanical Engineering in 1942 for those with Senior School Certificate for a five years course, admitting six to eight annually.
- The first major breakthrough for the introduction of technical and vocational education was in 1945, when the Elliot Commission on Higher Education in West Africa recommended that the Higher College at Yaba be converted into a Technical Institute to produce the hundreds of technicians that the country's economic development and eventual political independence would require.
- In October, 1947, Yaba Technical Institute was established as well as University College, Ibadan. The first Principal of the Yaba Technical Institute was Robert Gillion. The courses were for mechanics and carpenters.
- In 1949 Electrical Engineering and Architectural Assistant's courses were introduced .
- In 1950 Civil Engineering courses were introduced.
- In June 1959, Yaba Technical Institute presented the first set of students for the examinations of City and Guilds in building construction, electrical and mechanical engineering with satisfactory results.

That was the pre-independence era.

The Training of Engineering/Technical Educational Personnel (Post- Independence) in Nigeria.

The 1959 to 1968 was considered the era of reconstruction of technical education in Nigeria. More courses were introduced; more Trade Centres were established in different regions and states in Nigeria. Technical education after independence in Nigeria is enumerated below thus:

- In 1963 Yaba Technical Institute transformed to College of Technology, upon commissioning of the new engineering building. In other words the institution became a Polytechnic.
- The Higher Diploma Known as the Higher Technician Diploma was introduced in the 1966/67 session. It was in operation until June 1970 when the students sat for the City and Guilds of London Institute examination the last time.
- In 1970/71 session the syllabus for college Diploma was revised to conform in all respect with the United Kingdom Ordinary and Higher National Diplomas but at the same time having the particular needs of the Country in mind. In 1973 the first set of part time students got their Diplomas.
- Since the introduction of OND and HND, many other new courses at this level were developed. The establishment of more Polytechnics in different States was done.

The Development of Engineering and Technological University Education in Nigeria

The development of engineering education in the University came after the Nigeria independence, hence its treatment in this paper to coincide with after Nigeria Independence in 1960.

Taiwo (1980) and Adejuyigbe (1994a) wrote on the establishment of Engineering and Technological Education in Nigeria. Some of their findings are reviewed below thus;

- The establishing of Engineering in Nigeria Universities shows that Ahmadu Bello University that was established in 1951 was then Nigeria College of Arts, Science and Technology which in 1962 became the nucleus of Ahmadu Bello University. It then became the first University to offer courses in engineering.
- The University of Lagos established in April, 1962 urged strongly that opportunities should be provided for higher technological studies and training of graduate teachers hence the establishment of the Faculty of Engineering on 2nd October, 1964. Bringing the University to the second position.
- The University of Nigeria Nsukka in the 1961-62 session, incorporated the Enugu Branch of Nigeria College of Arts, Science and Technology, and was designated the Enugu campus of the University. It was in 1965-66 Session that Engineering (Civil, Mechanical, and Electrical) courses started, placing the University in the third position.
- The establishment of the Mid-West Institute of Technology in 1969 which ultimately was named the University of Benin and the eventual taking over by the Federal Government in April, 1975, because of poor financial position of the Institution eventually became the fourth University that trained engineering personnel in Nigeria.
- The University of Ife now ObafemiAwolowo University introduced Agricultural Engineering in 1967. This is not a full-fledged engineering department having Mechanical, Civil and Electrical.
- Other conventional and Universities of Technology joined to train the engineering personnel in Nigeria at a later date.

Challenges in the Areas of Turning Theories to Practical in Nigeria

Challenges in Engineering and Technology should as a matter of urgency leave the territory of theories and move to practical values. Some of the research conducted by our learned Engineers and Scientist died in their shelves. Quoting just very few research done in our tertiary institution and some practical work carried out in Nigeria thus; Olatunbosun and Abimbola, (2005) developed an Expert System, to carry out diagnostic operation on equipment. This is a prototype computer driven system for the maintenance of electrical equipment/devices. The system works satisfactorily, and if put into use, it would be of immense assistance in maintaining electrical installations. Especially in areas that are, remote and far from electric power stations, and where it may not be easily accessible for engineers. It could also be used as a training module for electrical maintenance. If implemented in the industries, the system will reduce the maintenance/repair cost and minimize the equipment downtime thereby raising the production level and reducing the overhead cost.

Adejuyigbe (1995 to 2016 as enumerated in this write up below under my experience), in various publications has worked in the areas of mechatronics, Computer Aided Engineering, Antropometry and Ergonomics, Artificial Intelligence, Knowledge Based Expert System, Automation, Robotics, which are the modern challenges in engineering that Nigeria needs to imbibe.

This will lead to rapid positive reactions to developments in technology and techniques.

Challenges in the Midst of Security Threats in Nigeria

According to Kevin Nengia in the Nigerian newspaper of Thursday 13th September, 2012, on “Why Nigeria May Not Break Up” he emphasized about the security problems of Nigeria. He looked at the breaking up of Nigeria into five different countries thus;

- Arewa Republic;
- Niger Middle Belt;
- Oduduwa Republic;
- United Niger Delta; and
- Biafra Republic.

He was looking at this because of some recent happening in Nigeria, and feels sorry for the future of Nigeria, for example;

- He looked at hope of the poor masses
- Governance;
- Corruption,
- Lack of basic amenities for people;

- Boko Haram bombing churches, for example the one at Deeper Life Bible Church at Kogi State, and Plateau State. For some unexplainable reasons, Boko Haram has besmirched all security measure put in place by the Government to track the faceless terrorist behind callous mayhem threatening the very foundation of the country.
- He also looked at some personality in Nigeria like Ogboni leader, GoodluckDiigbo who declared in faraway Netherland that the Ogonis had seceded, meaning the Ogonis were no longer part of Nigeria
- Bakassi people also declared self-determination. For them, the ceding of their father land is not only sacrilegious, it is devious and inhuman. Until today, they are yet to come to terms with the reality that they had been hounded out of their ancestral home by few judges, who sat in the Hague and decided their fate.
- A branch of the Living Faith Church, in Giwa Local Government Area, Kaduna State was burnt down on 30th March, 2015, as election results were being compiled.
- Violence against Christian abound in Kaduna, Kano and other Northern States. Last week (end of March, 2016) SabonGari Market of mostly Christian traders was burnt in Kano, and some social media commentators announced that it was just the beginning of fight against Christians in the North of Nigeria, meaning more fires will follow, and nothing happened to them.
- According to Udegbe (2016) in his opinion claims that the violence against Christians in some parts of the country will fueled the religious bill, passed by Governor Nasir El- Rufai of Kaduna State.

But, he concluded that all these are not the end for Nigeria. He said that all these strange happenings, violence and bombing by Boko Haram in the North, are mere façade put up by phony power mongers. It is simply the quest for power control and once they are “settled” we will see the elastic spring returning back to size.

DayoAdebowale on Saturday, September 15, 2012 looked at the Technology, politics and global security and analysed the killing of the US Ambassador in Benghazi, Libya over the alleged blasphemy on Islam in the film- Desert Warriors – said to be about life 2000 years ago, bring the fore the good, the bad and ugly side of the internet as a fast and speedy generator of information and ideas. The presence of objectionable scenes on the Holy Prophet and Islam sparked off murderous protests in the Middle East with protesters looking for Americans to kill, maim or skin alive. In Cairo the situation was similar to that of Benghazi. Just as in Senaa the Yemeni capital where protesters besieged the US embassy and tried to enter it.

He also emphasized the use of internet by the Boko Haram manufacturing bombs from the local raw materials from the knowledge gained from the internet. Then he concluded by saying that one is tempted to ask if there has not been a mistake somewhere on expected use of information on an unfettered internet and totally free social networks and on-line information sharing systems.

ENGINEERING AND TECHNOLOGY AS THE BEDROCK OF SUSTAINABLE DEVELOPMENT AND DISASTER MANAGEMENT- PERSONAL EXPERIENCE IN DESIGN, PROJECTS DEVELOPMENT AND INITIATIVES IN MANUFACTURING ENGINEERING AND COMPUTER AIDED ENGINEERING

As somebody who has been in the engineering profession for the past 42 years, starting as a Fitter Machinist from Trade Centre, Osogbo, now a Professor in the field of Mechanical, Computer Aided Engineering, Production/ Manufacturing and Management, I will be treating Engineering and Technology as the bedrock of disaster management in Nigeria from the developments in which I have been involved in and in the area of the use of computer in the industry which has a profound impact on the manufacturing industries from design to machine processing as well as the management and marketing components (Some of the Adejuyigbe Publications, from 1988 - to 2016). In both the developed and developing countries, most of the technological processes can be characterized by the rapid development and wide spreading application CAD/CAM/CAE systems.

The Development of Process Equipment using Mechanical and Agricultural Engineering Design in Nigerian Universities

There are some equipment development in our various research institutes and universities in Nigeria. They are just laying waste without making use of them in our industrial development. I will only cite what I have been doing as an example in this write up and also show some of the end products which can be utilized for our development.

Adejuyigbe (2010) in his Inaugural lecture showcased what he had been able to do in the area of the development of local processing equipment which can be very useful for our development and change our situation from poverty to wealth

Machining Operations and Engineering Materials

- Developments of Textbooks and Coolant for Machining
- The use of soybean, groundnut oil, palm oil as an alternative to soluble oil in machining mild steel materials was also carried out
- Development of Tool Wear Detector –
- Development of Single Point Tool for Machining Plastic Materials -represented the expanded image analysis of the scanned image of the new parting-off tool.
- Modelling the Electromechanical Behaviour of Austenitic Stainless Steel in some Selected Media.
- Production of Ductile Iron Using Indigenously Manufactured Rotary Furnace.
- Production of Cutting Tools from Recycled Steel with Palm Kernel Shell as Carbon Additives.
- Effect of Carburizing on Mechanical Properties of Recycled Steel with Palm Kernel Shell (PKS) as Carbon Additives
- Impact of Carburizing Temperature and Holding Time on Wear of High Speed Steel Cutting Tools.
- Developing a Medium Carbon Steel Lathe Cutting Tool for Plastics

Machines Fabricated and Developed

A research into machine fabrication and development was carried out. Extensive work has been done in this area of research that will add wealth to our economy if properly harnessed. Some of the machines fabricated and constructed are presented.

Looking at the Industrial sector of our economy we research into how some of the problems in this sector can be eliminated. Some of the works done in the areas are further enumerated;

- Design, fabricate and carry out the performance evaluation of a domestic water treatment plant for the Nigerian market, using Ibadan as a case study
- Developed a suitable die casting mould, designed and constructed, suitable for the production of various sizes of key blanks
- Design of a radiation- recuperative heat exchanger for a 200kg capacity rotary furnace.
- Also the design, moulding and performance evaluation of cylindrical fibre- cement silo for storing two-tonnes of maize were carried out. The coconut fibre (coir) was used.
- Design, fabrication and performance evaluation of bean dehuller having the average capacity of 3.6 kg/h and efficiency of 75.7 % for the use of our local and mini industrial farmer
- The development of Pump Housing and Impeller by casting using local raw materials which could compare favourably in terms of performances with the imported ones
- Designed and fabricated the prototype incubator for birds.
- The design and fabrication of a pineapple fruit juice extractor that operates using pressure which is provided by screw press for the purpose of squeezing juice out of pineapple fruits was done.
- The design, construction and performance evaluation of a locally developed cassava chipping machine was carried out
- Development and Performance Evaluation of a Rice De- Stoning Machine using Vibrating Sieves.
- Development of a Solar Photovoltaic Power System to Generate Electricity for Office Appliances..
- Improved Design and Fabrication of a Cassava Chipping Machine.
- Performance Evaluation of Dry Season Okro Under Sawdust and Trash Mulch Cover Treatments in Southwestern Nigeria
- Development and Performance Enhancement of Vapor Recompression Heat Pump.
- Evaluation and Optimization of Steam and Lye Peeling Processes of Sweet Potato (*Ipomeabatatas*) using *Response Surface Methodology (RSM)*.
- Development and Performance Simulation of Vapour Compression Refrigeration Systems Using Ozone-Friendly Hydro-Fluorocarbon Refrigerants
- Computation Modeling of Temperature Distribution of Streams in Recuperative Heat Exchanger.
- Design Component for Developing the Terrain of a Low-Cost 3-D Simulated Automobile Framework.

- Development and Performance Evaluation of a Palm Kernel Nut Cracking Machine for rural use.

The automobile industry encounters a lot of problems when working on the automobile engine.

- Developed an Internal Combustion Engine Valve Installation Machine.
- Looked at the local mechanic problems and developed auxiliary equipment for improved reliability of tyre removing machine.

Human Factor Engineering/ Ergonomics

Human Factor Engineering / Ergonomics were researched into. Some of our model contributions in this field of specialization are enumerated below:

In relation to human comfort

- Alternative energy resources and potential in the next millennium.
- The ergonomic assessment of mass transit vehicles in Nigeria using a state owned mass transportation company as a case study.
- The Ergonomic Evaluation of Furniture in Higher Institutions using FUTA School of Engineering as a case study.
- An Anthropometric data of Nigerian paraplegics and also developed a tricycle
- Modeling Manual Material Lifting Risk Evaluation: A Fuzzy Logic
- Reducing Low Back Pain in Construction Works: Fuzzy Logic Approach
- Anthropometric Design of Furniture for Use in Tertiary Institutions in Abeokuta, South- Western, Nigeria
- Low Back Pain Assessment for Construction Workers.
- Decree of Safe Postures in Manual Lifting Tasks among Some Group of Construction Workers in Southwestern Nigeria
- Low Pain Assessment Application for Construction Workers.

In researching into industrial engineering ergonomics

- The incessant burst of crude oil pipeline in Nigeria which has resulted in the death of so many in Nigeria and has been a problem and concern to all. Solutions were proffered to reduce incidence of crude oil burst and explosion.
- Cost-to-Worth Value Engineering Analysis of Manufacturing Industries in Nigeria.
- The machine installation, mounting of shaft alignment and balancing, lubricant, lubrication, gasket and seal, for the machine installation for Oye Local Government, in Ekiti State.
- Manual Lifting Task Methods and Low Back Pain among Construction Workers in the Southwestern Nigeria.
- Enhanced Ergonomics Training: A Requisite to Safe body Postures in Manual Lifting Tasks.
- Technology: A Basic Tool for National Development
- Effective Management Accounting System in Food and Drinks Industries in Lagos State, Nigeria.
- Production Cost Estimation in Food and Drinks Industries in Lagos State, Nigeria.

In the area of environmental ergonomics

- The environmental pollution from vehicle sources which continues to attract worldwide attention was researched into.
- Conducted a technical assessment of mechanic village in Lagos state – layout model.
- Conducted a survey of automobile materials using Peugeot as a case study. It was however discovered that the materials used nowadays has changed to what is used to be.
- Examination and Noise Pollution from Generators on the Residents of Obantoko, Ogun State, Nigeria.
- Nigerian Engineering Students' Compliance with Workshop Safety Measure
- Thermo economic and Environmental Assessment of a Crude Oil Distillation Unit of a Nigeria Refinery.

In the area of Computer Aided Design / Computer Aided Manufacturing / Artificial Intelligence / Robotics

- Improvement on Development of CAD Software for Shaft under Various Loading Conditions
- Design of Plastic Spur Gears Using Virtual Reality.
- Computer Aided Model for Costing Aluminium Using Die Casting.
- Development of Expert System for Material and Welding Rod Selection in Robotic Welding.

- Appraising Road Design and Material – Cost Component using Virtual Reality.
- Material Selection for Computer Aided Design Software for Crankshaft Design.
- Design and Application of CAD Expert System for Gas Turbine Power Plant for Electricity Generation in Nigeria.
- Computerized Inventory Management for a Manufacturing Industry: A Case Study in Nigeria.
- Software Package for Small Scale Bottled Water Industry in Nigeria.
- Modeling and Simulation of Wave Load on Periodic Support for Isolation System of Offshore Platform.
- Development of Computer Aided Management for Grain Reception at Grain Storage Silos in Nigeria.
- Development of CAD Software for Mechanical Chains Design.
- Computer Aided Management for Stored Grain Monitoring in Nigeria.
- Development of Software for a Tracking Device
- A Knowledge Based Expert System for Silicate Glass Plant Maintenance
- Development and Performance Evaluation of a Mini – Robot for Welding Applications in Manufacturing.

CONCLUSION

I was in Israel recently. The country operates amidst tight security challenges. But the country is up to the task. According to one of my Lecturers in Israel he said “When you are inside the country you are safe”. Israel developed a technology to sense if there are missiles or enemy attack coming to attack them. The missile when it is about to attack and blast Israel their sensor will sense it and immediately the machine already developed will catch the missile. If they discovered that the missile is going to land where it is free they will allow it to land. That is the level of security measures and technological development in Israel. I hope that we too can develop our security to a level that it can be depended upon in developing countries like Nigeria, to cater for handling of disaster situation and enhance sustainable development. If not both our technology and economy will be going down the drain as to what is happening to us now as a Country. Something urgent needs to be done here, so that life and properties can be protected.

Appeal to Government

There should be a stoppage into insecurity in Nigeria or Africa and the Developing Nations. If not the few industries presently in place will find their way out of the country and the Educational system will be underdeveloped. We can never witness any technological development and evolution under threat to life and properties, since our technological advancement is not up to the level of advanced countries (G7). The foreign partners cannot invest their hard earned money in an unsafe environment, in a developing economy like that of Nigeria.

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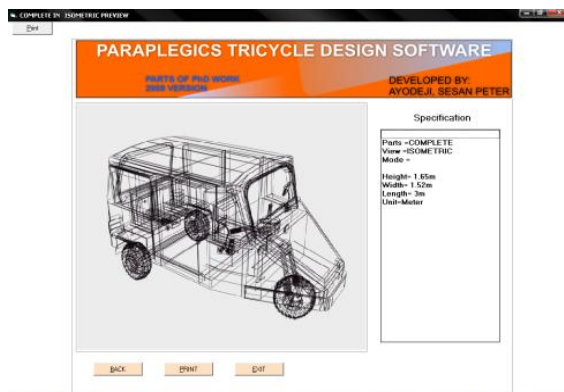
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SOME PROJECT WORKS FOR SUSTAINABLE DEVELOPMENT OF ENGR. PROF. SAM. ADEJUIGBE & CO – GOING BEYOND THEORIES

Some selected projects of works done by the author Prof. Sam. B. Adejuyigbe and his research team described in this write up which is going beyond theory are shown below;



Plates 1 Showing the Drawing of the Tricycle







Plates 2-9 Showing Developmental Stages of Major Components of the Tricycle

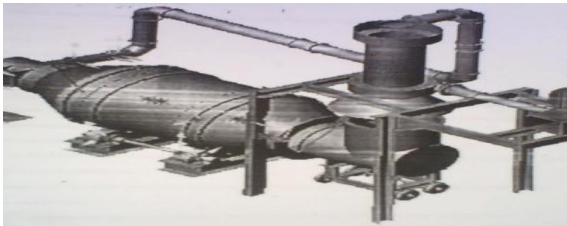


Plate 10: Construction of Rotary Furnace



Plate 11: Construction of a Fruit Juice Extractor

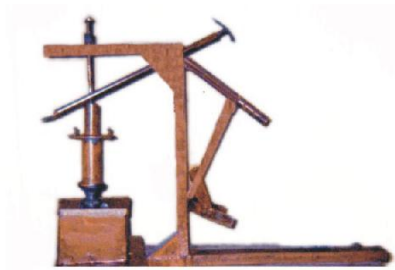


Plate 12: Tyre Remover and Fixing Machine



Plate: 13 Development of a Mini Robotic Welding Machine



Plate: 14 PIC for the Mini Robotic Welding Machine

RECENT TRENDS IN HR: ROLE OF TELEWORK AT TIMES OF CRISES

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Abstract

Telework or Telecommuting is considered a new kind of work arrangement or an organizational strategy to operate and remain productive at times of crises. An organization's ability to operate and manage its employees at times of crises has been an issue of concern in the field of public administration and management. Crises is a situation that is unpredictable but not unexpected that leads to difficulty in routine operation and disruption for the normal work schedules of the employees. Despite the different classifications of the term Crises in organizations in various literatures, it can also be classified into internal crises like fire damages to the building, gas leakage and external crises like street strikes and major road accidents. Crises can also be classified into natural types of crises like volcanoes, earthquakes or man made crises like financial crises, technological crises, kidnapping ..etc. This paper tackles the significant role of telework or telecommuting at times of crises and the different organizational strategies in some countries to be prepared for it.

Key words: telework, telecommuting, crises management, natural and man made crises, HR

INTRODUCTION

Telework is a new kind of work arrangement that helps prevent business interruptions at times of crises or disasters whether natural or man made. Telework has proved to be an effective tool for organizations to remain productive during crises like war, bombing or threat of bombing, congested traffic jams, major street accidents, strikes, road maintenance, gas leakage (Martino, Vittorio & Wirth, Linda, 1990). It can also serve organizations at times of natural disasters like tornado, hurricane, earthquakes, floods or wood fires, The concept of telework is about the transfer of information and not employees, it is based on computers interconnected through phone lines. Telework is an arrangement for work flexibility that allows an employee to perform his duties and responsibilities of his job from an approved worksite other than his main office location (Gibson, Jane et.al, 2011) .

WHAT IS MEANT BY TELEWORK ?

According to Gainey et.al (1999), telecommuting involves working at one's home or another location as a full time or part time where employees use computers and communication technology to communicate with their organization. The terms telework, virtual work, telecommuting or remote employment are used interchangeably. Telework can be also through satellite centers which are separate units away from the central organization but remaining communicated electronically (Beer & Blanc, 1985). People in US use the term "telecommuting" more than the term "Telework" which is commonly used in Europe or outside US (Mariani, 2000).

Telecommuting or telework has proved to be of benefits for the employees, employer and the community at large for helping relief traffic jams and creating more job opportunities. Some of its benefits on employees are reduced traffic time, increased employee productivity and moral due to the flexibility offered to them, achieving a better work life balance. Its benefits for the employer can be in decreasing organizational expenses due to less overhead cost in transportation, electricity, renting offices, better retention of employees, lowering the rate of employees' turnover and sick leaves. The senior management of CTrip, China's largest travel agency allowed its Shanghai call center employees to work from home to be able to reduce office rental costs which was increasing to the booming real estate market in Shanghai and also to reduce the high attrition rates at their agency. The Chinese experiment was run on 16000 employees at CTrip who worked four days a week for 9 months from home and a control group who were in the office all days of the week for a period of nine months. By the end of the 9 months experiment, results revealed were in favor of the home employees as compared to the office employees like previous research findings (Bailey, et al, 2002). The home employees revealed 13% of performance increase, of which about 9% was from working more minutes per shift, fewer breaks and sick days and 4% from more calls per minute due to the quieter work environment at home, higher satisfaction and psychological attitude scores than the office employees. They also reported a reduction of \$2000 in the employee's costs and a lower job attrition rates by over 50% compared to the office employees [Bloom et.al, 2013].

THE CONCEPT OF CRISES MANAGEMENT

Haten (1982) discussed the term **Risk Management** and **Crisis Management**. “**Risk refers** to any impediment that can prevent an organization from achieving its goals,” these goals may be financial or market share. While Crises refers “to a situation that implies a great deal of time pressure created by an event”. **Crisis response or Management** in return refers to “an organized plan to deal with the crisis situation that affects the organization¹”. Crises management can be described as a **Proactive crisis response** which is according to Hatén (1982) is a “strategy that is planned, organized and practiced, and thus not reactive or spontaneous in nature²” (Haten, 1982).

The Process of Crises Management

Minzberg, Henry (1990) pointed out that Crisis Management is a process that has the following steps:

- **Analyzing the Situation for prevention:** Top management should be able to appoint a department or team of employees responsible for Crises Management whose participants would be responsible to hold meetings, workshops with the employees to determine the possible crises or incidents that might threaten the organization and interrupt the continuity of work. They should also be able to diagnose the problem and who will be affected whether the employees, company building, computer system...etc. A proper diagnosis of the situation would help the Crises Management team to deal with the different scenarios and assign tasks among their members for implementation or follow up.
- **Preparation Stage:** through conducting surveys to collect data to plan on how to counteract the drastic effect of any incidents. In this stage, planning for financial resources and expected behavior from employees is also essential.
- **Training, Testing and Review:** Minzberg, Henry (1990) discussed at his work the importance of this stage in the crises management. At this stage, employees should be trained, coached and tested to reveal any mistakes that undermines the crises management strategy.
- **Detecting the Early Warning Signs:** Those who work on formulating the crisis management strategy should take care of early warning signs for any crises. If the crises for example is in a school setting then any harming or destructive behavior like students being engaged with gangs or bringing weapons to schools should be detected earlier.
- **Communication and early steps for problem solving** should be the management concern to communicate the problem with the concerned parties and to plan for action plan towards problem solving. All crises management team should be assigned tasks and responsibilities and a follow up plan with allocation of resources should also be included.

The GROWING POPULARITY OF TELEWORK AT TIMES OF CRISES

The growing popularity of telework in both governmental and private organizations is not only due to its multiple benefits and advantages as mentioned before but due to its effectiveness at times of crises and disasters. Telework is said to increase with a growing rate of 74% from 2005 to 2008 despite the fact that it has been estimated to be widely used by some organizations a little more than 10 years. In 2000, in US, the government encouraged Federal employees to telework to decrease their government expenditures which resulted in a shift of about 50% of government employees to telework (Council of Economic Advisors, 2010). Telework incentives were included in the House Committee on energy and transportation laws in US at around 2010. (Lister, Kate, 2010).

Telework at California State Disasters

Noraman, Sefani (2000) discussed in his work about California State that has been suffering lot of natural disasters like two major earthquakes and still there is an expectation for another major one within the next 30 years. California State has also witnessed the biggest man made disasters, in 1997, the State was recorded as the largest number of bombing incidents among all States. The tele work pilot project was implemented from 1988-1990 after

which the number of telework government employees are rising steadily in California and the State of California became model for governmental States and corporations operating without interruptions even at times of crises.

Mokhtarian (1998) believes that the role of telework at times of disaster or crises like damage for the organizational building or route damage making it difficult to reach the workplace is huge. Despite advantage of telework at normal times for the employer like reducing expenses, better retention of employees and also for the employees like offering more flexibility, reducing stress and help with their job motivation, but there is still some disadvantage for telework at times of crises. Among the disadvantage of telework at times of crises is that employees productivity may suffer at the beginning or some employees might not be used to work under this telework system. Some jobs that might require employees to be present at the workplace might not be suitable for telework. Middle managers may also be afraid on how to manage and be in control of telework employees.

Declaration of Telework by US Office of Personnel Management

The US Office of Personnel Management declared that all federal agencies must have a telework policy as required by Public Law 106-346, § 359 and Public Law 111-292, § 6502. Telework must be implemented among eligible employees to benefit from its several advantage not only at times of crises but to help with cut federal budget expenses and give more flexibility for employees that would help with their productivity. Every agency may have the right to use the types of telework that best fits its operation with regards to its policies and procedures. Agencies should provide employees with agency PCs or laptops and avoid use of employees' personal computers or laptops for "protection of sensitive agency information" as per memorandum of June 23, 2006.

The Federal Office called that telework must be included by law into the Planning for Continuity Operations By law and that includes any pandemic health crisis . The Federal Office called that all agencies must designate a Telework Managing Officer (TMO) who would be responsible to develop the policy and implementation telework programs. Agencies must also appoint a telework coordinator who would be responsible for the everyday operation and management of the telework programs.

All telework employees and their managers must receive telework and information security training which should be available through an eternal link to employees. In addition to that, telework employees are provided information security training and must sign a written agreement to protect the information security of their work.

Federal agreement for telework employees should include schedule or flexible working hours for employees, clear job responsibilities and duties, the required daily communication between the employee and his manager, the accountability for the information security and their responsibility to fulfill customers' needs and expectations during emergency time (US Office of Personnel Management, 2016).

The Establishment of Telework Council in Japan

The introduction of multi media in 1995 encouraged the Ministry of Communication and Ministry of Posts to implement the telework system as a response for disaster response strategy due to destructive earthquakes. In 1996, Japan established the telework Council sponsored by Ministry of labor which brought leaders and telework experts to support corporations teleworking due to the crises nature taking place in the country (Soto et al,

CONCLUSION

Organizations should be prepared ahead of time with its crises management strategy to survive emergencies that would keep them running before any crises or disasters. Telework or Telecommuting has been widely spread in both governmental and private organizations to avoid the disruption of work at times of crises and guarantee its continuity. Although telework is an effective solution for organizations at times of crises, employees and managers should be trained on how to do it and should not be left when the crises occurs. Teleworking at times of crises requires that organizations appoint a telework planner and coordinator to schedule employees' work, organize all the issues that has to do with the usage of technology away from workplace, organize the privacy and security of information ...etc. To conclude, the usage of telework at times of crises requires a proper preparation and implementation strategy which should not be ignored by organizations to avoid any drastic effects and remain productive.

BIO

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**INTERNATIONAL CONFERENCE ON EMERGING TRENDS FOR NATIONAL
SUSTAINABLE DEVELOPMENT AND DISASTER MANAGEMENT
(NSDDM 2016) /EXHIBITION**

**Hugh Aston Conference Hall
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August 3rd to 5th, 2016

Track One:

Emerging Trends in Learning, Education and Teaching (ETLET)

A NEW PERSPECTIVE ON GROWTH EFFECTS OF DEMAND FOR TERTIARY EDUCATION

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ABSTRACT

The study examined the dynamic relationship between demand for university and polytechnic educations and the performance of the Nigerian economy for the period of 1985 to 2013. Time series econometrics (Granger Causality and Autoregressive Distributed Lag Model) was applied to test the causal, short run and long run relationship among the variables. The result of the Granger Causality test revealed that there is a unidirectional causality running from university enrolment to real gross domestic product. The test also shows that there is bidirectional causality between polytechnic enrolment and real gross domestic product. The bound test established the presence of a long run relationship among the series. Polytechnic enrollment constitutes a leakage to the Nigeria economy while University education has positive long run impact on the economy. The paper recommends that Government and other relevant stakeholders reviews the education system such that products of polytechnics are able to match up with Nigeria technological and labor market challenges and enhance their contributions towards national output in the bid to achieve sustainable development.

KEYWORDS: Tertiary education, Growth effects, Causality, Bound test.

INTRODUCTION

The role of tertiary education in a knowledge-based competitive economy has been a prominent research area since Mincer (1958) and Schultz (1961) introduction of the concept of human capital. Tertiary Education is significant in producing scientific skills which generate new knowledge and technology through Research and Development (R&D) and contribute more than proportionately to increased productivity when combined with other intermediate factors. As a public good, it produces social benefits with spillover effect, which foster and enhance work and life skills, welfare and frees up resources to create new technologies, businesses, and wealth, [Romer (1989); Hellerstein and Neumark, (2004); Bloom, Canning and Cha (2006); Papademos (2007)]. Evidence abound indicating that demand for tertiary education has been on the increase throughout the world and Nigeria in particular. This is evident in the number of students seeking international studies across the world. Globally, in 2012, at least 4 million students went abroad to study, up from 2 million in 2000. It was also found that Central Asia, which played host to most of the mobile student population, experienced a steady rise in the number of students studying abroad. The group grew from 67,300 in 2003 to 156,600 in 2012, with the outbound mobility ratio more than doubling from 3.5% to 7.5% same period (NCES, 2014). Similarly, percentage of tertiary enrolment as measured by the Global Tertiary Education Enrolment percentage of Gross Enrolment

Ratio (GER) witnessed a dramatic turn in the 21st century. It increased from 18.1% to 20% and 27.1% in 1999, 2000, 2009 respectively, with Europe and Central Asia accounting for over 55% of tertiary Gross Enrolment Rate (GER) of age youth enrolled in 2009 followed by Middle East and North American region. However, sub-Saharan African countries tertiary-level participation improved only marginally, from 3.9% in 1999 to 6.3% during the period (UNESCO, 2009; Rena, 2010).

In Nigeria, the share of tertiary enrolment as a percentage of gross enrolment rose from 1.8% in 1980 to 6.1% in 2000. It further increased to about 10% in 2005 (WDI, 2013). Similarly, application for the Unified Tertiary Matriculation Examination (UTME) reveals a consistent upward trend in the recent years. Statistics shows that total number of applicants received by the Joint Admission and Matriculation Board (JAMB) for UTME stood at 805, 466 in 2006. However, the figure increased significantly to 1,306,718 in 2009 and 1,632,172 in 2014. This implies that more people are demanding for and enrolled into the tertiary institutions of learning. Similarly, the trend in the growth rate of Nigeria economy shows a sustained growth rate in the last decade. The Gross Domestic Product (GDP) grew at 11.3% in 1985 and dropped to about 5% in 2000. The growth rate since then had averaged 6.5% till 2012.

Though there are empirical studies investigating the relationship between tertiary education and economic performance, not much has been done in the context of Nigeria. Moreover, most studies on the relationship between demand for tertiary education and economic performance focused on the effect of aggregate tertiary enrolment, with no consideration for the relative impact of the disaggregated components of tertiary education on economic performance; hence this study investigates the causal and dynamic relationships between the components of tertiary enrolment and Nigeria economic performance between 1985 to 2013.

The rest of the study is organized as: section 2 reviews the literature on the relationship between tertiary education and economic growth. The empirical model, methodology and data description are discussed in the section 3, and section 4 presents the conclusions and policy recommendations.

Review Of Related Literature

The Lucas (1988) endogenous growth model considered human capital as one of the factors of production and education as a means of human capital accumulation. This way, education became a vehicle for human capital accumulation also treated as a factor of production in addition to labour and physical capital. This implies that progress in the educational attainments of the labour force could have an impact on productivity and improve economic performance. The endogenous growth models argued that total factor productivity is determined within the model, instead of being driven by exogenous technological progress. Unlike the neoclassical theories, endogenous growth models have explicitly included education by emphasizing its role in increasing the innovative capacity of the economy through developing new ideas and technologies. Arguing in the similar direction, Romer (1989) identified three types of skills possessed by individuals in a given country; physical skills (in-born in individuals), educational skills acquired in primary and secondary school, and scientific talent acquired in post-secondary education. However, total stock of educated and scientific talent in a country should be related to the growth in output and capital in the economy which is achieved through a combination of new technology from Research and Development, with other intermediate inputs.

Empirical investigations into the relationship between tertiary education and economic often follow from the Neo-classical growth theory. Investigating the impact of State University of New York on the State economic growth from 1960 to 2001, Vogel and Keen (2010) studied the interaction among investment expenditure on the University, growth in output and income of the state, and established that the State University of New

York positively and significantly contributed to the economy of New York over a long run period.

De Meulemeester and Rochat (1995) examined the causal relationships between higher education and economic growth of six developed countries and concluded in the study that strong uni-directional causality exists from higher education to economic growth in Japan, France, UK and Sweden, but no causality in Italy and Australia. Similarly, Moroto and McMullen (1996) examined the connection between higher education and economic development in three emerging economies in Latin America (Argentina, Brazil, and Chile) from 1960 to 1996. Employing the Granger pair wise causality test the study concludes that there is a non-uniform result for the countries included. In Brazil, higher education was found to impact GDP growth unidirectional, and in the case of Chile and Argentina, no causal relationship was found between these variables.

Investigating the cointegrating and causal relationship between higher education and economic growth in Turkey from 1970 to 2008, Erdem and Tugcu (2010) employed the ARDL bounds testing approach and Dolado and Lutkepohl Granger causality method. The study deduced that higher education is cointegrated to economic growth and either higher education or economic growth has significant causal relationship on each other. Therefore, there is a bidirectional causal relationship between higher education and economic growth in Turkey. In a related study Jaoul (2004), investigated the correlation between higher education and economic growth in France and Germany since Second World War, employing a nonparametric and VAR technique. He examined the relationship between the increasing number of higher education qualifications and the GDP of France. The study revealed that there is a high correlation between higher education and economic growth in France. Saima, Janaran and Tesfa (2012) analyzed the relationship between economic growth and higher education in West Virginia using the three Stage Least Square to estimate a system of simultaneous equations. The results show that income growth and education growth are positively related while education growth reduces population growth in West Virginia. Furthermore, increase in education increases income in West Virginia, while change in income growth increases educational growth.

In a regional study of the relationship of higher education and economic growth, Kwabena, Oliver and Workie (2006) investigated the effect of higher education human capital on economic growth in African countries. They used panel data over the period of 1960-2000. The study found that all levels of education human capital, including higher education human

capital, have positive and statistically significant effect on the growth rate of per capita income in African countries. In the same line, Pegkas (2014) investigated the link between educational level and economic growth. The study employed the Granger causality test and Vector Error Correction to analyze the potential impact of differential educational levels on economic growth in Greece over the period of 1960 to 2009. The empirical findings show that there is a long run relationship between educational levels and gross domestic product, and a long run and short run causality running from higher education to economic growth. Hence it is deduced that tertiary education has long and short run impact on the growth of Greek economy. The study supports the finding of (Khoras-gani, 2008). Examining the long-run relationship between higher education and economic growth in Iran using ARDL methodology, he found that higher education has positive and significant effects on economic growth both in the short and the long-run. In another study, Babatunde and Adefabi (2005) explained the long run relationship between education and economic growth for Nigeria during 1970 to 2003. They applied the Johansen cointegration technique and the vector error correction. The results of the cointegrating technique suggests that there is a long run relationship between enrolments in primary and tertiary level as well as the average years of schooling with output per worker. Results of the vector error correction model revealed that a well-educated labour force significantly influenced economic growth both as a factor in the production function and through total factor productivity.

Okuneye and Adelowokan (2014) examining the impact of tertiary enrolment on economic growth in Nigeria over the period of 1980 to 2010, employed the Ordinary Least Square (OLS) estimation technique for empirical analysis. The variables considered are real GDP and tertiary school enrolment. The result shows that tertiary enrolment is positively related to economic growth in Nigeria. They assert that without human capital development, sustainable economic growth may not be achieved. Contrarily, Olomola (2007) analyzed the relationship between increasing enrolment in tertiary institutions of learning and economic growth in Nigeria from 1970 to 2002. The study adopted vector error-correction mechanism and granger causality test on annual data from 1970 to 2002; and tertiary education was decomposed into three components; university enrolment, polytechnic enrolment and enrolment into vocational schools. The result reveals that economic growth granger-cause enrolment in tertiary institutions. Furthermore, he argued that human capital drives economic growth both in short and long run. However, no causality was detected between economic growth

and enrolment in Nigerian universities and colleges of education. This is in line with (Madhav, 2010). In his investigation of the interrelationship between higher education enrolment and real gross domestic product of Nepal from 1975 to 2009, he found that causality runs from real GDP to enrolment in higher education. Employing Engle-Granger cointegration and Granger causality analysis Amatul, Asim and Yasir (2009) similarly, supporting the long run relationship between higher education and economic growth, argued that the number of enrolled students at the universities of Pakistan over 1975 to 2005 had a long run relationship with economic growth. However, they established through the Toda-Yamamoto Causality test that there is only a unidirectional causality running from economic growth to higher education over the period. They argued that low proportion of highly educated labor in the total population and the low enrolment and high dropout ratio at basic level of education of Pakistan are the reasons for the findings.

METHODOLOGY AND DATA DESCRIPTION

Multivariate Granger Causality Model

To determine the causal relationship between tertiary education and Nigeria economic performance, a dynamic model of vector autoregressive (VAR) representation of Engel and Granger (1987) is employed. The equation in matrix identification is shown in equation 1 below.

$$Y_t = \delta_i + \tau_i X_{t-i} + \epsilon_{it} \dots\dots\dots 1$$

Where Y_t is a matrix of the dependent variables, δ_i is the matrix of the intercepts, τ_i is a matrix of the estimated coefficients in the VAR model, X_t is a matrix of the explanatory variables and ϵ_{it} a matrix of the error terms. The Granger Causality model specified in a VAR set up is as stated below;

$$\begin{bmatrix} \Delta RGDP_t \\ \Delta Uni_t \\ \Delta Poly_t \end{bmatrix} = \begin{bmatrix} \lambda_1 \\ \lambda_2 \\ \lambda_3 \end{bmatrix} + \sum_{i=0}^p \begin{bmatrix} \alpha_{1i} & \beta_{1i} & \theta_{1i} & \gamma_{1i} \\ \alpha_{2i} & \beta_{2i} & \theta_{2i} & \gamma_{2i} \\ \alpha_{3i} & \beta_{3i} & \theta_{3i} & \gamma_{3i} \end{bmatrix} \begin{bmatrix} \Delta RGDP_{t-i} \\ \Delta GCF_{t-i} \\ \Delta Uni_{t-i} \\ \Delta Poly_{t-i} \end{bmatrix} + \begin{bmatrix} \epsilon_{1t} \\ \epsilon_{2t} \\ \epsilon_{3t} \end{bmatrix} \dots\dots\dots 2$$

where;
 Δ denotes the first lag operator, $\lambda_i = A_i$, $0 \leq i \leq p$, and p is the lag length, to be selected for each variable using the Akaike Information criterion (AIC) and the Final Prediction Error (FPE) and the $\tau > 0$. AIC and FPE are most appropriate for this study because they are superior to other criteria in a small sample (60 observations and below), because they minimize the chance of under estimation while maximizing the chance of recovering the true lag (Liew, 2004).

A Wald test is conducted on the coefficients of the relevant variables in equation 2 to determine the causality. Granger and Newbold (1974) pointed out that there is a possibility of spurious causality, hence the

series were evaluated for unit root using the Augmented Dicky-Fuller (ADF) and Phillips-Perron (PP) unit root tests, while their cointegrating relationship (Granger, 1988) was ascertained using Johansen Cointegration test.

Auto-Regressive Distributed Lag (ARDL) Model

To determine the dynamic relationship between the variables of tertiary education and economic growth, the study employs the Autoregressive Distributed Lag model (Pesaran et al, 2001). The model of the ARDL is presented below.

$$\Delta RGDP_t = \delta_0 + \sum_{i=1}^p \alpha_i \Delta RGDP_{t-i} + \sum_{i=0}^p \pi_i \Delta GCF_{t-i} + \sum_{i=0}^p \beta_i \Delta Uni_{t-i} + \sum_{i=0}^p \lambda_i \Delta Poly_{t-i} + \theta RGDP_{t-1} + \gamma GCF_{t-1} + \psi Uni_{t-1} + \phi Poly_{t-1} + \mu_t \dots \dots \dots 3$$

Where, $\ddot{Y} > \dot{o}$; and \ddot{Y} is a vector of the estimated parameters ($\alpha_i, \pi_i, \beta_i, \lambda_i, \theta, \gamma, \psi, \phi$) in equation 3. Δ denotes the first lag operator of the series, α, π, β and λ are the short run estimated parameters of Real Gross Domestic Product, Gross Capital Formation, University enrolment and polytechnic enrolment respectively, and θ, γ, ψ and ϕ are the long run estimated parameters of the respective variables. Equation 3 measures the long run and short

run dynamics of tertiary education and economic growth. If the long-run relationship is supported, the error-correction model (ECM) from equation (3) is estimated as the second stage of the ARDL procedure.

$$\Delta RGDP_t = \delta_0 + \sum_{i=1}^p \alpha_i \Delta RGDP_{t-i} + \sum_{i=0}^p \pi_i \Delta GCF_{t-i} + \sum_{i=0}^p \beta_i \Delta Uni_{t-i} + \sum_{i=0}^p \lambda_i \Delta Poly_{t-i} + \gamma ECM_{t-1} + \varepsilon_t \dots \dots \dots 4$$

Where the parameters are as explained in equation 3 above.

ARDL is considered a better approach because it has ability to accommodate heterogeneous order of integration so far as there is no variable in the model that is integrated at second order (Pesaran and Shin, 1999; Pesaran, Shin and Smith, 2001).

EMPIRICAL RESULT

The results of the Augmented Dicky-Fuller (ADF) and the Phillips-Perron (PP) unit root tests indicated that the variables are non-stationary at levels, but after differencing once, the ADF and Phillips-Perron tests show that they were all integrated of order one; I(1). The result is presented in tables 1 and 2 below.

Table 1: Philip-Perron Unit Root tests (constant without trend)

Series name	PP test at level		PP tests at 1 st difference		Order integration	Remark
	PP Statistic	Critical value at 5%	PP Statistic	Critical value at 5%		
Poly	-1.6732	-2.9719	-7.9188	-2.9763	I(1)	Stationary
Uni	1.0631	-2.9719	-2.8120	-2.9763	I(1)	Stationary
RGDP	3.8008	-2.9719	-3.1005	-2.9763	I(1)	Stationary
GCF	-1.2674	-2.9719	-3.8274	-2.9763	I(1)	Stationary

Source: Authors' Computation, 2016

Table 2: ADF Unit Root tests constant (without trend)

Series name	ADF test at level		ADF tests at 1 st difference		Order integration	Remark
	ADF Statistic	Critical value at 5%	ADF Statistic	Critical value at 5%		
Poly	-1.7582	-2.9719	-5.7368	-2.9810	I(1)	Stationary
Uni	0.4669	-2.9810	-4.8996	-2.9810	I(1)	Stationary
RGDP	3.8008	-2.9719	-3.2416	-2.9763	I(1)	Stationary
GCF	-1.0170	-2.9185	-3.8274	-2.9763	I(1)	Stationary

Source: Authors' Computation, 2016

The optimum lag length of four (4) used for the analysis is based on the suggestions of the Final Prediction Error (FPE) and the Akaike Information Criteria (AIC). Following the suggestion of Granger (1988), a test of possible cointegrating relationship between the series was conducted using the Johansen cointegration test.

Table 3: Johansen Cointegration test

Hypothesized No of cointegrating equations	Eigen value	Trace Statistic	5% critical value	Probability
None *	0.749928	53.28250	47.85613	0.0142
At most 1	0.288752	15.86028	29.79707	0.7221
At most 2	0.218017	6.660466	15.49471	0.6174
At most 3	0.000761	0.020557	3.841466	0.8859

Source: Authors' Computation, 2016

The trace statistic indicates that there is one cointegrating relationship among the variables. See table 3 below.

The multivariate Granger causality test was employed to investigate the causal relationship among the series. The result of the causality test based on the Wald test Chi-

square statistic at 5% significance level is presented in table 4 below:

Table 4: Multivariate Granger Causality test (Wald test)

Null hypothesis (Ho)	X ² test Statistics	X ² Critical value	Probability	Remark
GCF does not Granger cause RGDP	6.1553	11.8076	0.0461	Reject Ho
POLY does not Granger cause RGDP	27.0063	11.8076	0.0000	Reject Ho
UNI does not Granger cause RGDP	30.1203	11.8076	0.0000	Reject Ho
RGDP does not Granger cause POLY	10.5451	11.8076	0.0051	Reject Ho
GCF does not Granger cause POLY	0.2093	11.8076	0.9007	Accept Ho
RGDP does not Granger cause UNI	0.9354	11.8076	0.6264	Accept Ho
RGDP does not Granger cause GCF	0.5115	11.8076	0.7743	Accept Ho
GCF does not Granger cause UNI	0.0917	11.8076	0.9552	Accept Ho
POLY and UNI do not jointly Granger cause RGDP	51.9646	10.5197	0.0000	Reject Ho

Source: Author's Computation, 2016.

Note: *sample size = 29 and degree of freedom = 2; X² = chi-square*

The analysis shows that there is a bidirectional causal relationship between real gross domestic product and polytechnics enrolment in Nigeria. Contrarily, the findings indicate a unidirectional causality running from university enrolment to real gross domestic product. Testing for a joint causal relationship between the variables of tertiary education; university and polytechnic enrolments, and real gross domestic product, the study shows that enrolments into both institutions of higher learning granger cause real GDP in Nigeria.

The bounds test statistics were computed using the Eviews 9.0 and the values for the lower bound I(0) and upper bound I(1) at 10%, 5%, 2.5% and 1 % significance levels. The result as shown in table 5 below indicate that the value of the F-Statistic (24.2617) lies above the upper bounds at 10%, 5%, 2.5% and 1% significant levels respectively. Hence, the null hypothesis of no long-run relationships among the variables was rejected.

Table 5: ARDL- Bound test

Null hypothesis	No long-run relationships exist			
	10%	5%	2.5%	1%
I(0) Bound	2.72	3.23	3.69	4.29
I(1) Bound	3.77	4.35	4.89	5.61
F-Statistic:	24.2617			Degree of freedom (k)
				3

Source: Authors' Computation, 2016.

Thus, there is a long run relation among polytechnic enrolment, university enrolment, gross fixed capital formation and real gross domestic product in Nigeria. Based on this result, the long-run relationship equation for the variables is estimated as well as the short-run dynamics. The result is presented in table 6 below:

The result shows that the coefficient of polytechnic enrolment (-0.000790) is negative and not significantly different from zero in the current period but positive and significant in the first lag period (0.000243) during the short run. This suggests that an increase in the number of enrolments into Polytechnics contributes negatively to the economy in the current year but positively in the latter years. Although the coefficient of University enrolment (0.000051) was positive and not significant in the current period, it has a significant negative (-0.000362) relationship with real gross domestic product in the first lag period.

The coefficient of the error correction term (-0.339459) is correctly signed (negative) and significant. It therefore suggests that given a long run equilibrium condition with short run deviations, the system corrects about 33.9 percent of the deviations in the current year. However, the long run estimate shows that polytechnic education has significant negative impact on the Nigerian real output. Conversely, university education has a long run significant positive impact on the performance of the economy. It is argued that polytechnic education in Nigeria today offers about 70% of technological programmes which are veritable tools for national development (Asibeluo, 2015), designed to prepare middle level personnel, technicians and input for the intermediate market, and at university level prepare engineers and technologists for higher management positions (UNESCO, 1978).

Table 6: ARDL Cointegrating and Long Run Form

Cointegrating or Short run form				
Variable	Coefficient	Standard error	t-Statistic	Probability
D(POLY)	-0.000005	0.000091	-0.057649	0.9551
D(POLY(-1))	0.000243	0.000084	2.898869	0.0145
D(POLY(-2))	-0.000176	0.000090	-1.960614	0.0757
D(UNI)	0.000051	0.000079	0.638774	0.5360
D(UNI(-1))	-0.000362	0.000124	-2.921620	0.0139
D(GCF)	0.664247	0.213413	3.112492	0.0099
D(GCF(-1))	-0.380527	0.254743	-1.493768	0.1634
D(GCF(-2))	0.483090	0.230818	2.092952	0.0603
D(GCF(-3))	-1.049442	0.272311	-3.853832	0.0027
CointEq(-1)	-0.339459	0.111591	-3.041981	0.0112
Cointeq = RGDP - (-0.0008*POLY + 0.0011*UNI + 1.8058*GCF + 83.3502)				
Long run coefficient				
Variable	Coefficient	Standard error	t-Statistic	Probability
POLY	-0.000790	0.000315	-2.508316	0.0291
UNI	0.001059	0.000157	6.724842	0.0000
GCF	1.805833	0.626682	2.881578	0.0149
C	83.350208	29.949358	2.783038	0.0178

Source: Authors' Computation, 2016.

Over time, the intermediate market has diminished significantly in Nigeria with the growth of more sophisticated technology and production process requiring engineers and technologists, favoring university products. This gap affects the absorption rate of polytechnic products into the production process and distorts the linkage through which polytechnic education could contribute to output level of the economy. Therefore, investment in polytechnic education constitutes a leakage and reduces productive capacity of the Nigerian economy. Therefore, more enrolments into universities compared to the polytechnics contribute to meet the sophisticated manpower need of the labour market in Nigeria today than the technicians. Similarly, the admission requirements for university and polytechnic education in Nigeria contributes to a major dichotomy in the labour markets, which sees university products as superiors to their counterparts from the polytechnics. A process requiring a cutoff point of 200 and above for university admission and less than 180 for polytechnic enrollment in the Unified Tertiary Matriculation Examination (UTME) suggests that the best brains are admitted into the universities while the weaker ones are in the polytechnics. It psychologically affects the personnel and their contribution to production.

CONCLUSION

The objective of the study was to investigate the dynamic relationship between tertiary education and the performance of the Nigerian economy over a period of 1985 to 2013. The multivariate granger causality test was employed to test the causal relationship between University enrollment, polytechnic enrollment and real gross domestic product of Nigeria. The test revealed that although both university and polytechnic enrolment jointly Granger caused real gross domestic product,

there are bidirectional causal relationship between real gross domestic product and polytechnics enrolment in Nigeria, and unidirectional causality running from university enrolment to real gross domestic product.

The ARDL-Bounds test also suggests that there is a long run relationship between the variables. However, polytechnic education which was designed to produce manpower for the intermediate market has constituted a leakage to the Nigeria economy because the products could not fit into the present day sophisticated production process tailored towards engineers and technologists. Contrarily, university enrolment has a sustainable long run positive impact in the Nigeria output performance. This is partly because the production process favors the university graduates, and provides them avenue to employ their skills effectively in production. It is also a reflection of the dichotomy between polytechnic and university education in Nigeria, which favors the later. Hence, the feeling that polytechnics are less superior to Universities affects the productive capacity of their products compared to their university counterparts and national output.

Therefore, we recommend that Government and all relevant stakeholders carry out a review and restructuring of the polytechnic curriculum to meet the present day technological need in the production sector and forestall the discrepancy between university products and those of the polytechnics. The process should take into consideration ways to harmonize the standards for admission into the universities and polytechnics; eliminating the present dichotomy in cutoff marks and other admission requirements into any of the institutions. Government and authorities of the universities should make university education more accessible and affordable for the low income earners and Nigerian youths. This is to enable the country

increase her stock of skilled manpower both in quantity and quality, in line with global best practices and towards the achievement of sustainable development.

AUTHORS' PROFILE

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COMPARATIVE EFFECTIVENESS OF STORYTELLING AND ENTER EDUCATE STRATEGIES IN THE TEACHING OF CIVIC EDUCATION IN LOWER PRIMARY SCHOOLS IN OSUN STATE, NIGERIA

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ABSTRACT

The study investigated the participatory levels of lower primary school pupils in the use of storytelling and enter educate strategies in the teaching of civic education. It also examined the differences in the pre-test and post-test of the two teaching strategies. It compared the difference in the performance of pupils taught with the two strategies, and finally examined the influence of gender of pupils on their participatory levels in storytelling activities. These were with a view of improving pupils' performance in the use of the two teaching strategies. The study adopted quasi experimental research design. The population consisted of pupils learning Civic Education in lower primary schools in Osun State. The sample consisted of 60 pupils drawn from two intact classrooms in a conveniently selected primary school in Osun State. Three research instruments were constructed by the investigator and were validated before used. Two research questions emanated and were answered, and four research hypotheses were tested and verified. The results showed that 51.7 % and 66.7% of the pupils demonstrated low participatory level and positive perception in storytelling and enter educate respectively. The results further showed that there was a significant difference in the pre-test and post-test scores of learners taught with storytelling strategy ($t = -11.845$; $p < 0.05$). Also, there was a significant difference in the pre-test and post-test scores of learners taught with enter educate strategy ($t = -11.319$; $p < 0.05$). Furthermore, there was a significant difference in the performance of pupils taught with storytelling and enter educate strategies ($t = -1.867$; $p > 0.05$). Finally, sex has a significant influence on pupils' participatory level in storytelling activities ($F(2) = 9.714$; $p < 0.05$). The study concluded that storytelling and enter educate strategies are both effective in the teaching of civic education in lower primary schools in Osun State.

KEYWORDS: Storytelling strategy, Enter educate/edutainment strategy, Civic education, lower primary school

INTRODUCTION

The philosophy of Nigerian Education as vividly stated in the country's national policy on Education (2004) is based on the provision of Education that emphasises the integration of the individual into a sound and effective citizen with equal educational opportunities for all. The fact that numerous subjects exist in the school curriculum for learners implies that they are capable of facilitating the realisation of the nation's philosophy of Education.

Civic Education is one of the subjects incorporated in Universal Basic Education programme as one of the objectives set up in Nigeria for the attainment of the Millennium Development Goals (MDGs). It is a subject that is highly imperative for effective training of all round development of a child. It is believed that if the subject is properly taught right from primary school level, it will assist pupils at formative primary education in the development of national values and civic traits. It will also help in promoting national consciousness, unity and patriotism in Nigeria.

The purpose of teaching Civic Education is to create interest, desire and positive values in the learners, for this to be achieved there is the need for effective teaching strategies that will facilitates effective learning of the subject. Not only that, studies in the past (Adeyemi 2008; Adeyemi 2012; & Iroegbu 2014) have attributed poor performance in subjects to inadequate and ineffective strategies. This prompted strategies for teaching of Civic Education at formative years. It is in the light of this background that the study examined storytelling and enter educate strategies in the teaching of Civic Education at lower primary school level in Osun State.

It is not a gainsaying to say that civic education as a discipline requires appropriate strategies for its teaching. No wonder, storytelling and enter educate teaching strategies are considered in this study. National Council of Teachers of English (2005), defined storytelling as relating of a tale to one or more listeners through voice and gesture. They emphasize that it is not

congruent with simply acting out a drama or reacting to story form memory or texts but it is the creation of mental images of the element of a story through voice and gesture to an audience. Through the telling of a story, the teller and the audience give complete attention and engage in learning experience. Storytelling has proved to be an effective way of coding knowledge in oral culture because it enables pupils to remember information very easily and passed on to others. According to Abrahamson (1998), storytelling forms the very foundation of teaching profession. To him, storytelling education has been associated with children in the lower grades; there is now greater evidence that the use of storytelling in higher education is being recognized as a powerful teaching and learning tool and one that has proven effective across all academic disciplines.

Enter educate on the other hand implies education and entertainment. It has been defined as a hybrid genre that relies heavily on visual material, on narrative or genre-like formats, and more informal and less didactic styles of address (Buckingham and Scanlon, 2000). Enter educate integrates fun into the learner process thus it suggests effortless and entertaining learners learning without any pain. In enter educate strategy, animation is often used to reduce the learners cognitive load and enables them to focus on a long duration (Okan, 2003; Garzotta & Ferfori 2006; Prensky 2007; Miller & Pennycuff 2008). Enter educate as a teaching strategy has been used to specific knowledge through the entertainment medium. It has been used as entertainment to address such health and social issues as substance abuse, immunization, teenage pregnancy, Hiv/ Aids, and cancer (Madej 2003; Lee 2004; Resnick 2004; & Sanchez 2009). It is also called entertainment.

There is therefore the need for this present study which focuses attention on more effective strategies on teaching civic education as a right step in the right direction if more effective teaching strategy is established.

STATEMENT OF THE PROBLEM

The unceasing demand for acquisition of knowledge has led teachers to search for better teaching strategies to enhance effective instructional processes. Storytelling and Enter educate instructional strategies appear to be promising in this respect. Although they are traditional methods, their effectiveness appeared to be looked down; hence this study.

OBJECTIVES OF THE STUDY

This study is determined to investigate the participatory levels of lower primary school pupils in the use of storytelling and enter educate strategies in the teaching

of civic education. It also set out to examine the differences in the pre-test and post-test of the two teaching strategies. It will compare the difference in the performance of pupils taught with the two strategies, and finally will examine the influence of gender of pupils on their participatory levels in storytelling activities.

METHODOLOGY

The design for this study was quasi experimental research design. The study population consisted of lower primary school pupils learning civic education in Osun State. The sample consisted of 60 pupils drawn from two intact classrooms in conveniently selected primary schools in Ile-Ife, Osun State. Three research instruments were developed by the researcher for this study, namely: Achievement Test in Civic Education (ATCE), Instructional Inventory on Storytelling Strategy (IISTS) and Instructional Inventory on Enter Educate Strategy (IEES). The three instruments were validated by the investigator. ATCE consisted of 20 objectives test on four units in civic education at primary three levels. This instrument was validated with the use of K-R 20 and it yielded 0.76 reliability coefficient. IISTS consisted of two sections. Section A centred on demographic variables while section B consisted of 10 items centred on pupils participatory level in the teaching of civic education using storytelling strategy. Cronbach alpha was used to validate the instrument and it yielded 0.78 values. IEES also consisted of two sections. Section A focused on Demographic variables while section B consisted of nine items that elicited information on pupils perception on enter educate strategy in the teaching of civic education. Cronbach alpha was equally used to validate the instrument and it yielded 0.79 values. The data collection lasted for a month. Data analysis involved simple percentage, t-test and chi-square statistics.

RESULTS

Research Question 1: What is the participatory level of pupils during storytelling activities in civic education class?

To answer this question, pupils' responses to section B of IISTS were scored based on the items in the inventory as rated by the investigator. The individual respective scores were summed up to build their measure of participation. The mean and standard score of the group score were 32 and 5.2 respectively. Scores below the group mean score were considered as having a low level of participation. Scores within the mean score and one standard deviation above the mean score (i.e. 32-37) were considered as moderate level of participation while those with scores of 38 and above

were considered as high participatory level. The result is presented in table 1 below.

Table 1: Pupils' participatory level during a storytelling activities in civic education classes

Pupils' Participatory Level	Frequency	Percent (%)
Low	31	51.7
Moderate	18	30.0
High	11	18.3
Total	60	100.0

Table 1 show that 51.7% of the pupils had low participatory level when employing storytelling strategy in the teaching of Civic Education. Also, 30% of the pupils had moderate participatory level while 18.3% of the pupils were found among those with high participatory level when employing storytelling strategy in the teaching of civic education in the classroom. There is an indication from this result that more than 50% of the pupils that participated in the study demonstrated low participatory level in storytelling strategy in the teaching of civic education.

Research Question 2: How do pupils perceive the introduction of enter educate in the teaching of civic education?

To answer this research question, learner's responses to section B of IIEES based on the items in the inventory as rated by the investigator. The individual respective scores were summed up to build their measure of perception. The mean and standard scores of the group score were 17.9 and 3.8 respectively. Pupils whose scores were less than the group mean score were considered as having negative perception while those with and above the group mean score were considered as having positive perception. The result is subsequently presented in Table 2 below:

Table 2: Pupils' perceptions on the introduction of enter educate in the teaching of civic education

Pupils Perception	Frequency (f)	Percent (%)
Negative	20	33.3
Positive	40	66.7
Total	60	100.0

Table 2 above shows that the majority (66.7%) of the sampled pupils had a positive perception to the introduction of edutainment in the teaching of civic education while 33.3% of them had negative perception. This result concludes that the majority of the pupils were favourably disposed to the introduction of edutainment in the teaching of civic education.

Research Hypothesis 1: There is no significant difference in the pre-test and post test scores of pupils taught with storytelling strategy.

To test this hypothesis, pupils' scores on both pre-test and post-test were subjected to paired sample T-test of significance. The result is presented in Table 3 below:

Table 3: Paired samples T –test of significant difference of pre and post test scores

Paired Sample Statistics		Mean	N	Std. Deviation	t	df	P
Pair 1	S-pre	4.3667	30	1.90251	-11.845	29	.000
	S-post	8.9667	30	.88992			

Table 3 shows that the mean scores of pupils on pre-test and post-test were 4.3667 and 8.9667 respectively. Furthermore, the t-value obtained was -11.845 at p = 0.000, with 29 as the degree of freedom. Since the p-value is less than 0.05, the null hypothesis is therefore rejected. We can conclude that there is significant difference in the pre-test and post-test scores of pupils taught with storytelling strategy. This result is an indication that storytelling strategy is effective in teaching civic education.

Research Hypothesis 2: There is no significant differences in the pre-test and post-test scores of pupils taught with enter-educate strategy.

To test this hypothesis, pupils' scores on both pre-test and post-test were subjected to paired sample T –test of significance. The result is presented in Table 4 below:

Table 4: Paired samples T –test of significant difference of pre and post test scores

Paired Sample Statistics		Mean	N	Std. Deviation	t	df	P
Pair 1	E-pre	4.9000	30	1.74889	-11.319	29	.000
	E-post	9.3667	30	.76489			

Table 4 shows that the mean scores of pupils on pre-test and post-test were 4.9000 and 9.3667 respectively. Furthermore, the t-value obtained was -11.319 at p = 0.000, with 29 as the degree of freedom. Since the p-value is less than 0.05, the null hypothesis is therefore rejected. We can conclude that there is significant difference in the pre-test and post-test scores of pupils taught with enter- educate strategy. This result also confirm that enter-educate strategy is effective in teaching civic education.

Research Hypothesis 3: There is no significant differences in the performance of pupils taught with storytelling and enter educate strategies.

To test this hypothesis, post test scores of pupils taught with storytelling and enter-educate strategies were subjected to T-test. The result is presented in table 5 below:

Table 5: T –test of significant difference in performance of pupils taught with storytelling and enters-educate strategy

	Group	N	Mean	Std. Deviation	T	df	p
Scores of post –test	Storytelling	30	8.9667	.88992	-1.867	58	.067
	Enter-educate	30	9.3667	.76489			

Table 5 shows that the mean scores of post-test of pupils taught with storytelling and enter-educate strategies were 8.9667 and 9.3667 respectively. Furthermore, the t-value obtained was -1.867 at $p = 0.067$, with 58 as the degree of freedom. Since the p-value is greater than 0.05, the null hypothesis is therefore upheld and it can be concluded that there is no significant difference in the performance of pupils taught with storytelling and enter-educate strategies.

Hypothesis 4: Sex of the pupils will have no significant influence on their participatory level in storytelling activities.

To test this hypothesis, pupils' participatory levels were cross tabulated with the sex and the chi-square value was obtained. This is presented in Table 6 below:

Table 6: Cross tabulation of pupils participatory level and sex

Learners Participatory Level	Sex			χ^2	df	p
	Boys	Girls	Total			
Low	18(30.0%)	13(21.7%)	31(51.7%)	9.714	2	.008
Moderate	5(8.3%)	13(21.7%)	18(30.0%)			
High	1(1.7%)	10(16.7%)	11(18.3%)			
Total	24(40.0%)	36(60.0%)	60(100.0%)			

Table 6 shows that out of the 60 pupils that participated in the activities 51.7% of them participated at low level, 30% of them were girls while 21.7% were boys. It also revealed that 30% of the participants had moderate participatory level and 21.7% of them were girls while 8.3% were boys. Pupils' with high participatory level constituted 18.3% of the total participants. It can also be observed that 16.7% of them were girls while 1.7% were boys. The Chi square value obtained is 9.714, $df = 2$, $p < .05$. Since p-value is less than 0.05, the stated null hypothesis is therefore rejected. It can be concluded that sex has a significant influence on pupil's participatory level in storytelling activities.

DISCUSSION OF FINDINGS

The findings of this study shows that majority of the primary school pupils had a negative perception of the introduction of storytelling teaching strategy in the teaching of civic education. From the results, their participatory level was low with 51.7%. This implies that pupils in this category are likely to look on and listen passively during lesson. This study collaborated the view of Rose & Nicholl (1997), Wallace (2000) and ECK (2006) who indicated in their findings support for the use of storytelling as an effective teaching method and were still of the view that the effectiveness of storytelling technique is highly dependent on the skills of the teacher and the relevance of such stories to the

content of the subject matter. This implies that if the story is not relevant to the course content, there is every tendency on the part of pupils to indicate low level of participation.

The results of the second research question indicates that majority of the students are favourably disposed to the introduction of enter educate in the teaching of civic education out of the totality of learners sampled. This implies that learning was more meaningful during the lesson in which teaching strategy was adopted. This findings supported the views of previous studies such as, Resnick (2004);Garzotto and Forfori (2006) and Prensky (2007) who argued that the introduction of enter educate into learning enhances the instructional process and effective learning

The results of the first hypothesis indicated that there was a significant difference in the pre-test and post-test scores of learners taught with storytelling strategy. This implies that the strategy is effective in teaching civic education. This study supported the view of McDrury & Alterio (2003); and Remenyi (2005) that students progressed from their initial reactions towards making deeper understanding and personal associations as they reflectively engaged in critical analysis and changed behaviour/knowledge about themselves and others.

The results of the second hypothesis also indicated that enter educate is an effective teaching strategy in the teaching of civic education as there was a significant difference in the pre-test and post-test when employed enter educate strategy. The results was in consonance with the views of Olson and Clough (2001) and Resnick (2004) that were equally in support of enter educate as an effective teaching strategy.

The results of the third hypothesis indicated that no significant difference existed in the performance of pupils taught with storytelling and enter educate strategies. This implies that both teaching strategies are of the same level and therefore effective which also supported the views of Mello (2001); McDrury & Alterio(2003); Resnick (2004); Simmons (2006) and Sanchez (2009)

The results of the last hypothesis indicated that sex have significant influence on pupils participatory level in story telling activities. This finding agreed with the views of Kara & Yeslyhurt (2008).

CONCLUSION AND RECOMMENDATIONS

From the results and findings of this research, it is concluded that storytelling and enter educate strategies are effective in the teaching of civic education at lower primary schools. In addition, in order to discourage passivity of pupils in the course of lesson, pupils have to be involved and participate at high level. Also, the management of schools should facilitate the equipment needed for the effective utilization of the teaching strategies. There should be cooperation between the pupils and staff for the enhancement of the teaching strategies.

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RETHINKING CLASSROOM INSTRUCTION FOR SPEEDY REALIZATION SUSTAINABLE DEVELOPMENT GOALS IN BAYELSA STATE

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ABSTRACT

Teaching, in the opinion of Clark and Starr (1970), is an attempt to help people acquire some skills, attitude, knowledge and ideas. Again, Clark (1995) saw teaching as the interaction between a teacher and students under the teacher's responsibility in order to bring about the expected change in the students' behaviour. This means that the task of the teacher is to create or influence desirable changes in the behaviour of his/her pupils or students. In other words, the teacher is to effect desirable changes in the students by way of interacting with them in and outside the classroom using different methods. Emerging contemporary issues like sustainable development, national development, character development, entrepreneurial education, teaching to acquire employability skills and others require classroom instruction to assume new trend. This paper therefore advocates newer methods of interaction in the school system. This will be discussed under rethinking classroom instruction for speedy realization of Sustainable Development Goals (SDGs) in Bayelsa State.

KEYWORDS: Rethinking, Classroom Instruction, Education, Sustainable Development Goals, Bayelsa State.

INTRODUCTION

Education has from time immemorial been used as a tool for development by all societies. This is so because education is the measure for the socio-economic, cultural and technological advancement of man. Education is therefore a veritable instrument for national sustainable development. The progress or otherwise of any society is therefore a function of the provision of a functional and quality education.

Given that education is a tool for national sustainable development, what actually transpires in the classroom should naturally interest all stakeholders in the system. It must be noted that Bayelsa State and indeed, Nigeria did not meet the Millennium Development Goal (MDG) target on Education For All by 2015, and also did not perform well in the other MDGs, partly because of the corrupt practices of most of the stakeholders as well as the operators of the system. Suffice to state here that what was responsible was not that the people were not educated. The main reason was because most of the operators of the system were corrupt because their character (affective attributes) were questionable as a result of poor training that should have been provided through proper classroom instruction.

To rethink classroom instruction for speedy realization of Sustainable Development Goals (SDGs) in Bayelsa state will therefore require emphasis on the affective characteristics of the pupils/ students alike. This

important component in education has been neglected for quite some time. The affective characteristics are the foundation of character and morality. They border on what constitute acceptable and good conduct for humans. Such attributes as honesty, truthfulness, patience, sincerity, integrity, etc are the concern of the affective domain. Suffice to state here that the present educational system in Bayelsa state and other parts of Nigeria pay more emphasis on the cognitive attributes of learning than the affective. This has resulted to poor moral upbringing and character in students and the consequences are corrupt government officials, cultism in schools, kidnapping and all sorts of societal ills as it is being experienced in most parts of the country.

Bloom (1956/1976) introduced the taxonomy of instructional objectives in three domains (cognitive, affective and psychomotor) and emphasized the importance of the affective in the learning process. Woolfork (1998) expatiated on the relationship among the cognitive, affective, and behavioural domains. Alexander (2003) reiterated the strong ties between cognitive / affective attributes of learners and how these attributes impact the acquisition and comprehension of knowledge and information. Further categorization of the three domains of learning is as follows:

1. Cognitive domain- relating to or involving intellectual activity

2. Affective domain- relating to or influencing values (ethics), emotions, feelings, and attitudes.
3. Psychomotor domain- relating to motor action proceeding from mental activity.

The Problem

Educationists advocate for the proper integration of the three domains of learning in the classroom. The domains of learning as shown are actually interdependent. This is more evident between the cognitive and affective domains. For this reason, according to Olatunji (2013), focusing on cognitive constructs to the exclusion of affective constructs can only unavoidably lead to an incomplete educational experience for learners. Unfortunately, this has been the situation in the Nigerian educational system for some time. The implication of this, among others is that we will have students with advanced knowledge of their specific fields with great abilities but with little or no regard for their professions or the ethical standards that govern them. This has accounted for the high rate of indiscipline among university students, militancy, kidnapping and corruption in public service.

Consequently, to achieve rapid national sustainable development will require educators to pay attention to the affective characteristics of students. Interestingly, the foundation of societal values, character development and all ethical issues is the affective. This paper therefore discusses rethinking of classroom instruction to emphasize affective education for a speedy realization and sustenance of the SDGs in Bayelsa state.

Significance of the Study

Over the years, development plans in Bayelsa State have always been done without considering the role of education in the planning and implementation processes. This factor is responsible for the dismal performance by the state in the implementation of the Millennium Development Goals (MDGs). This paper is therefore a clarion call on the need for policy makers, both at the states and federal levels to consider education as a necessary tool for the successful planning and implementation of sustainable national policies and programmes, especially the current Sustainable Development Goals (SDGs). This is significant since education has been recognized as the instrument for sustainable national development for all societies.

Sustainable Development Goals (SDGs)

At the United Nations Sustainable Development Summit on 25 September 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which

includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. The Sustainable Development Goals, otherwise known as the Global Goals, build on the Millennium Development Goals (MDGs), eight anti-poverty targets that the world committed to achieving by 2015. The MDGs, adopted in 2000, aimed at an array of issues that included slashing poverty, hunger, disease, gender inequality, and access to water and sanitation. Enormous progress has been made on the MDGs, showing the value of a unifying agenda underpinned by goals and targets. Despite this success, the indignity of poverty, diseases, hunger, inequality, poor education, etc have not been ended for all (<http://undp.org/content/undp/en/home/sdgooverview/post-2015-development-agenda.html>).

The new SDGs, and the broader sustainability agenda, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people.

UNDP Administrator Helen Clark noted: "This agreement marks an important milestone in putting our world on an inclusive and sustainable course. If we all work together, we have a chance of meeting citizens' aspirations for peace, prosperity, and wellbeing, and to preserve our planet." The Sustainable Development Goals will now finish the job of the MDGs, and ensure that no one is left behind (<https://africapplatform.org/news/why-this-is-sustainable-development-not-global-goals/>)

Education for Sustainable Development

Sustainability Education (SE), Education for Sustainability (EfS), and Education for Sustainable Development (ESD) are interchangeable terms describing the practice of teaching for sustainability. ESD is the term most used internationally and by the United Nations. Agenda 21 was the first international document that identified education as an essential tool for achieving sustainable development and highlighted areas of action for education (UNESCO, 2012).

In recognition of the importance of ESD, the United Nations General Assembly declared 2005-2014 the UN Decade of Education for Sustainable Development (DESD). UNESCO leads the Decade and has developed an International Implementation Scheme for the Decade. The goals of the decade are to provide an opportunity for refining and promoting the vision of, and transition to, sustainable development – through all forms of education, public awareness and training; and to give an enhanced profile to the important role of education and learning in sustainable development.

Education for sustainability is the practice of learning how to achieve global and local sustainable communities. The objectives of the DESD according to UNESCO (2012) are to:

- facilitate networking linkages, exchange and interaction among stakeholders in ESD;
- foster increased quality of teaching and learning in ESD;
- help countries make progress towards and attain the Millennium Development Goals through ESD efforts; and
- provide countries with new opportunities to incorporate ESD into education reform efforts, among others.

Today's education is crucial to the ability of present and future leaders and citizens to create solutions and find new paths to a better future. Education for Sustainable Development (ESD) is not a particular programme or project, but is rather an umbrella for many forms of education that already exist, and new ones that remain to be created. ESD promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies. ESD affects all components of education: legislation, policy, finance, curriculum, instruction, learning, assessment and so on. ESD calls for lifelong learning and recognizes the fact that the educational needs of people change over their lifetime. Many individuals and organizations around the world already implement ESD (e.g. a teacher weaving sustainability themes into primary education using participatory methods; a community development worker raising people's awareness on rights which are denied them; or a public health worker training people to draw water from clean sources). There are many programmes using an ESD approach to learning which is critical for achieving sustainability (<http://www.unesco.org/new/en/education/themes/edu-for-sustainable-devpt>)

Education for Sustainable Development allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. Education for Sustainable Development means including key sustainable development issues into teaching and learning; for example, climate change, disaster/risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. It similarly entails newer methods of education administration to help improve the system. Education for Sustainable Development consequently promotes

competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. Education for Sustainable Development requires far-reaching changes in the way education is practiced today. UNESCO is the lead agency for the UN Decade of Education for Sustainable Development (UNESCO, 2012).

Imperative for Rethinking Classroom Instruction for Speedy Realization of Sustainable Development Goals (SDGs) in Bayelsa State

To rethink classroom instruction in the light of this paper is to emphasize the development and assessment of the affective qualities of pupils/ students in the educational system. What this means is that the teachers in the school system must teach and assess the affective characteristics of the pupils/ students. All types of assessment and grading of pupils/ students performance must take cognizance of the affective attributes as well. These attributes as earlier observed are the foundation for character and moral values. They are the qualities that sustain societies, and so, very crucial for the realization of the SDGs as well. Accordingly, it is interesting to note that all the seventeen goals as outlined in the implementation document of the United Nations can only be readily achieved through education. Furthermore, it has been observed that the type of education required to achieve this, is not only knowledge based but a comprehensive education with particular interest in the affective component of learning. For instance, education holds the key to poverty reduction; zero hunger; provision of good health and well being; gender equality and so on. Education planners must therefore take this into consideration for speedy realization of the SDGs in Bayelsa State.

The education target of the sustainable development agenda of promoting lifelong learning opportunities for all can only be achieved through the development of students' affective skills which have the advantage of inculcating in students the life skills they need such as faith, justice, truth, gratitude, tolerance, co-operation, patience and so on. These qualities according to Popham (2011) are important for people to acquire because they influence future desirable behaviour.

Stiggins (2005) stated that motivation and desire represent the very foundation for learning. Thus, in his opinion, if students do not want to learn, there will be no learning. However, desire and motivation are not academic achievement characteristics, they are affective traits. Consequently, for the SDGs to be successfully implemented, the operators of the system must have sufficient motivation and desire to achieve. The same is true for virtues like honesty, responsibility,

accountability, sincerity of service on the part of project operators. Without these virtues, the SDGs cannot be readily achieved. Educating the populace and other stakeholders of the SDGs agenda on moral rectitude is therefore a necessary requirement for success.

The values of honesty, good conduct, integrity, dedication to duty which are all affective characteristics cannot be over emphasized in Bayelsa State work environment where corruption has eaten deeply over the years. Suffice to state here that if the values of hard work, honesty and other measures of good conduct are inculcated in students while in school, the problem of corruption, resulting to over bloated wage bills would have been minimal in the system. Thus, education that emphasizes the development of affective traits would play a vital role in the realization and sustenance of the SDGs in Bayelsa State.

Buseri and Agih (2016) have observed that the sixteenth SDG of peace, justice and strong institutions is primarily hinged on affective characteristics of the citizenry. Therefore, effective development of character, strong values and virtues through education that pays emphasis of the affective domains of students is a necessary requirement for the realization of the SDGs in Bayelsa state.

The same is true for the seventeenth SDG of partnership for goals. The emphasis here is on co-operation, team work, understanding, tolerance, etc which are all affective traits that the Nigerian society desperately needs to succeed. Unfortunately, these virtues are inappropriately handled in the school system. Thus it is through proper classroom instruction that pays credence to exemplary virtues that can guarantee the realization of the SDGs in Bayelsa state.

CONCLUSION

Mahatma Ghandi in 1925 as quoted by Kimbro (1998) enumerated seven deadly sins in the world. These are: *wealth without work; pleasure without conscience; science without humanity; knowledge without character; politics without principle; commerce without morality; and worship without sacrifice*. It is evident that all the issues raised by Ghandi border on human character and a critical observation reveals that the current plagues of the world are mostly associated with the seven issues raised by Ghandi. Therefore, for speedy realization of the SDGs in Bayelsa state and indeed, Nigeria in general will require the operators of the system to have excellent moral character. What this means is that the teachers in the schools have to inculcate worthy societal values into the pupils/ students through sufficient development and assessment of their affective attributes as discussed in this paper.

When this is done, the success rate for the SDGs to be achieved over the next fifteen years will be realistic. Buseri and Agih (2016) have already recommended that to sustain this, it is imperative for policy makers and especially those in the education system to develop curriculum to address this salient aspects in teaching and learning. Accordingly, moral education should be introduced as a core subject in the educational system. In the tertiary institutions of learning, moral and ethical education should be taught at all levels under General Studies (GS) Courses. Consequently, university lecturers also need to acquire relevant pedagogy to be able to inculcate worthwhile knowledge, character and skills to students. Thus, university lecturers who do not have teaching qualification will need to undergo a postgraduate diploma in education programme to acquire teaching skills and be duly certified by the Teachers' Registration Council of Nigeria (TRCN) to develop capacity for effective teaching. Similarly, seminars and conferences can be organized for the operators of the system at different levels to inculcate the exemplary virtues of honesty, integrity, discipline, etc since these values are significant for the speedy realization of SDGs in Bayelsa state and Nigeria in general.

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EPIDEMIC DISASTER: PUBLIC HEALTH SURVEILLANCE AND ITS INFLUENCE ON THE CONTROL AND PREVENTION OF COMMUNICABLE DISEASES IN ONDO STATE, NIGERIA

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ABSTRACT

Public health surveillance is considered to be an essential tool in the prevention of outbreak of epidemics. The purpose of this study is to examine the influence of public health surveillance the control and prevention of communicable diseases in Ondo state. The study adopted the descriptive research method. 150 respondents were selected from public and private health facilities in Ondo state using convenient sampling technique. Public Health Surveillance's Influence on Communicable Disease Questionnaire (PHSICDQ) was used to elicit information from the respondents. The coefficient of 0.94 was obtained through the use of Cronbach's Alpha to test the reliability of the instrument. The collected data were collated, screened and analysed using frequency counts and percentages for the demographic variable while the stated hypotheses were tested using chi-square at 0.05 alpha level. The findings of the study revealed that early detection and reporting, health data, health care delivery, media and public awareness will have significant influence in the control and prevention of communicable diseases. The study therefore recommended that government and other health stakeholders should ensure effective and efficient public health surveillance in order to avert epidemic disaster.

KEYWORDS: Epidemic, Disaster, Public Health Surveillance, Communicable Diseases, Prevention and Control.

INTRODUCTION

It is a fact of life that at one time or another a community or nation will be faced with an adversity, a calamity, a catastrophe, a disaster or emergency. This disaster can be natural or man made. Nigeria like any other country is exposed to a wide range of disaster in which the lives of the citizens as well as infrastructures may be endangered or adversely affected. Onyebuchi (2013) reported that the most common disaster in Nigerian society ranges from flooding, drought, catastrophic gully and coastal erosion, civil strife, building collapse, road accidents, destructive storms, land slide and disease epidemic. He further stated that most times, these disasters can be prevented.

World Health Organisation (WHO, 2012) defined communicable diseases as infectious diseases that are caused by pathogenic micro-organisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread directly or indirectly from one person to another. It further stated that although disease pattern change constantly, communicable diseases remain the leading cause of mortality and morbidity in the least and less developed countries. According to WHO, communicable diseases can be categorized in different ways which include diseases with a large-scale impact

on mortality, morbidity and disability such as human immunodeficiency syndrome (AIDS), tuberculosis (TB) and malaria: diseases that can potentially cause epidemics such as influenza and cholera; and diseases that can be effectively controlled with available cost-effective interventions and surveillance such as diarrhea/disease, Ebola.

Disease Control Priorities Project (2008) defined public health surveillance as the ongoing systematic collection, analysis, interpretation and dissemination of health data fro the planning, implementation and evaluation of public health action. They further stated that public health surveillance involves adequate and trained health personnel, health facilities and enlightenment for it to be effective in the control of infectious diseases and impending disasters. The term "surveillance" derived from the French roots, Sur (Over) and Veiller (to watch) (Brachman, 2009) which is defined by Merriam-Webster dictionary as the "close and continuous observation of one or more persons for the purpose of direction, supervision or control. Public health surveillance is considered to be an essential tool in the prevention of outbreak of epidemics (Hilton, 2008). A public health system is said to have five essential

functions: population health assessment, health surveillance, health promotion, disease and injury prevention, and health protection (Canadian Institute of Health Research, 2003)

Ondo state is a state in Nigeria with majority of the south surrounded by water, while the central is a rain forest region and the northern part of the state surrounded with hills and rocks (CLEEN Foundation, 2012). Recently the state suffered an outbreak of a strange ailment which claimed more than twenty five lives in Ode Irele in Irele Local Government Area of the state in which the cause were rumored to be associated with the “gods been angry”, Ebola virus diseases (EVD), and natural cause (Sahara Reporters, 2015). The cause of the outbreak was later confirmed after clinical analysis and public health surveillance to be a methanol Poisoning. (Adeyanju, 2015).

Garcia-Albreu, Halperin and Daniel (2002) reported that World Bank described six categories through which public health surveillance can be of importance in the area of controlling communicable diseases as follows:

1. Recognize cases or clusters of cases to trigger intervention to prevent transmission or reduce morbidity and mortality.
2. Assess the public health impact of health events or determine and measure trends
3. Demonstrate the need for public health intervention programmes and resources, and allocate resource during public health planning.
4. Monitor effectiveness of prevention groups and control measures and intervention strategies.
5. Identify high-risk population groups or geographic areas to target interventions and guide analytic studies.
6. Develop hypotheses that lead to analytic studies about risk factors for disease causation, propagation, or progression.

Therefore, the purpose of this study is to examine public health surveillance and its influence in the prevention of disasters in the area of epidemics in Ondo state, Nigeria.

Statement of the Problem

Infectious diseases are major public health burden causing millions of deaths every year. Government authorities need to be able to monitor disease incidence and evaluate their interventions for disease control. Monitoring the status of communicable diseases is one of the most challenging problems facing the public health sector, and epidemiological surveillance system for infectious diseases, particularly notifiable diseases are essential.

Despite initiative to encourage reporting of infectious diseases, under-reporting because of stigmatization and discrimination, poor health facilities, under trained or shortage of health personnel, poor health care delivery is till a ravaging problem in the developing countries. Most of the causes of mortality and morbidity are mostly preventable of the necessary health intervention is duly provided, monitored and efficient.

Theoretical Framework

The theoretical framework adopted for this study is the Precaution Adoption Process Model (PAPM) by Weinstein, Sandman, and Blalock in 2008. The PAPM attempts to explain how a person comes to decisions to take action and how he or she translates that decision into action. Adoption of a new precaution or cessation of a risky behaviour requires deliberate steps unlikely to occur outside of conscious awareness. Public Health Surveillance helps to create public enlightenment and awareness on the causative factors, risks, mode of transmission and prevention techniques to be adopted by the public which can also serves as precautionary guide to the general populace.

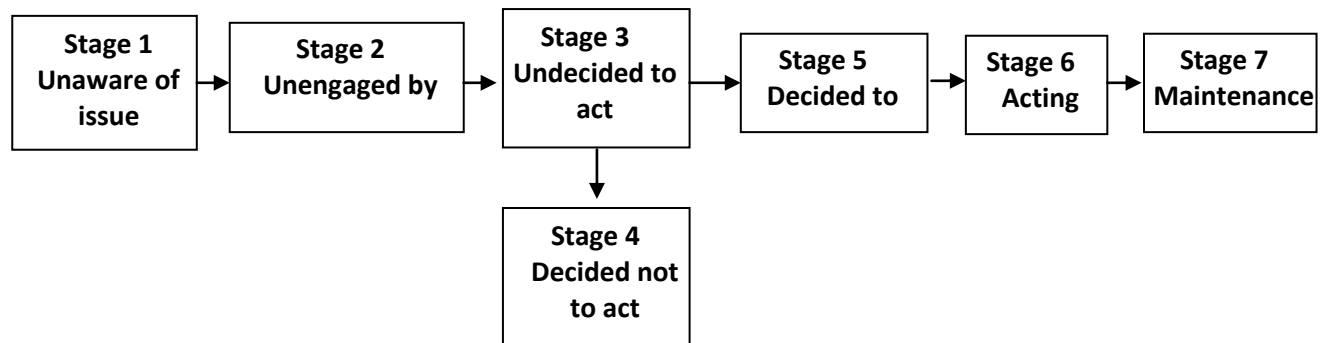


Figure 1: The Precaution Adoption Process Model

Source: Weinstein, Sandman, and Blalock (2008). The Precaution Adoption Process Model.

RESEARCH QUESTIONS

- (1) Will early detection and reporting of diseases have any influence on the control and prevention of communicable diseases in Ondo state?
- (2) Will health data generated from health facilities have any influence on the control and prevention of communicable diseases in Ondo state?
- (3) Will health care delivery have any influence on the control and prevention of communicable diseases in Ondo state?
- (4) Will media and public awareness have any influence on the control and prevention of communicable diseases in Ondo state?

RESEARCH HYPOTHESES

- (1) Early detection and reporting of diseases will not have significant influence on the control and prevention of communicable diseases in Ondo state.
- (2) Health data generated from health facilities will not have significant influence on the control and prevention of communicable diseases in Ondo state.
- (3) Health care delivery will not have significant influence on the control and prevention of communicable diseases in Ondo state.
- (4) Media and public awareness will not have significant influence on the control and prevention of communicable diseases in Ondo state.

MATERIALS AND METHODS

The research adopted the use of descriptive research methods. The population of the study comprised all health care providers in Ondo state. One hundred and fifty respondents were selected using convenient sampling technique method. The respondents were drawn from the public health officers, physicians, nurses, pharmacist, laboratory scientists, health

educators' environmental health officers and media officers. A self structured questionnaire titled Public Health Surveillance's influence on Communicable Diseases Questionnaire (PHSICDQ) based on related literature was constructed and used to collect data for the study. The validity of the questionnaire was ascertained by experts who have worked extensively on public health surveillance. The coefficient of 0.94 was obtained through the use of Cronbach's Alpha in determining the reliability of the questionnaire. 150 copies of the questionnaire were administered to the respondents with the help of 2 research assistants after obtaining verbal consent. The data collected were collated and analysed using frequency counts and percentages for the demographic variables while inferential statistics of chi-square (X^2) was used to test the stated hypotheses at 0.05 alpha level.

LIMITATION OF THE STUDY

This study was conducted within health facilities in Ondo state. Due to the busy schedule of the health workers, the researchers faced the challenges of distributing the copies of the questionnaire to the respondents. But the time frame for the work was adjusted to meet up with the distribution and collection of the questionnaire.

SIGNIFICANCE OF THE STUDY

The findings of this study will help to evaluate the effectiveness of public health surveillance on the prevention and control of communicable diseases. It will also help government and other stakeholders in health to design adequate health interventions to prevent and control ravaging communicable diseases.

RESULTS

Table 1: Demographic presentation of the respondents

Gender	Frequency	Percentages (%)
Male	92	61.3
Female	58	38.7
Total	150	100
Age	Frequency	Percentages (%)
20-30	54	36.0
31-40	51	34.0
41-50	27	18.0
51 and above	18	12.0
Total	150	100
Occupation	Frequency	Percentages
Physician	17	11.3
Nurse	38	25.4
Lab. Scientist	15	10.0
Health educator	11	7.3
Public health officer	15	10.0
Media officer	10	6.7
Environmental health officer	23	15.3
Pharmacist	21	14.0
Total	150	100

Table 2: Chi-square presentation of the stated hypotheses

Variables	N	DF	L.S	Calc. value	Crit. Value	Remarks
Influence of early detection and reporting on communicable diseases	150	12	0.05	41.56	26.41	“S”
Health data on communicable diseases	15	12	0.05	33.06	26.41	“S”
Health care delivery in communicable diseases	150	12	0.05	38.17	26.41	“S”
Media and public awareness on communicable diseases	150	12	0.05	43.07	26.41	“S”

From the table 2 above, the calculated value of 41.56, 38.17 and 43.07 is greater than the critical value of 26.41, with degree of freedom 12 at 0.05 alpha level. The null hypotheses which stated that early detection and reporting of diseases, health data generated from health facilities, health care delivery, media and public awareness will not have significant influence in the control and prevention of communicable diseases in Ondo state are thereby rejected. Therefore, early detection and reporting of diseases, health data generated from health facilities, health care delivery, media and public awareness will all have significant influence on the control and prevention of communicable diseases in Ondo state, Nigeria.

DISCUSSION OF FINDINGS

The revelation from this study which stated that early detection and reporting of diseases will have significant influence on the control and prevention of communicable diseases agrees with Dairo, Bamidele and Adebimpe (2010) who reported in his study that early detection and prompt reporting of diseases to health facilities helps in the control of infectious diseases. He further asserted that early detection will yield prompt diagnosis and provision of vaccines and therapies that will help to curtail the scourge. Olaoluwa and Adegboola (2013) also confirmed that early detection and reporting of Ebola helps to curtail the spread of it and they opined that early detection and prompt reporting is a great surveillance tool in eradicating communicable diseases.

The second findings that health data generated from health facilities will have significant influence on the control and prevention of communicable diseases also conform with Hilton (2008) who identified health data as important part of health surveillance as a measure of wide range of health indicators for a community. Health data provide comparisons for clinical studies; it can also be used to assess costs of health care and also the necessary health interventions to be adopted for specific groups.

The third finding that health care delivery will have significant influence on the control and prevention of communicable disease is in line with the study of Areagbo (2014) which stated that effective health care delivery which include provision of trained health

personnel, proper and adequate funding and health facilities and equipment helps in the control of infections diseases. As an important element of national security, public health not only functions to provide adequate and timely medical care but also track, monitor and control disease outbreak.

The fourth finding that media and public awareness will have significant influence on the prevention and control of communicable diseases agreed with Zuhike and Engel (2013) who reported that improving community awareness and enlightenment goes a long way in preventing and controlling diseases. Health awareness and education helps to provide what need to be done in case of outbreaks and how to prevent its spread.

CONCLUSION

The study concluded that early detection and reporting of diseases, health data generated from health facilities, effective health care delivery, media and public awareness will all have significant influence on the preventions and control of communicable diseases.

RECOMMENDATIONS

Based on the findings, the following are thereby recommended:

Government through Federal Ministry of Health, Education and environment in collaboration with other stakeholders should ensure that effective public health surveillance should be put in place in order to avert disasters in the areas of diseases outbreaks.

Public awareness and enlightenment on diseases outbreak and effective strategies such as personal hygiene, hand washing, immunization should be advertised on the media.

Inferences from health data should be made and ways of monitoring and supervision of health care delivery should be made available for.

Relevance of Paper to Conference Theme

Increased movements of people, expansion of international trade in foodstuffs and medical products, social and environmental changes linked to urbanization, deforestation are all manifestations of the rapidly- changing nature of the world we live in. ozone

layer depletion and global warming as led to the return of old communicable diseases and the emergence of new ones, and evolution of antimicrobial resistance, which means that curative treatments for a wide range of parasitic, bacterial and viral infections have become less effective, and a communicable disease in one country today is the concern for all. For a country to be effective in all ramifications, her citizens must be healthy.

Recently, there has been outbreak of communicable diseases such as the dreadful Ebola Disease Virus which killed countless of people across West Africa, therefore, to meet up with the goal of the conference theme "International Conference on Emerging Trends for National Sustainable Development and Disaster Management" in the area of disaster prevention in the area of epidemics, there must be a public health surveillance.

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IMPACT OF TEST ANXIETY AND GENDER ON ACADEMIC PERFORMANCE OF NIGERIAN PRE-SERVICE SCIENCE TEACHERS

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ABSTRACT

Tests and examinations' anxiety could be stumbling blocks in some students' attainment of academic excellence. It has been found that tests and examinations are the sources of increase in anxiety which prevent students from demonstrating their true achievements. This study examined the impact of test anxiety and gender on Nigerian pre-service science teachers' academic performance. The sample for the study was 450 pre-service science education students in intact classes of a College of Education in South-West Nigeria. Penultimate (200 level) and final year (300 level) students from the seven departments (Biology, Chemistry, Computer Science, Integrated Science, Mathematics, Physical and Health Education, and Physics) in the school of science education participated in the study. The instruments for data gathering were the Test Anxiety Inventory scale, and students' CGPA obtained from the aforementioned departments. Data were analysed using both descriptive and inferential statistics. Major findings of this study are that at low test anxiety, pre-service science teachers performed better with higher CGPAs than their high test anxiety colleagues, female pre-service science students exhibited lower test anxiety than male pre-service science students. Based on the findings, useful recommendations were made.

KEYWORDS: Test anxiety, Academic performance, Gender, Pre-service Teacher, Examination

INTRODUCTION

Tests and examinations at all stages of education, especially at higher education level, have been considered an important and powerful tool for decision making in our competitive society, with people of all ages being evaluated with respect to their achievement, skills and abilities (Rizwan and Nasir, 2010). Zollar and Ben-chain (1990) have the opinion that "the era in which we live is a test-conscious age in which the lives of many people are not only greatly influenced, but are also determined by their test performance". Test and examination stress is thought to prevent some individuals from reaching their academic potential. It has been found that students consistently perceive examination as a source of increase in anxiety and a situation engulfed with uncertainty/unfairness in letting them demonstrate their true achievements (Zollar and Ben-chain, 1990; Spielberger, 1980).

Such feelings among students limit their potential performance during the test situation, resulting in higher test anxiety directly causing drop in the student's achievement (Hill and Wigfield, 1984). Anxiety is a basic human emotion consists of fear and uncertainty. Emotion produces string feeling of fear, anger sexual desire, and affection and so on. It is often accompanied

by physical sensations such as heart palpitations, nausea, chest-pain, shortness of breath or tension and headache. Anxiety is often described as having cognitive, somatic, emotional and behavioural components. Psychologically, anxiety is a feeling of dread, fear or apprehension often with no clear justification. A lot of studies had been carried out on the students' anxiety levels, effect of anxiety on students' academic achievements at the different levels of their educational life which may be transferred and have influence on the pre-service science teachers teaching learning process in the classrooms. However, not much research has been done on the possible effect of test anxiety and gender on the academic performance of the pre-service science teachers in Nigeria. Hence, this study.

Hypotheses

The following null hypotheses were formulated and tested for this study:

Ho₁: There is no significant main effect of test anxiety on academic performance of pre-service science students.

Ho₂: There is no significant main effect of test anxiety level of gender on academic performance of pre-service science students.

Ho₃: There is no significant interaction effect of gender and test anxiety on academic performance of pre-service science students.

Significance of the Study

The study examined the impact of test anxiety and gender on Nigerian pre-service science teacher's academic performance in colleges of education. Information gathered helps the stakeholders, evaluators on how to reduce test anxiety so as to improve teaching learning process in Nigerian classrooms.

Test Anxiety

You've participated in class, done all of your homework, studied hard, and you think you have a grip on the material. But then the day of the test comes. Suddenly, you blank out, freeze up, zone out, or feel so nervous that you can't get it together to respond to those questions you knew the answers to just last night. If this sounds like you, you may have a case of test anxiety — that sometimes nervous feeling in people when they're about to take a test. Test anxiety is a multidimensional construct that has been defined as “the set of phenomenological, physiological, and behavioural responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative consequences or failure of an exam (Zeidner, 1990). Test anxiety is actually a type of performance anxiety — a feeling someone might have in a situation where performance really counts or when the pressure is on to do well (Aysan, Thompson and Hamarat, 2001). For example, a person might experience performance anxiety when he or she is about to try out for the school play, sing a solo on stage, get into position at the pitcher's mound, step onto the platform in a diving meet, or go into an important interview.

Like other situations in which a person might feel performance anxiety, test anxiety can result in a tension headache. Some people might feel shaky, sweaty, or feel their heart beating quickly as they wait for the test to be given out (Sieber, 1980). A student with strong test anxiety may even feel like he or she might pass out or throw up. Test anxiety is not the same as doing poorly on a certain test because your mind is on something else. Most people know that having other things on their minds — such as a breakup or the death of someone close — can also interfere with their concentration and prevent them from doing their best on a test.

All anxiety is a reaction to anticipating something stressful. Like other anxiety reactions, test anxiety

affects the body and the mind. When you're under stress, your body releases the hormone adrenaline (Keogh and French, 2001), which prepares it for danger (you may hear this referred to as the "fight or flight" reaction). That's what causes the physical symptoms, such as sweating, a pounding heart, and rapid breathing. These sensations might be mild or intense. Focusing on the bad things that could happen also fuels test anxiety. For example, someone worrying about doing poorly might think thoughts like, "What if I forget everything I know?" or "What if the test is too hard?" Too many thoughts like these leave no mental space for thinking about the test questions (Eysenck and Calvo, 1992; Sarason, 1988; Zatz and Chassin, 1983; Peleg-Popko, 2004).

People with test anxiety can also feel stressed out by their physical reaction and think things like "What if I throw up?" or "Oh no, my hands are shaking" (Zeidner, 1998). Just like other types of anxiety, test anxiety can create a vicious circle: The more a person focuses on the bad things that could happen, the stronger the feeling of anxiety becomes. This makes the person feel worse and, because his or her head is full of distracting thoughts and fears, it can increase the possibility that the person will do worse on the test. People who worry a lot or who are perfectionists are more likely to have trouble with test anxiety (Ellsworth and Smith, 1988; Lazarus, 1991). People with these traits sometimes find it hard to accept mistakes they might make or to get anything less than a perfect score. In this way, even without meaning to, they might really pressure themselves. Test anxiety is bound to thrive in a situation like this. Students who aren't prepared for tests but who care about doing well are also likely to experience test anxiety (Culler and Holahan, 1980; Wittmaier, 1972). If you know you're not prepared, it's a no-brainer to realize that you'll be worried about doing poorly. People can feel unprepared for tests for several reasons: They may not have studied enough; they may find the material difficult, or perhaps they feel tired because didn't get enough sleep the night before.

Test Anxiety and Academic Performance

There are number of researches reporting text anxiety as one of the major cause for students' underachievement and low performances at different levels of their educational life (Oludipe, 2009) and has been shown to affect students' ability to profit from instruction (Schonwetter, 1995). Gaudry and Spielberger (1971) discussed that high test anxiety is considered as one of the main factor for low performance of students at university level. A study conducted by Nicholson (2009) explored the effects of test anxiety on student achievement of grade 11 students, revealed that anxiety

and achievement are related to each other. Khalid and Hasan (2009) conducted a study on a purposively selected sample of 187 undergraduate students to explore the relationship between test anxiety and academic achievement and found that students with academic achievement have low test anxiety scores and vice versa. Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005) conducted a research study to explore the relationship between test anxiety and academic performance. They collected data from a large sample of graduate and undergraduate students and found a significant and negative relationship between test anxiety and academic achievement.

Hancock (2001) investigated the effects of students' test anxiety and teacher's evaluation practices on students' achievement and motivation at post the secondary level. He found statistically significant results which revealed that all students, especially students with high anxiety level, performed poorly and were less motivated to learn. Thus he concluded that when students, who are particularly test-anxious, are exposed to a highly evaluative assessment environment in their educational institution, they perform poorly and are less motivated to perform (Hancock, 2001). Cassady and Johnson (2002) investigated the effect of cognitive test anxiety on students' academic performance and found that cognitive test anxiety exerts a significant stable and negative impact on academic performance measures. Albero, Brown, Eliason and Wind (1997), on the basis of their research study, concluded that students having high test anxiety had significantly lower scores. Oludipe (2009) conducted a study to explore how test anxiety affects students' performance levels in the sciences, especially in Physics, and concluded that "low test anxious students performed better than high test-anxious students on both numerical and non-numerical tasks in Physics". On the other hand, Schonwetter (1995) by relating this phenomenon to classroom instruction submitted that high test- anxious students were unable to benefit directly from organized instruction, which ultimately affected their performance in class.

Test Anxiety and Gender

Several researchers explored gender differences with respect to test anxiety and found that females have higher levels of overall test anxiety than males (Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005); Cassady and Johnson, 2002; Bandalos, Yates and Thorndike-Christ, 1995; Mwamwenda, 1994; Hembree, 1988; Volkmer and Feather, 1991; Zeidner, 1990). Cassady and Johnson (2002) explained "that one explanation for differences in test anxiety on the basis of students' gender is that males and females feel same levels of test worry, but females have higher levels of

emotionality". Zeidner (1990), on the basis of his research, concluded that difference in test anxiety scores of male and female is due to gender difference in scholastic ability. Previous researches have also shown that males typically score lower on measurements of test anxiety than females (Lashkaripour, 2006; Berger and Schecter, 1996; Mehregan, Najjarian and Ahmadi 2001; Ferrando et al, 1999; Chang, 1997; Feingold, 1994). The different test anxiety constructs affect males and females in different ways. Results show that: (a) worry was related to task-orientation and preparation and low avoidance coping in females; (b) emotionality was related to seeking social support in male students and to task-orientation and preparation in female students; and (c) interference was related to avoidance coping in females (Stober, 2004). There was a gender effect on worry and emotionality test anxiety for high achieving students. Overall, females were reported to be more subject to test anxiety than males; and females experienced higher worry than emotionality, while males reported little difference between the two dimensions

METHODOLOGY

The target population for the study was the science education students in a Colleges of Education in South-West Nigeria. 200 level and 300 level students respectively from the seven departments (Biology, Chemistry, Computer Science, Integrated Science, Mathematics, Physical and Health Education, and Physics) in the school of science education participated in the study. Intact classes of each of the aforementioned departments were used which brought about sample of 450 students (250 female students, 200 male students).

The main instruments for data gathering were the Test Anxiety Inventory scale (Smith, 2000) and students' CGPA obtained from the aforementioned departments. Several instruments have been developed by various researchers for measuring test anxiety but they all use text anxiety as unitary construct. Hence they insist on finding a unitary number representing text anxiety level of students. Researcher preferred using Test Anxiety Inventory (TAI) because researcher believed that test anxiety is at least bi-dimensional construct comprising emotionality and worry scale. The same argument is put forward by the Smith (2000) while using this instrument for his study. He compared different test anxiety scales (Test anxiety scale by Sarason, 1990; Test anxiety questionnaire by Mandler Rizwan, Nasir and Sarson, 1952; and the State-trait anxiety inventory by Spielberger, Gorsuch, and Luschene, 1970) to conclude that they yield global test anxiety scores that combine components, emotionality and worry, of test scores". Hence researchers are of the view that when someone

intends to study the influence of test anxiety on academic performance, it is expedient to study both components of test anxiety because of the fact that these components are related to academic performance (Berk and Nanda, 2006; Chapell et al., 2005; Cassady and Johnson, 2002; Hancock, 2001; Smith, 2000; Pintrich and Schunk, 1996; Bandlos, Yates, and Thorndike-Christ, 1995; Williams, 1991, Humber, 1988).

Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005) reported that test anxiety inventory is extensively used to explore students test anxiety at different levels of education all over the world. According to them, TAI comprised 26 Likert Scale type self-report items (1= *Not at all typical of me*, 2= *Only somewhat typical of me*, 3= *Quite typical of me*, and 4 = *Very typical of me*) which are designed by its author (Spielberger, 1980) to measure test anxiety symptoms. The scale is further divided into two subscales: Worry Scale (8 items), and Emotional Scale (8 items). Cronbach alpha (α) reliability coefficient reported for total scale (TAI-Total) ranged from 0.92 to 0.96 and for its two sub-scales: Worry scale (0.83 to 0.91) and Emotional scale (0.85 to 0.91). For present study, the Cronbach Alpha (α) for total scale was 0.87, while the reliability for emotional scale items was 0.76 and for worry scale items was 0.75. The difference in the reliability found in other studies and present study is due do difference in sample size as reliability is directly proportional to number of subjects in sample. Despite difference in reliability on each sub-scale, the values of alpha (α) are reasonably high and statistically acceptable. Students of 200 and 300 levels respectively were chosen because their examination questions and scripts were moderated by competent external moderators; hence their scores used to compute their CGPA were valid and reliable.

The researcher and six research assistants (lecturers in the aforementioned departments) administered the Test Anxiety Inventory (TAI) to the students in their intact classes and waited to collect them back. After the collection of the administered TAI, the researchers calculated the TAI scores of each of the students and

group them according to their TAI scores; students with high TAI scores were assigned to high test anxiety group, while those with low TAI scores were assigned to low test anxiety group. The researcher, having grouped the students to test anxiety groups, contacted their departments to request for the students' omnibus for firsthand information on their CGPAs. Descriptive statistics, Univariate Analysis of Variance (ANOVA) and Post Hoc tests (Scheffe) were used to analyze the data collected using SPSS 15.0 statistical package.

RESULTS

Table 1: Means and Standard Deviations according to Test Anxiety and Gender

	TAIsum	Mean	Std. Deviation	N
Male	44	3.00	.000	100
	83	1.00	.000	57
	86	1.00	.000	43
	Total	2.00	1.003	200
Female	44	3.19	.396	150
	83	1.20	.406	35
	86	1.05	.211	65
	Total	2.36	1.089	250
Total	44	3.12	.321	250
	83	1.08	.267	92
	86	1.03	.165	108
	Total	2.20	1.065	450

In table 1, it is revealed that low test anxiety students had the higher mean score (3.12) than their colleagues in the high test anxiety group whose mean scores were 1.08 and 1.03 respectively (high test anxiety implies low mean scores, while low test anxiety implies high mean scores). Similarly, male students with low test anxiety had a lower mean score (3.00) than the low test anxiety female students with the mean score of (3.19). The male students in the high test anxiety had lower mean scores (1.00 and 1.00) than their female colleagues in the high test anxiety group (1.20 and 1.05).

Table 2: Univariate Analysis of Variance on the Academic Performance subscale of the TAI and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	477.543(a)	5	95.509	1331.219	.000	.937
Intercept	1074.545	1	1074.545	14977.234	.000	.971
Gender	1.904	1	1.904	26.544	.000	.056
TAIsum	441.296	2	220.648	3075.437	.000	.933
Gender * TAIsum	.437	2	.218	3.044	.049	.014
Error	31.855	444	.072			
Total	2683.000	450				
Corrected Total	509.398	449				

R Squared = .937 (Adjusted R Squared = .937)

Ho₁: There is no significant main effect of test anxiety on academic performance of pre-service science students. It is revealed in table 2 that there was significant difference in the mean scores of low and high test anxiety pre-service science students ($F_{(1,449)} = .000$, statistically significant). Hence hypothesis 1 is not accepted.

Ho₂: There is no significant main effect of test anxiety level of gender on academic performance of pre-service science students.

It is also revealed in table 2 that there was significant difference in the mean scores of low and high test anxiety pre-service science students ($F_{(1,449)} = .000$, statistically significant). Hence hypothesis 2 is not accepted.

Ho₃: There is no significant interaction effect of gender and test anxiety level on academic performance of pre-service science students.

Talking about the interaction effects of anxiety and gender, it is revealed in table 2 that there was no significant interaction effect of gender and test anxiety on students' academic performance ($F_{(2,449)} = .049$, statistically not significant).

Table 3:

67.5 mid-point; 100 out of these 250 pre-service teachers were male, while 150 of them were female. 92 pre-service science teachers scored 83 (20.44%); 57 of them were male, 35 of them were female, 108 pre-service science teachers scored 86 (24.11%); 43 were male, while 65 were female; all of which were higher than the mid-point (67.5). This result indicates that 250 of the prospective science teachers in this sample had low test anxiety, while 200 of them had high test anxiety. 221 out of the 250 low anxiety pre-service science teachers had CGPAs at credit level, while the remaining 29 of the 250 low anxiety pre-service science teachers had CGPAs at distinction level. Similarly, 190 out of the 200 high anxiety pre-service science teachers had CGPAs at Pass level, while the remaining 10 of the 200 high anxiety pre-service science teachers had CGPAs at merit level.

Results in table 3 above revealed that when pre-service science teachers with low test anxiety (44) were compared with those with high test anxiety (83 and 86) pre-service science teachers, there were significant differences in their academic performance (.000), the low test anxiety pre-service science teachers performed better than their colleagues with highest anxiety. When the CGPAs of 83 pre-service science teachers with high

Multiple Comparisons

Dependent Variable: CGPA
Scheffe

(I) TAIsum	(J) TAIsum	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
44	83	2.040*	.034	.000	1.96	2.12
	86	2.088*	.032	.000	2.01	2.17
83	44	-2.040*	.034	.000	-2.12	-1.96
	86	.048	.040	.478	-.05	.15
86	44	-2.088*	.032	.000	-2.17	-2.01
	83	-.048	.040	.478	-.15	.05

*. The mean difference is significant at the .05 level.

Table 3 above shows the multiple comparisons of pre-service science teachers' CGPAs according to their various levels of test anxiety.

DISCUSSION

Total test anxiety score was calculated from the 26 items on the TAI scale in order to ascertain the prevalence of anxiety within each of the two groups. The minimum possible score was 27 and the maximum 108. A score of 67.5 is the middle point; hence higher scores indicate more test anxiety, while lower scores indicate less (or no) test anxiety. It was revealed from the data analysis that 250 pre-service science teachers representing (55.55%) had 44 as scores less than the

test anxiety were compared with those of the low test anxiety pre-service science teachers (44), it was found that the low test anxiety pre-service science teachers performed significantly better academically (.000) than their colleagues in the low anxiety groups. When compared with the high test anxiety pre-service science teachers (86), there was no significant difference in their academic performance (.533). The same results similar to the aforementioned were obtained when the high test anxiety (86) pre-service teachers' CGPAs were compared with other levels of pre-service science anxiety. This study has established the influence of science anxiety and gender on the academic performance of the pre-service science teachers in Nigeria, which is in line with the findings of (Oludipe,

2009; Schonwelter, 1995; Gaundry and Spielberger, 1971; Nicholas, 2009; Khalid and Hassan, 2009; Hancock, 2001; Cassady and Johnson, 2002; Chapell et al., 2005; Bandalos et al., 1995; Lashkaripour, 2006; Berger and Schecter, 1996).

CONCLUSION

The study revealed that text anxiety is very crucial on the academic performance of Nigerian pre-service science teachers in the area of study. There is therefore, a need to build confidence in the pre-service science teacher to improve teaching and learning process in Nigerian classrooms.

RECOMMENDATIONS

Test anxiety can be a real problem if you're so stressed out over a test that you can't get past the nervousness to focus on the test questions and do your best work. Readiness to meet the challenges, though, can keep test anxiety at a manageable level. In view of the above, the following recommendations are hereby made:

- 1. Use a little stress to your advantage.** Stress is your body's warning mechanism — it's a signal that helps you prepare for something important that's about to happen. So use it to your advantage. Instead of reacting to the stress by dreading, complaining, or fretting about the test with friends, take an active approach. Let stress remind you to study well in advance of a test. Chances are, you'll keep your stress from spinning out of control. After all, nobody ever feels stressed out by thoughts that they might do well on a test.
- 2. Ask for help.** Although a little test anxiety can be a good thing, an overdose of it is another story entirely. If sitting for a test gets you so stressed out that your mind goes blank and causes you to miss answers that you know, then your level of test anxiety probably needs some attention. Your teacher, your school guidance counselor, or a tutor can be useful resources to talk to if you always get extreme test anxiety.
- 3. Be prepared.** Some students think that going to class is all it should take to learn and do well on tests. But there's much more to learning than just hoping to soak everything up in class. That's why good study habits and skills are so important — and why no amount of cramming or studying the night before a test can take the place of the deeper level of learning that happens over time with regular study. Many students find that their test anxiety is reduced when they start to study better or more regularly. It makes sense — the more you know the material, the more confident you'll feel. Having confidence going into a test means you expect to do well. When you expect to do well, you'll be able to

relax into a test after the normal first-moment jitters pass.

- 4. Watch what you're thinking.** If expecting to do well on a test can help you relax, what about when people expect they **won't** do well? Watch out for any negative messages you might be sending yourself about the test. They can contribute to your anxiety. If you find yourself thinking negative thoughts ("I'm never any good at taking tests" or "It's going to be terrible if I do badly on this test"), replace them with positive messages. Not unrealistic positive messages, of course, but ones that are practical and true, such as "I've studied hard and I know the material, so I'm ready to do the best I can." (Of course, if you haven't studied, this message won't help!)
- 5. Accept mistakes.** Another thing you can do is to learn to keep mistakes in perspective — especially if you're a perfectionist or you tend to be hard on yourself. Everyone makes mistakes, and you may have even heard teachers or coaches refer to mistakes as "learning opportunities." Learning to tolerate small failures and mistakes — like that one problem you got wrong in the math pop quiz — is a valuable skill.
- 6. Take care of yourself.** It can help to learn ways to calm yourself down and get centered when you're tense or anxious. For some people, this might mean learning a simple breathing exercise. Practicing breathing exercises regularly (when you're not stressed out) helps your body see these exercises as a signal to relax. And, of course, taking care of your health — such as getting enough sleep, exercise, and healthy eats before a test — can help keep your mind working at its best. Everything takes time and practice, and learning to beat test anxiety is no different. Although it won't go away overnight, facing and dealing with test anxiety will help students learn stress management, which can prove to be a valuable skill in many situations besides taking tests.

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IMPLEMENTING LANGUAGE PROVISIONS IN NATIONAL POLICY ON EDUCATION: CHALLENGES IN NIGERIAN SCHOOLS

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ABSTRACT

This study sought to examine various challenges affecting the implementation of language provisions in National Policy on Education in Nigeria. The study made use of the survey research design. The population for this study comprised of all the primary school pupils, secondary school students, their parents, teachers, head teachers and principals in Southwestern Nigeria. A sample of 1,620 pupils, 1,620 students, 54 head teachers, 54 principals, 300 English language teachers and 500 parents in Southwestern Nigeria totaling 4,148 were drawn from three senatorial districts in each of the six states (Ekiti, Ogun, Osun, Oyo, Ondo and Lagos) in Southwestern Nigeria for the study. Purposive sampling technique was used to select both public and private schools in the senatorial districts. An instrument titled “Challenges and Factors on Language Implementation Questionnaire” (CFIQ) was developed for the study. One research question and three research hypotheses emanated from the study. The study recommended among others that government should sponsor the development of curricular and instructional materials for teaching and learning of various languages in the country, especially those that have been recognized in the language provisions.

KEYWORDS: challenges, language provisions, National Policy on Education, Nigerian schools.

INTRODUCTION

In spite of government deferential plan concerning the language provisions in the NPE, a number of challenges arise, which tend to influence the concerns of the language policy. These include: classroom congestion, unavailability or poor libraries in schools, inadequate instructional and enrichment materials, insufficient and incompetent language teachers, inadequate training and retraining of teachers, over-reliance on English textbooks, insufficient fund and computer assisted language learning,

The phenomenon of large classes resulting from population explosion of school age children is fast becoming one to be contended with in schools. Classroom congestion and low utilization rate of classrooms are common features of secondary school classes in Nigeria. Such large classes have negative impacts on both secondary school teacher productivity, student learning input, and students’ academic performance. According to Martins (2002), class factors are very important in the teaching–learning activities, particularly when students’ academic performance is being considered. The lower the class size or teacher-pupil ratio, the better the performance since students’ achievement decreases as class size increases.

Many studies have pointed out the significance of teacher pupil ratio to cognitive learning in the school

(Krauss, 1992; Ojoawo, 1989; Fabunmi, 2000; Okoro, 2000). The National Policy on Education (2004, section 2, p. 6) states that “for effective teaching and learning at the basic education level, the teacher-student ratio shall be 1.35.” In emphasizing the importance of class size to the learning–teaching process, the All Nigeria Conference of Principals of Secondary Schools (ANCOPSS) recommends a maximum of forty students per class for effective management and better control. However, these are common phenomenon both in urban and rural secondary schools where 50 or 60 students may be in a class.

Omojuwa (1983) in his own study found that class size had a negative coefficient with examination performance of students. The lower teacher-pupil ratio allows for more effective communication between the learner and the teacher though the opinion of Bolton (1988) “larger is sometimes better”. Edge (1980) however identifies two of the problems which large classes pose; they are (1) the provision of an opportunity for discussion or for any kind of oral input to the written work is difficult, and (2) the amount of noise-making involved can dissuade even the most enthusiastic teacher from setting the amount of written work that he/she feels would benefit the students. Both federal and state governments should be conscious of these factors while allocating resources to education. Educational planners and policy makers have to take

these factors into consideration while conducting school mapping exercises and policy formulation.

The quality and availability of libraries in schools are also factors in learning English language. Numerous researchers such as Nwoke (1987), Ajayi (2002), Adegbite (2005) confirm the educational gains that school library programmes provide in students' learning. The library provides avenues for learners to be exposed to different reading materials and information that can positively boost their language skills. Through the library, learners can have access to larger collections of prints and electronic resources that can develop in them skills such as problem solving, critical thinking and communicative ideas. In spite of the many benefits derivable from the library, many primary and secondary schools lack this provision.

Ajayi (2002) in support of this view discusses the issue of the discouraging state of libraries in schools. At present, many schools do not have libraries. Even those who have can not afford to buy new books. Where the books and novels are available, they are too few to cope with the ever-increasing student enrolment in school. He further enunciates that the poor performance in English among primary and secondary school learners arises from the absence of enrichment materials in the school library. Consequently, learners' interest in reading has dwindled since most of the libraries in schools are stocked with obsolete reading materials.

The onus thereby lies on the government to furnish the school libraries with recent reading materials so that the objectives of the language provision in the NPE can be realised. Moreover, the teachers should be able to motivate the pupils and stimulate their interest in learning and reading so that their communicative competence can be enhanced.

Instructional materials are essential tools in fulfilling the objectives of the language provisions as depicted in the NPE (2004). They allow learners to interact with words, images, and ideas in ways that develop their abilities in reading, listening, viewing, thinking, speaking, writing and in using media and technology. The range of instructional and enrichment materials has broadened considerably to include tape-recorder, video tape, camera, pictures, charts, diagrams, debates, excursions, radio, resource persons, newspapers, magazines, supplementary books, maps, projectors, films etc

These materials which enhance appropriate language learning are not provided in most primary and secondary schools. In schools where some of these materials are provided, they are not adequately utilized. This invariably affects language learning and as a result

hampers learners' performance. Ajayi (2002) affirms that enrichment constructional materials and activities indicate initiative to either recommend or provide or improvise to support and facilitate robust academic activities in order to achieve desirable educational goals or objectives even beyond schools.

Newspapers are among the relevant instructional materials that can be used in the classroom. Ajayi (2002) states

The newspaper can be a great language enrichment material, particularly in ESL writing/reading classroom. For instance, it is easy to adopt, it can be marked, cut, pasted, coloured and discarded easily and new issues appear daily. Finally, photographs, paintings, drawings, graphics, maps, cartoons and sketches serve as comprehension aids because they provide context clues working with the newspaper.

Emphasizing the importance of newspaper/magazines as enrichment materials in schools, Roe et al cited in Umoh (1991) say that: "Newspapers and magazines are excellent media for reading instruction... they treat a wide variety of subject matters. They are interesting to students who have been turned off by formal reading materials" (p. 84).

Umoh (1991), therefore, provides differences between a novel (or English textbook) and a newspaper/magazine in terms of volume cost, production, readership, care and handling and contents. It is clearly indicated that the cost of newspapers and magazines is lower than novels or English textbooks. Also, while the production of textbooks is at one time or reproduced (reprinted) after sometimes, newspapers and magazines are produced daily, weekly or monthly. In terms of utilization or readership, newspapers and magazines satisfy the academic and life beyond school purposes.

Insufficient and incompetent language teachers also pose as a challenge to adequate implementation of the objectives in the language provision in the NPE. The language teachers play significant roles in disseminating appropriate information that will assist the learners in recognizing the similarity between the old situation and the new, so as to transfer the training received during lessons to other fields. All learning must proceed from the known to the unknown. If a child cannot correlate an unknown thing with something familiar to him, he cannot get at its meaning. Therefore, the teacher must use the learner's apperceptive mass in order to teach. The apperceptive mass is the sum of the experience contained in the phantasms, concepts and emotional

associations which have been registered in the consciousness. The teacher is expected to draw upon the learner's apperception, in such a way that when he proposes a new idea of a new object, the learner will be able to associate it with some idea or mental image he already has (Awobuluyi, 1991).

Considering the indispensability of teachers to proper implementation of any language provisions, it is evident that most primary and secondary schools don't have sufficient and competent language teachers, thus school heads entrust the teaching of English language to graduates from other specialization. According to Babatunde (2011), the role of the teacher as a major determining factor in the quality of education cannot be ignored. As a curriculum implementer and guide to the learner, it is necessary for the teacher to know what to teach, how to teach it and to ensure that learning takes place.

There is a dearth of retraining of language teachers all through the school system. In English, the practicing teachers are poorly motivated, incompetent, overworked, unevenly distributed, and abysmally insufficient in numbers. Most teachers of English are unqualified to teach the English language, sometimes redundant teachers are drafted to teach it. Just anybody with a degree or diploma is a potential English teacher, after all such a graduate was taught in English. How then can the learners achieve communicative competence that is the vision of the government in such a situation? The lack of trained and committed teachers affects the performance of students. It is a known fact that the teacher is the fulcrum around which the entire teaching learning process revolves. A competent, qualified, dedicated, resourceful, well-motivated, and well paid teacher is the greatest asset in realizing the set objectives of any educational policy.

In the manual for the re-training of primary and secondary school teachers which was sponsored by National Teachers' Institute (2011), it was stated that there has not been any systematic attention to update regularly the knowledge and pedagogical skills of teachers in the light of changes in the curriculum and the wider society. This neglect has, in turn, affected the quality of teaching in schools. It is on this basis that the Federal Government, through the Ministry of Education, directed the National Teachers' Institute to retrain both primary and junior secondary school teachers. Training for teachers has been used to widen access to learning opportunities for teachers. Through regular re-schilling of teachers, their knowledge and skills are upgraded in order to meet new standards of education that are geared towards the improvement of the entire education system (Pradilla 2001, Turell, 2001). Since re-training

workshops focus on innovative technique of teaching, the language teachers should be adequately trained to improvise and utilize various activities to enhance the communicative efficiency of the learners.

Over-reliance on English textbook poses a challenge to appropriate implementation of the language provision. According to Ohia and Adeosun (2002), it is not uncommon among teachers to get into the class and ask the students to 'open to page...of ...text and rely entirely on the text throughout the duration of the lesson. English Language course books exhibit a characteristic of over-emphasis and superiority of a particular teaching method over the other(s), forgetting, according to language experts, that there is no best way of learning and that learners learn best when different learning methods and approaches/strategies are used.

English language course books writers should shed their preference to particular method(s) and employ what Rivers (1964) calls informed eclecticism, which is a combination of teaching methods/approaches designed to strike a balance between linguistic competence and communicative competence. Teachers should remember that language production and comprehension are normally carried out in varieties of knowledge: conscious knowledge acquired from other people, from books, mass media, at school etc, and tacit knowledge, which is unconscious and cannot normally be verbalized but forms the basis of many skills, including verbal ones (Klein, 1986:40-41).

It is the responsibility of the government to provide adequate fund for managing the school. In a situation where there is non-provision or insufficient fund for the running of the school, the necessary instructional materials and needs for language teaching and learning will be affected. Much of the difficulty in education lies in the fact that the sector is poorly funded. This results in shortages of material and human resources for education. There are instructional inputs, shortage of classrooms and a host of other problems. These difficulties have been most pronounced at the foundation levels of education. Both primary and school levels have been negatively affected. In 1997, the Federal Minister of Education, following a nation-wide tour of the schools stated that the basic infrastructure in schools such as conducive classrooms, laboratories, workshops, sporting facilities, equipment, libraries were in a state of total decay. Even the physical condition of most schools was reported to be pathetic (Moja, 2000).

Computer Assisted Language Learning is succinctly defined in a seminal work by Levy (1997) as "the search for and study of applications of the computer in language teaching and learning" (p.1). Computer

Assisted Language Learning (CALL) embraces a wide range of Information Communication Technology (ICT) applications and approaches to teaching and learning foreign languages. The current philosophy of CALL puts a strong emphasis on student-centered materials that allow learners to work on their own. Such materials may be structured or unstructured, but they normally embody two important features: interactive learning and individualized learning. CALL is essentially a tool that helps teachers to facilitate the language learning process. It can be used to reinforce what has been already been learned in the classroom or as a remedial tool to help learners who require additional support (Davies, 2011). Over the years, more and more technical inventions have taken their place among the educational aids with which teachers surround themselves, so as to make their teaching more effective. What distinguishes the computers from other pieces of equipment, such as tape recorders and film projectors, and what forms the basis of its being an educational aid is its interactive capability.

Having identified and discussed some of the challenges encountered in implementing language provisions in the National Policy on Education, it is exigent to examine how these variables empirically affect the policy.

Research Question

What are the challenges encountered by teachers and school administrators in implementing the language provisions in the NPE?

Research Hypotheses

1. There is no significant difference in the challenges encountered by teachers and school administrators in the implementation of the language provisions in the NPE.
2. There is no significant difference in the challenges encountered at private and public schools in the implementation of the language provisions in the NPE.
3. There is no significant difference in the challenges encountered in rural and urban schools in the implementation of the language provisions in the NPE.

METHODOLOGY

The research adopted the survey design. The population for this study comprised of all the primary school pupils, secondary school students, their parents, teachers, head teachers and principals in Southwestern Nigeria. A sample of 1,620 pupils, 1,620 students, 54 head teachers, 54 principals, 300 English language teachers and 500 parents in Southwestern Nigeria were drawn from three senatorial districts in each of the six states (Ekiti, Ogun, Osun, Oyo, Ondo and Lagos) in

Southwestern Nigeria for the study. Purposive sampling technique was used to select both public and private schools in the senatorial districts. Thus, two public and one private schools were selected from each senatorial district. From each of the primary and secondary schools, 90 students were selected using stratified random sampling technique with class level as stratum giving a total of 3,240 students. All the 54 head teachers and 54 principals of the selected primary and secondary schools were used. 300 certified English Language teachers and 500 parents were selected using convenience sampling. In each senatorial district, six streams of classes, primaries 4, 5, 6, JSS II, JSS III, SS 1 were selected using stratified random sampling. An instrument titled "Challenges and Factors on Language Implementation Questionnaire" (CFIQ) was developed for the study. The instrument was designed by the researcher to elicit information on the challenges encountered in implementing the language provisions as well as factors affecting the implementation of the language provisions in the NPE. This was intended to find out whether factors such as inadequate instructional materials, insufficient language teachers as well as students' level of proficiency influence the implementation of the language provisions. This questionnaire was divided into three sections. Section A was on personal information like work experience, qualification, sex, and class. Section B of the instrument consisted of 45 items which was meant for teachers and school administrators on the challenges encountered in the implementation of the language provisions in the NPE. The respondents were expected to respond to each of the items of "CFIQ" on a five point Likert-type scale ranging from Great Extent to Not at all. The instrument was scored 0 for Not at all; 1 for Undecided, 2 for Little Extent, 3 for Some Extent and 4 for Great Extent.

Section C was meant to get information on the factors affecting the implementation of the language provisions such as students' learning environment and students' level of proficiency. The questionnaire was for teachers only. It was divided into two parts, Part A was on contextual factors which consisted of 15 items. Part B dealt with cultural factors that equally consisted of 15 items. The respondents made selection from the five options ranging from Great Extent to Not at all. Scoring of the instrument was: 0 for Not at all; 1 for Undecided, 2 for little Extent, 3 for Some Extent and 4 for Great Extent. The instrument yielded 0.77 using Cronbach Alpha. Data collected were analysed using simple percentage, Relative Significance Index, One-Way ANOVA and t-test statistics.

RESULTS

Research Question

What are the challenges encountered by teachers and school administrators in implementing the language provisions in the NPE?

To answer this question, data on the question items of section 'B' on challenges encountered in the implementation of the language provisions in the NPE were used. The data were analyzed using the percentages and RSI statistics. The results are presented in Table 1.

Table 1: Challenges Encountered in Implementing the Language Provisions in the NPE

	Statement	Great Extent		Some Extent		Little Extent		Undecided		Not at all		RSI
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
1	My English language class is overcrowded	192	47.1	145	35.5	29	7.1	4	1.0	38	9.3	0.7960
2	There are inadequate strategies for recruiting language teachers to my school	261	64.0	81	19.9	16	3.9	40	9.8	10	2.5	0.8143
3	Instructional materials in my school for teaching English language in schools are not adequately provided	228	55.9	86	21.1	19	4.7	61	15.0	14	3.4	0.7488
4	I am faced with the pressure to cover the course content within a limited time frame	170	41.7	153	37.5	16	3.9	60	14.7	9	2.2	0.7230
5	Language teachers are not adequately motivated to put in their best in teaching in my school	11	2.7	13	3.2	99	24.3	229	56.1	56	13.7	0.2065
6	Language teachers are trained and retrained to meet with challenges in language classes in my school	6	1.5	104	25.5	199	48.8	83	20.3	16	3.9	0.4596
7	There is over-reliance on English language course books in teaching and learning in schools	13	3.2	206	50.5	156	38.2	29	7.1	4	1.0	0.6042
8	There is the absence of well-defined objectives for the teaching of language in the language provisions	238	58.3	80	19.6	14	3.4	66	16.2	10	2.5	0.7537
9	Instructional materials such as tape-recorder and diagrams are provided in teaching English language in my school	11	2.7	36	8.8	109	26.7	81	19.9	171	41.9	0.3315
10	I improvise teaching aids for language learning	13	3.2	103	25.2	182	44.6	37	9.1	73	17.9	0.4890
11	Sufficient fund is provided for taking care of needs in my school	67	16.4	98	24.0	209	51.2	18	4.4	16	3.9	0.6103
12	Libraries in my school are supplied with good reading materials	12	2.9	74	18.1	296	72.5	13	3.2	13	3.2	0.5362
13	Language teachers are not properly monitoring of the language teachers	12	2.9	68	16.7	152	37.3	154	37.7	22	5.4	0.3542
14	Competent language teachers are posted to my school to teach	11	2.7	41	10.0	268	65.7	80	19.6	8	2.0	0.4357
15	Learners have adequate time to read up after language classes in my school	34	8.3	82	20.1	152	37.3	83	20.3	57	14.0	0.4553
16	Co-curricular activities are organized in my school to assist learners' interactions	43	10.5	94	23.0	198	48.5	37	9.1	36	8.8	0.5429
17	Many of the buildings in my school are not conducive for language learning	21	5.1	112	27.5	152	37.3	71	17.4	52	12.7	0.4755
18	There is insufficient provision of furniture for learners in my school	29	7.0	97	23.8	193	47.3	81	19.9	8	2.0	0.4908
19	Language teachers are effectively monitored and evaluated in my school	35	8.6	56	13.7	41	10.0	83	20.3	193	47.3	0.3572
20	Head teachers and principals serve as internal supervisors to monitor language teaching and learning in my school	10	2.5	92	22.5	119	29.2	98	24.0	89	21.8	0.3940
21	Media and computer assisted instruction are provided in teaching and learning English in my school	15	3.7	12	2.9	88	21.6	183	44.9	110	27.0	0.2341
22	I incorporate the mother tongue in teaching English language in the upper classes for learners' better understanding in my school	139	34.1	108	26.5	95	23.3	56	13.7	10	2.5	0.6618
23	There are inadequate language teachers in schools in my school	99	24.3	163	40.0	95	23.3	8	2.0	43	10.5	0.6850
24	Most learners in my school find it difficult to express themselves in English	104	25.5	118	28.9	100	24.5	67	16.4	19	4.7	0.6060
25	Language teachers motivate learners to cultivate reading habit in my school	41	10.0	129	31.6	91	22.3	106	26.0	41	10.0	0.4743
26	Language teachers' welfare is not adequately considered in my school	116	28.4	153	37.5	84	20.6	37	9.1	18	4.4	0.6795
27	Most learners in my school participate more actively in Yoruba classes than in English Language classes	80	19.6	116	28.4	77	18.9	78	19.1	57	14.0	0.5386
28	The methods language teachers' employ in teaching in my school is boring	5	1.3	202	49.5	112	27.5	73	17.9	16	3.9	0.5386
29	Learners in my school are exposed to English language at school, not outside the school	205	50.2	134	32.8	32	7.8	30	7.4	7	1.7	0.7923
30	The students population in my English language class adversely affects learning	83	20.3	79	19.4	242	59.3	2	0.5	2	0.5	0.6464
31	Learning activities within the school system are properly coordinated in my school	7	1.7	79	19.4	196	48.0	121	29.7	5	1.2	0.4056
32	Available resources are properly managed so as to achieve the objectives of the language provisions in my school	6	1.5	155	38.0	241	59.1	3	0.7	3	0.7	0.5968
33	Language teachers are not selected for training programmes on the principle of reasonableness, justice and fair play in my school	198	48.5	145	35.5	18	4.4	2	0.5	45	11.0	0.8015
34	Language teachers are offered stipends for attending retraining	199	48.8	185	45.3	16	3.9	5	1.2	3	0.7	0.8493

	programmes in my school											
35	I have little time for planning and preparation of English language lessons	5	1.2	146	35.8	26	6.4	2	0.5	229	56.1	0.4528
36	My school obtains relevant information on in-service training for language teachers' development from the Ministry of Education	190	46.6	145	35.5	26	6.4	42	10.3	5	1.2	0.7672
37	Instructional materials are not consistently updated in my school	6	1.5	34	8.3	272	66.7	89	21.8	7	1.7	0.4148
38	As head teachers and principals we understand the goals and objectives of the language provisions	8	2.0	51	12.5	116	28.4	189	46.3	44	10.8	0.2825
39	Short and long range plans are made to accomplish the specific objectives of the language provisions in my school	5	1.2	138	33.8	107	26.2	121	29.7	37	9.1	0.4197
40	There is proper communication between the language teachers and school heads for proper planning and implementation of language provisions in my school	7	1.7	78	19.1	200	49.0	120	29.4	3	0.7	0.4075
41	Seminars on selected language topics are organized as part of the school programme in my school.	41	10.0	55	13.5	231	56.6	79	19.4	2	0.5	0.4859
42	The allocations in the school budget are spent accordingly in my school	15	3.7	194	47.5	121	29.7	35	8.6	43	10.5	0.5680
43	Language learning activities are reviewed in order to make improvement in necessary areas in my school	28	6.9	65	15.9	204	50.0	66	16.2	45	11.0	0.4657
44	Responsibilities relating to language learning activities such as quiz, debate, etc are properly organized and delegated in my school	36	8.8	113	27.7	223	54.7	30	7.4	6	1.5	0.5729
45	There is support, cooperation and dedication among the English language teachers in achieving the objectives of the language provisions in my school	12	2.9	91	22.3	230	56.4	60	14.7	15	3.7	0.4877

Table 1 depicted the challenges encountered by teachers, head teachers and principals in implementing the language provisions in the NPE. The most prevalent challenges confronted by the respondents as revealed by the RSI analysis were lack of concern for language teachers' welfare (0.8493), inadequate strategies for recruiting language teachers (0.8143), inappropriate selection of language teachers for training programmes (0.8015) and overcrowded classes (0.7960) with percentage scores of 48.8%, 64.0%, 48.5% and 47.1% respectively. This implied that teachers and school administrators were unable to appropriately implement the language provisions as a result of the various challenges they confronted. In a situation where the appropriate instructional aids needed for the teaching of languages were not provided adequately in primary and secondary schools, implementation of educational policies would be affected.

Hypothesis 1

There is no significant difference in the challenges encountered by teachers and school administrators in the implementation of the language provisions in the NPE.

Table 2: Challenges Encountered by School Administrators in the Implementation of Language Provisions in the NPE

	SS	df	MS	F	Sign
Between Groups	180.427	2	90.213	0.811	.445
Within Groups	45054.689	405	111.246		
Total	45235.115	407			

The results in Table 2 showed that there was no significant difference in the challenges encountered by teachers, head teachers and principals in the implementation of the language provisions in the NPE, ($F = 0.811, p > 0.05$). This indicated that both teachers and school administrators faced with the same challenges in implementing the language provisions. These challenges ranged from inadequate teachers, poor school structure and over-reliance on English Language course books.

Hypothesis 2

There is no significant difference in the challenges encountered at private and public schools in the implementation of the language provisions in the NPE.

Table 3: t-test Summary Table showing difference in the Challenges Encountered in Private and Public Schools on the Implementation of Language Provisions in the NPE

Variable	School type	N	\bar{X}	Sd	Df	T	p	Remark
Challenges	Public	25	87.00	27.68	40	0.4	0.6	>0.05
	Private	7	78	827	6	27	70	
	Total	15	85.80	26.93				

The results in table 3 showed that there was no significant difference in the challenges encountered in both public and private schools in the implementation of the language provisions in the NPE ($t = 0.427, p > 0.05$). This implied that the same challenges were encountered in both public and private schools as regards the implementation of language provisions in the NPE. This was to say that challenges such as inadequate instructional materials, insufficient language teachers,

over-reliance on English language textbooks had direct influence on the implementation of language provisions in the NPE.

Hypothesis 3: There is no significant difference in the challenges encountered in rural and urban schools in the implementation of the language provisions in the NPE

Table 4: t-test Summary showing the difference in the Challenges Encountered in Rural and Urban Schools on the Implementation of the Language Provisions in the NPE

Variable	School location	N	\bar{x}	Sd	df	t	p	Remark
Challenges	Rural	155	87.1226	25.63336	406	0.322	0.747	>0.05
	Urban	253	86.2213	28.45015				

The results in table 4 showed that there was no significant difference in the challenges encountered in both rural and urban schools in the implementation of the language provisions in the NPE ($t = 0.322, p > 0.05$). This implied that the same challenges were encountered in urban and rural areas as regards the implementation of language provisions in the NPE.

DISCUSSION OF FINDINGS

The results obtained from the study showed that teachers and school administrators encountered diverse challenges in implementing the language provisions. The challenges ranged from: overcrowded classes for language teachers to cope with, inadequate provisions of instructional materials and textbooks for learners, unequipped libraries and lack of concern for the welfare of teachers. The frequency of the high percentage at which the needed support for implementation of the language provisions was indicated in the responses showed that for effective implementation, these challenges must be surmounted if not eradicated. The goals and objectives of the language provision were not clearly understood by the head teachers, principals and teachers. This supported the views of Emenanjo (1998) that there was still some lack of awareness of language provisions on the part of highly placed ministry officials, supervisors/inspectors of education, principals/headmasters of schools and practicing language teachers as stated in the NPE. This lack of awareness, on its part, was responsible for the relatively inferior status accorded Nigerian languages in the school system in particular and the society in general. In addition, in most primary and secondary schools in Southwestern Nigeria, adequate language activities such as quiz, debates etc were not organized. Kolawole (2002) emphasized that various extra-curricular activities in schools helped learners to learn. These activities were press club, literary and debating societies and others. The shortage of trained language teachers was a challenge to language provision implementation. Alaku (1997) blamed teachers for not having sufficient command of the language as well as sufficient techniques to successfully teach language.

The results also indicated that there was no significant difference in the challenges encountered by teachers,

head teachers and principals in the implementation of language provisions in the NPE. ($F=0.811, p > 0.05$). This implied that the same challenges were witnessed by all the stakeholders. This study was in support of Oladipo (2007) who was of the view that, as long as the mother tongue remained underdeveloped, English would continue to be used as an indispensable medium of instruction while the mother tongue would have little or no role to play in the country's educational system.

The results revealed no significant difference in the challenges encountered by private and public schools in the implementation of the language provisions in the NPE ($t = 0.427, p > 0.05$). The public schools used Nigerian languages as medium of instruction while from mid-primary, English became the major. This was unlike the private school where the medium of instruction was wholly English which gave little or no room for the teaching of indigenous languages. This supported Spillane, Reiser and Reimer (2002) who depicted the challenges to implementation and reasons why implementation failed in actual practice on the part of teachers and implementers. To them, unavailability of required instructional materials, incompatibility of organizational arrangements with the innovation, lack of staff motivation, among others posed as challenges to the implementation of language provisions.

The results indicated that there was no significant difference in the challenges encountered by rural and urban schools in the implementation of language provisions in the NPE ($t = 0.322, p > 0.05$). The relative influence and envisaged development of the indigenous languages remained the same in both rural and urban. In the rural area, the tendency to use the mother tongue as medium of instruction was high. English was also taught as a subject whether or not it was used as a medium of instruction. This agreed with that of Oladipo (2007) who was of the view that appropriate medium of instruction should be utilized at the different stages of learners' learning in both rural and urban areas.

CONCLUSION AND RECOMMENDATION

The study indicated that there was difficulty in implementing the language provisions as stipulated in the National Policy on Education in primary and

secondary schools in Southwestern Nigeria. The results depicted that the objectives of the language provisions were not implemented in schools. The various factors and challenges confronting the implementation of the language provisions showed that the extent of implementation was far from meeting the stated objectives of the language provisions. It was therefore concluded that if the factors and challenges identified in the study were addressed, implementation of the objectives of language teaching as stipulated in the NPE in primary and secondary schools would be better implemented in Southwestern Nigeria.

Government should sponsor the development of curricular and instructional materials for teaching and learning of various languages in the country, especially those that have been recognized in the language provisions. There should be a forum where teachers, school administrators and inspectors would be informed of the objectives of language provisions in the NPE.

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TEACHERS' ATTITUDE, YEARS OF TEACHING EXPERIENCE AND SELF-EFFICACY AS DETERMINANTS OF TEACHERS' PRODUCTIVITY IN TEACHERS' PROFESSIONAL DEVELOPMENT PROGRAMME IN IBADAN METROPOLIS, OYO STATE, NIGERIA

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ABSTRACT

Teaching as a process of education is congruent to individual and national development thus necessitating its continuous professionalism. The teachers' professional Development Programme (TPDP) is a step in the direction of enhancing and empowering teachers. The output of such TPDP impinges on several factors thus this study aimed at determining the effects of selected teachers' variables on primary school teachers' productivity in TPDP cluster meetings in Oyo State, Nigeria. A descriptive type of survey design was adopted for the study. 350 (M = 39; F = 311) primary school teachers in Ibadan metropolis were purposively sampled for the study, using three instruments: Teachers' Attitude to Teaching ($r = .83$); Teachers' Self-efficacy ($r = .68$) Scales and Teachers' Productivity Checklist ($r = .91$). Pearson Product Moment Correlation and Multiple regression were used for data analysis. The results indicated strong relationship between teachers' attitude ($r = .86$; $p < .05$) years of teaching experience ($r = .69$; $p < .05$); teaching self-efficacy ($r = .79$; $p < .05$) and teachers' productivity in TPDP cluster meetings. The predictor variables jointly contributed 43% ($F_{(2,349)} = 17.508$; $R = .66$; $R^2 = .43$; $p < .05$) to teachers' productivity. Therefore, it was recommended among others that teachers of different years of teaching experiences should be selected for TPDP and prompt incentives as token economy given to stimulate the participants' positive attitude and self-efficacy towards the programme productivity.

KEYWORDS: Teachers' attitude; Years of Teaching Experience; Teachers Self-Efficacy; Teachers' Productivity; Teachers' Professional Development Programme (TPDP).

INTRODUCTION

Teachers' productivity entails the efficiency and effectiveness of utilizing the educational resources (students, other teachers, school managers, parents, curriculum, instructional materials, school facilities etc) for the attainment of pre-determined educational goals. A productive teacher optimizes the available school resources to enhance the attainment of stated educational objectives. Teachers are regarded as one of the greatest inputs into the educational system. Teachers are recognized as the most important school factor affecting student achievement (Sass, Hannaway, Xu, Figlio, and Feng 2010). Teachers facilitate effective teaching and learning. At the same time, poor academic performance of students can be blame on teachers. Teachers' productivity varies from teacher to teachers and may be predicated by hosts of factors such as teachers' attitude to teaching, years of teaching experience, teachers' teaching self-efficacy, self-concepts, teaching style, level of qualifications, teachers' innovativeness, creativity and the likes. It is

disheartening and perplexing that many teachers in the primary schools, the foundation of educational edifice, are less productive, poorly skilled in pre-active and interactive lesson presentation, less innovative and myopic in teaching styles (Adesina, 2011; Osagie, 2011; Adu, Titilola & Ifeoma, 2013). Thus, there is stringent need for teacher professional development programme (TPDP) if the nation will attain the coveted millennium development goals.

Little (2001) in Osagie (2011) opined that professional development is a process of inspiration and goal Setting objectives that are used to motivate teachers . One way to enhance teachers' productivity is to develop the teachers to be productive. This could be achieved through valuable staff development programs.

According to Glatthom (1995), teacher development is the professional growth a teacher achieves as a result of gaining increased experience and

examining his or her teaching systematically. When looking at professional development, one must examine the content of the experiences, the processes by which the professional development will occur and the context in which it will take place (Ganser, 2000; Fielding and Skhalou, 1985). Educational productivity on the other hand is the efficient production of educational outcomes (Rolle, 2001). Teacher productivity can be achieved through the use of valuable staff development programs which are vital instruments for ensuring the continuous growth of teachers in knowledge, skills and attitude in line with the changes in the education system and the expectations of the society (Ornstein and Levine, 2006; Afangideh, 2010).

Professional development programs for teachers include supervision, in-service training, capacity building, seminars, workshops, conferences, fellowship programs, study leave, retraining and skill upgrading courses (Afangideh, 2010). These development programs also include teachers' meetings, study circles, training sessions, peer assistance and review, mentoring, book clubs, teachers' network and curriculum materials design (Nnabuo and Onyeike, 2007). Professional teacher development programme has been found to have significant impact on pupils learning outcomes (Adesina & Adesina, 2014) and teachers' productivity (Abokwara 2010, Adesina, Raimi, Bolaji & Adesina, 2016). Since PTDP enrich teaching and learning significantly, there is thus needs to determine the predictive effects of some teachers' affective characteristics, viz: teachers' attitude, years of teaching experience and teachers' self-efficacy on their professional productivity.

Attitude is all about everything (that is psychological objects). Attitude is described as tendency for individuals to organise thought, emotions, and behaviours towards a psychological object (Erdemir & Bakirci, 2009). Attitude towards the teaching profession is considered to be an essential issue in understanding teacher behavior, and feelings about teaching, their students and the school environment. Basically, teacher's attitudes towards their profession have an effect on their performance, as well as on commitment to their roles and responsibilities. Teachers develop negative attitudes and/or leave the profession for different reasons. Basically, teachers' attitudes towards their profession have an effect on their performance, as well as on their commitment to their roles and responsibilities. It has been suggested that a teacher with a good disposition full of hope, faith and enthusiasm, reflects and disposes a positive attitude towards teaching. Stronge (2002), Williams (2003),

Gourneau (2010), Salha, Issan, Ali and Wajeha (2011), Adu and Ade-Ajayi (2015) argued to some extent that there is a strong relationship between teachers' attitudes towards the teaching profession and effectiveness. The extent to which the construct, teachers' attitude predicts relatively and in composite the teachers' productivity in PTDP is one of the main cruise of the study.

Another variable germane to teachers' productivity is teachers' years of teaching experience. There is that old axiom that "experience is the best teacher." Also, it is always linked together experience (wisdom) and age, thus, the teachers' years of service, teaching experience was correlated with their productivity in PTDP. The relationship between teaching experience and internal efficiency of schools has been examined by many researchers. Kwari (2007) examined the relationship between selected variables and students' achievement in Sokoto State, Nigeria in a bid to determine which of the predictor variables were statistically significant. He chose a sample of 20 schools, 700 teachers and 6 officials of the Ministry of Education at random and utilized multiple regressions to test his hypotheses. According to his findings, teaching experience was significantly related to students' achievements. Ewetan and Ewetan (2015), Fehintola (2014), Yala and Wanjohi (2011) and Adeyemi (2010) found that teachers' experience and educational qualifications were the prime predictors of students' academic achievement. However, Ravkin et al (2005) found that teachers' teaching experience and educational qualifications were not significantly related to students' achievement. Thus, the inconclusiveness of predictive and relational effect of teachers' years of teaching experience necessitates its inclusion in the present study.

The concept of self-efficacy has been consistently found to be associated with work-related performance. Self-efficacy, according to Hemmings and Kay (2009) refers to an individual's belief in his/her capability to organise and implement actions to reach a certain level of performance. Bandura (1997) contends that self-efficacy beliefs are influenced by a number of different sources, with previous performance (particularly mastery experiences) being the main source of influence. It should also be noted that self-efficacy as a specific construct has been understood as the belief about levels of competence in particular situations. For example, in the field of professional works Cherniss (1993) introduced the concept of professional self-efficacy; understood as belief in the ability to correctly fulfill one's professional role. Furthermore, self-efficacy beliefs also influence an individual's thought patterns and emotional recreations and having high self-efficacy can help create feeling of serenity in approaching difficulty tasks and activities. In his own contribution

Zimmerman (1995) in Ajegbomogun (2011) opined that sense of self-efficacy not only affects expectation for success or failure, it also influences motivation through goal setting. This simply means that if we have a high sense of self-efficacy in a given area, we will set a higher goal, be less afraid of failure but persist longer when we encountered difficulties. A teacher with high self-efficacy is prone to better teaching professional productivity while those with low self-efficacy likely to have weak teaching productivity. The present study investigated the relative as well as the composite effects of this construct on teachers' productivity in TPDP.

Statement of the Problem

There is a large body of research which indicates that teachers productivity in primary schools are on the decline. A second well established body of evidence exists which describes the efficacy of effective staff professional development programme on teachers' productivity. However, there is very little research that analyses the predictive effects of some teachers' characteristics on teachers' productivity when exposed to professional development in Nigeria. This lack of valuable information has limited researchers' abilities to support teachers in their quest for increased attendance in professional development programmes and enhance their effectiveness. An observation of the way primary school teachers exhibit teaching skills during teaching-learning process reveals some level of incompetence and certain unwholesome attitude towards teaching and learning. It appears there is insufficient or deficient training by the training institutions to prepare and make them competent enough for the task of teaching. The inadequate preparation of teachers is one of the factors that have contributed to the high rate of mass failure in our educational system over the past decades. Previous studies have focused on learners' and teachers' factors as determinants of pupils performance in schools. There is paucity of studies in the area of how the teachers' characteristics predict teachers' productivity in professional development programme. Therefore, this study investigated teachers' attitude, years of teaching experience and teachers' self-efficacy on teachers' productivity in PTDP.

Purpose of the Study

Connecting teachers' meeting intervention to their professional development is critical in our current educational climates. It would sensitize the educational stakeholders especially the government on sponsoring teachers' professional training interventions. It would furnish information on the predictive effects of teachers' attitude, years of teaching experience and teachers' self-efficacy on teachers' productivity.

This study therefore investigated the teachers' attitude, years of teaching experience teachers' self-efficacy on teachers' productivity in PTDP (teachers' lesson note preparation and teaching performance) in Oyo state, Nigeria.

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

Ho₁: There is no significant relationship between teachers' attitude, years of teaching experience and teachers' self- efficacy and teachers' productivity in PTDP;

Ho₂: There is no significant relative contribution of teachers' attitude, years of teaching experience and teachers' self- efficacy to teachers' productivity in PTDP;

Ho₃: There is no significant composite contribution of teachers' attitude, years of teaching experience and teachers' self- efficacy to teachers' productivity in PTDP.

Significance of the Study

Extensive pressure for improved pupils' performance falls directly on the shoulders of classroom teachers, the curriculum implementers. To support teachers who face these professional challenges, schools should provide staff development opportunities that promote continuous professional improvement.

The practical significance of the study is found in the need to support primary school pupils as teachers are well trained with capacity to create improved academic performance in pupils. The results of this study would equally justify or otherwise the resources government and non-governmental agencies expended on teachers' professional development programmes. Additionally, the study would also provide empirical data on the predictive effects of teachers' attitude, years of teaching experience and teachers' self- efficacy on teachers' productivity in PTDP.

METHODOLOGY

Research Design

It adopted an ex-post facto design. As all the predictor variables - teachers' attitude, years of teaching experience, teachers' self-efficacy and the criterion variable, teachers' productivity were already at the field for collection without experimental manipulation (Kerlinger & Lee, 2000; Abimbade, 2011; Singh, 2013).

Population and Sample of the Study

All primary school teachers in Ibadan metropolis constituted the population of the study. Purposive sampling technique was used to select the teachers

based on differential selection for professional training intervention (PTDP) in the state. Seven cluster groups in Ibadan metropolis were used for the study. Each cluster group consists of 50 teachers with varying years of teaching experience, attitude and self-efficacy. In all, three hundred and fifty teachers constituted the sample for the study.

INSTRUMENTATION

Three instruments were used for the study. These are:

- i. Teachers' Attitude to Teaching Scale (TATS);
- ii. Teachers' Self-efficacy Scale (TSES);
- iii. Teachers' Productivity in PTDP Checklist (TPPC);

Teachers' Attitude to Teaching Scale (TATS) was adapted from Renthel and Malsawmi (2015) Attitude Scale towards Teaching Profession with reliability of .69. Twenty (20) out of the twenty-two (22) items in the original scale were selected for the instrument. 25 copies of TATS were administered on primary school teachers, coded and subjected to Cronbach's Alpha reliability yielding an index of 0.82. The response format for the TATS is a 4-point Likert-type scale with Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1) for positively worded items while reverse for the negatively worded statements.

The Teachers' self-efficacy scale (TSES) was adapted from Gkolia, Betias and Koustelios (2014) Teachers' Sense of Efficacy Scale with a 5-point Likert-type scale of (1) = Nothing; (2) = Very little; (3) = Some influence; (6) = Quite a bit and (9) A great deal. The

original 24 items was validated to 20. 25 copies of TSES were administered on primary school teachers, coded and subjected to Cronbach's Alpha reliability statistics yielded a value of 0.71 for the instrument.

The Checklist (TPPC) has four universal contents of teaching procedure, appropriateness of lesson, fundamental techniques or technology and class management control. Forty-three (43) items to measure the teacher classroom lesson presentation in class. The initial fifty items adapted from Cluster Impact Survey Instrument (2014) was validated by experts in Curriculum and Instruction for construct and face validity. Forty-three (43) items selected was subjected to Cronbach's Alpha reliability measure yielding an index of 0.86.

Procedure for Data Collection

The researchers and their assistants went to those sampled colleges of education to administer the three research instruments on two hundred and thirty lecturers. The administered instruments were retrieved on the spot to ensure its hundred percent collections.

Method of Data Analysis

Socio-demographic attributes of the respondents were presented in tables of frequency counts and percentages. Pearson Product Moment Correlation Coefficient (PPMC) was used to test hypothesis one while Multiple regression analysis was used to predict the composite and relative effects of the independent variables on the dependent measures in hypotheses 2 and 3.

RESULTS

Table 1: Socio-demographic Variables of the Respondents

Variables	Frequency	Percentage (%)
Teachers' Attitude		
Negative	105	30.0
Positive	245	70.0
Total	350	100.0
Years of Teaching Experience (Yrs)		
1 – 5	140	40.0
6 – 10	120	34.35
11 & Above	90	25.65
Total	350	100.0
Teacher Self-efficacy		
Low	248	70.87
High	102	29.13
Total	350	100.0
Teacher Productivity		
Low	56	16.09
High	294	83.91
Total	350	100.0

Table 1 indicated that one hundred and five (30%) of the respondents have negative attitude to teaching while a larger percentage (245, 70%) had positive attitude to teaching. One hundred and fourty (40%) had 1-5 years of teaching experience, one hundred and twenty (34.35%) had 6- 10 years teaching experience while ninety (25.65%) had 11 years and above years of teaching experience. Two hundred and fourty-eight (70.87%) of the respondents are of low self-efficacy while a smaller group of one hundred and two (29.13%) had high teaching self-efficacy. On

productivity, fifty-six (16.09%) had low teachers' productivity while two hundred and ninety-four (83.91%) had high productivity.

Hypotheses Testing

Ho₁: There is no significant relationship between teachers' attitude, years of teaching experience and teachers' self- efficacy and teachers' productivity in PTDP

Table 2: Pearson Product Moment Correlation of Teachers' Attitude, Years of Teaching Experience, Self-efficacy and Teachers' Productivity in PTDP

Variable	N	Mean	SD	Teachers' attitude	Years of Teaching Experience	Self-efficacy	Teachers' Productivity
Teachers' attitude	350	57.31	6.25	1.000			
Years of Teaching Experience	350	9.16	8.83	.492	1.000		
Self-efficacy	350	41.89	11.72	.746	.529	1.000	
Teachers' Productivity	350	63.70	9.04	.759	.283	.631	1.000

Table 2 reveals that the relationship between teachers' attitude ($r = .759, p < .05$), years of teaching experience ($r = .283, p < .05$), self-efficacy ($r = .631, p < .05$) and teachers' productivity in PTDP are significant.

Ho₂: There is no significant relative contribution of teachers' attitude, years of teaching experience and teachers' self- efficacy to teachers' productivity in PTDP;

Table 3: Regression Analysis of Relative Contribution of Teachers' Attitude, Years of Teaching Experience, Self-efficacy to Teachers' Productivity in PTDP

Independent (Predictors) Variables	Unstandardised B	Coefficient Standard Error	Standardised Coefficient Beta	Rank	T	Sig.
(Constant)	69.472	14.207				
Teachers' attitude	.605	.018	.562	1st	9.626	.001*
Years of teaching experience	.399	.112	.295	3rd	5.281	.030*
Self-efficacy	.584	.029	.447	2nd	16.316	.005*

From Table 3, out of the three predictor variables, teachers' attitude made the greatest contribution to the teachers' productivity in PTDP ($\beta = .562; t = 9.626; p < 0.05$), followed by teachers' self-efficacy ($\beta = .447; t = 6.940; p < 0.05$), then years of teaching experience ($\beta = .295; t = 5.281; p < 0.05$). From the results in Table 3, it

could be identified that the three independent variables can be used to predict significantly teachers' productivity in PTDP.

Ho₃: There is no significant composite contribution of teachers' attitude, years of teaching experience and teachers' self- efficacy to teachers' productivity in PTDP.

Table 4: Composite Contribution of Teachers Attitude, Years of Teaching Experience and Teachers' Self-efficacy to Teachers' Productivity in PTDP

Source of Variation	Sum of Square	Df	Mean Square	F-ratio	Sig.	R	R ²
Regression	1677.251	2	838.625				
Residual	25533.301	347	73.583	11.397	0.001	0.628	0.394
Total	27210.551	349					

From table 4, it could be observed that the composite effect of teachers' attitude, years of teaching experience and teachers' self-efficacy on teachers' productivity in

PTDP is significant ($F_{(2,347)} = 11.397; p < 0.05$). Also from the table, there is a positive prediction of teachers' attitude, years of teaching experience and teachers' self-

efficacy on teachers' productivity in PTDP ($R = 0.628$). It also revealed that the three predictor (independent) variables can determine students' achievement in Basic General Mathematics ($R^2 = 0.394$) as the teachers' attitude, years of teaching experience and teachers' self-efficacy jointly accounted for 39.4% of the variance in the dependent measure (teachers' productivity in PTDP). The remaining 60.6% could be due to other factors that were not considered in the study.

DISCUSSION

Based on the findings of this study on effect of teachers' attitude, years of teaching experience and teachers' self-efficacy as predictors of teachers' productivity in PTDP, the results on hypothesis one shows that there is significant relationship between teachers' attitude and teachers' productivity in PTDP. The teachers' attitude, the likes, the dislikes, disposition to teaching held a strong, positive and significant relationship with teachers' productivity in PTDP. Attitude towards the teaching profession is considered to be an essential issue in understanding teacher behavior, and feelings about teaching, their students and the school environment, such dispositions go long way in enhancing their productivity in professional teacher development programme (PTDP). This findings corroborate the results of Stronge (2002), Williams (2003), Gourneau (2010), Salha, Issan, Ali and Wajeha (2011) Ade and Ade-Ajayi (2015) that to some extent there is a strong relationship between teachers' attitudes towards the teaching profession and their effectiveness.

The teachers' years of teaching experience equally have a strong, positive and significant relationship with teachers' productivity in PTDP. The more experienced the teachers are the more productive they are in the PTDP and vice versa. Noted that teachers' teaching experience likewise positively predicted the teachers' productivity in PTDP. The less experience teachers had less acquaintance with teaching intricacies, they lack exposure, ideologies and strategies in teaching-learning activities thus militating their productivity in PTDP whereas the more experienced teachers had everything on their side, exposure, acquaintances, ideologies and strategies that enhanced their productivity in PTDP. This results find support in Ewetan and Ewetan (2015), Fehintola (2014), Yala and Wanjohi (2011), Adeyemi (2010), Kwari (2007) that teachers' experience was a prime predictor of students' academic achievement and teachers' productivity. Conversely, the result contrasted Ravkin et al (2005) that found teachers' teaching experience not significantly related to teachers' productivity.

Also, teachers' teaching self-efficacy predicted teachers' productivity in PTDP. The teacher's belief in

his/her capability to organise and implement actions to reach a certain level of performance is concomitant to the individual teachers' productivity in PTDP. This is explained in the fact that self-efficacy beliefs influence an individual's thought patterns and emotional recreations and having high self-efficacy can help create feeling of serenity in approaching difficulty tasks and activities, teacher with high self-efficacy is prone to better teaching professional productivity while those with low self-efficacy likely to have weak teaching productivity. This result find supports in Ajegbomogun (2011) findings that sense of self-efficacy not only affects expectation for success or failure, it also influences motivation through goal setting meaning that if teachers have a high sense of self-efficacy in a given area, he/she will set a higher goal, be less afraid of failure but persist longer when encountered difficulties thus enhancing professional productivity. The findings also earlier corroborated Hemmings and Kay (2009) that referred to self-efficacy as an individual's belief in his/her capability to organise and implement actions to reach a certain level of performance.

The three predictor variables, teachers' attitude, years of teaching experience and teachers' teaching self-efficacy positively predicted the teachers' productivity in PTDP, the trio jointly contributed 39.4% to the teachers' productivity in PTDP, hence, positive teachers' attitude, high years of teaching experience and teaching self-efficacy determined up to 39% of the teachers' productivity in PTDP.

CONCLUSIONS

This study predicted the effects of teachers' teaching attitude, years of teaching experience and self-efficacy on teachers' productivity in PTDP in Oyo State, Nigeria. From the tested hypotheses, it can be concluded that teachers' teaching attitude, years of teaching experience and self-efficacy on teachers' productivity in PTDP as the independent variables jointly determined up to 39.4% of the teachers' productivity in PTDP in Oyo State, Nigeria.

Furthermore, each of the predictor variables significantly contributed to the dependent measure meaning that the teachers' teaching attitude, years of teaching experience and self-efficacy ought to be consciously developed to facilitate improvement in the teachers' productivity in PTDP in Oyo State, Nigeria.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are adduced:

1. More experienced teachers should be integrated into teachers' cluster meetings as their acumen of experience enhance, enrich and

enable less-experienced teachers productivity in professional development programme (PTDP);

2. Government to motivate teachers with incentives and windfall to go extra mile in developing their teaching attitude and self-efficacy, psyching their thinking process, especially teachers with high level of commitment to the profession;
3. Federal Government of Nigeria (FGN), National Primary Education Board (NPEB), State Primary Education Board (SUBEB) and Local Educational Board (LEB) should integrate efforts in synergy towards planning, implementing and supervising teachers' professional development in the country;
4. As education is one of the cardinal focuses of millennium development goals, World Bank, UNESCO, USAID and other International Agencies should rally round Nigeria in stepping up her educational standard through primary school teachers' professional development.

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TOWARDS ACQUISITION OF PHYSICS KNOWLEDGE AND TOWARDS ACQUISITION OF PHYSICS KNOWLEDGE AND OVERVIEW OF STRATEGIES ON SUSTAINABLE NATIONAL DEVELOPMENT AND DISASTER MANAGEMENT

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ABSTRACT

The study examines “towards acquisition of physics knowledge and overview of strategies on sustainable national development and disaster management.” The entire universe is in the state of progression due to fact that science provides the knowledge of natural phenomenon which empowers man. However, science puts the global world on the route of development because it eradicates chaotic turbulence making life worth living. The contribution of science to technology is with inclusion of Physics knowledge. Physics knowledge is not isolated with other sciences to explain natural phenomenon on the planet earth. The method and the way Physics studied nature has contributed immensely to social and economic well being of people. The weight of Physics to economic growth is remarkable in Industry, Communication, Medicine, Engineering and Technology. The undertone of this is the application of Physics knowledge to life; this conscripts to national growth of any nation. Human development can be achieved through Physics skills in problem solving, creative thinking, objectivity and abhorrence to superstitions; these attributes have the way to promote national development. However, the sustainable national growth and development are often challenge by monstrous events of natural and man-made disasters. Therefore, this paper therefore discusses relevance of Physics education to national development and disaster management. Other strategies to curb disasters were also highlighted .Since Physics lies in the heart of science and technology, the paper concluded that educationist and science educator should ensure that the teaching of science is carried beyond recitation of laws and principle but to see to problem solving, critical thinking, and value judgment during physics class and that different teaching styles should be used to teach the subject. The study recommended appropriate methods through concise education, scientific literacy, physics skills, government agency and voluntary organization to boost national development and manage both natural and man –made disasters.

KEYWORDS: Acquisition, Physics Knowledge, Overview Of Strategies, National Development, Disaster Management.

INTRODUCTION

Science is a systematic study of reality through organized methods for the sustenance and benefits of mankind. The knowledge of reality is imbedded in the physical world studied through diligent observation and careful experimentations. The word science is synonymous with knowledge. The knowledge of science has come to revive the economic and technology globally from primitive forms. The use of knowledge of science has rescued from many challenges. These rescue schemes include emergences of new drug resistant diseases, effects of genetic experimentation and engineering, ecological impact of modern technology , knowledge of the dangers of nuclear war, explosions and global warming among others (Alsop & Hicks,2001;Minishi ,Muni, Okumu, Mutai, Mwangasha, Omolo& Munyeke 2004). These areas of development have given tangible direction on the right path in field of medicine, engineering,

agriculture, industry, and communication. These developments through science have direct link with Physics knowledge.

Physics interprets natural phenomenon through principles, laws and mathematical concepts and its application has created comfort to the universe. The entire universe comprises of matter and energy, and the study of Physics simply involves relationship between matter and energy. To this end, Physics studies entire universe at microscopic and macroscopic levels, therefore ,its importance demands overhauling because is a key that open into sciences and technology. Physics is therefore an important subject that helps people understand the increasingly technological changing society (Zhaoyao,2002). Physics continues influences in medicinal methods including imaging techniques (X-rays, CT-scanning, ultra-sound techniques, MRI

techniques) and diagnostic patient screening techniques (Freeman,2012). The unraveling of DNA structure and the subsequent genome project required a significant input from Physics techniques (Stanly,2000). Electromagnetism is vital in generation of electricity, mobile phone communication, optical and satellite communication ,portable electronics ,radio and radar perception, and X-ray crystallography (Campbell,2006).Laser applications are used in commerce and industry, continuing research into challenges posed by diseases such as cancer, Ebola, and HIV/AIDS, will require high precision equipment employing physics principles(Amadalo , Ocholla & Memba ,2012). Hence , the development of nations cannot be divorced from Physics modus operandi .

Statement of the Problem

It is evidence that no nation can sustain her national development without science and technology and the knowledge of Physics anchors such. In many secondary schools, Physics is taught towards achievement or performance alone neglecting the correlation of its knowledge to a larger society. Moreover, many did not see the relevant of Physics knowledge to life. It is on this background that literature is reviewed on the strong chord of national development attached to Physics knowledge and its learning if aligned with other strategies could serve as measures to curb natural and man –made disasters .Hence, this study.

Significance of this Study

This study will be significant to Physics educators in the present day .This will encourage the Physics teachers to teach towards skill acquisition as this will aid social, economic, and scientific and technology sustainability for national development. More so, that human development is a duty of trained teachers which can start in classes. Therefore, human mind is prepared to tackle and cope with challenges in the society instead of resulting into superstitious believe. This will equally be of great benefits to all and sundry that physics learning is not abstract in nature but has relevance to national development and disaster management.

Roadmap to National Development Through Physics Education

The beauty of any nation is that development occurs for the better hope of its citizenry. That is, improving the life of its citizen in all ramifications. Development according to Hornby (2001) is the gradual growth of something so that it becomes more advanced and stronger. Going by this definition, it involves fortification of all institutions and reduction of abject poverty .In the view of Oyemelukwe in Onyesom (2005:141), development involves the society's transformation through its institutions, organizations,

social rules, customary usages and attitude to an extent that makes the society more and more positively responsive to desired modern change. Olowookere (2012) defined national development as the continuous economic, political and technological improvement of a nation-state, culminating in improved standard of living of its citizens. National development is better sustained through quality education and the knowledge of science acquisition among others play prominent role. Science promotes attributes such as patience, respect for fact not fiction, discovery, honesty, respect for logic and abhorrence of superstition which are keys to any nation's development. These qualities are imbedded in the science, more importantly in studying of Physics. There would be no sustainable development without scientific development and scientific development is hinge on physics acquisitions and its applications. Physics is taught to enable students acquire relevant proficiency in scientific concept and skills. The study of Physics involves the pursuit of truth, hence it inculcates intellectual honesty, diligence, perseverance and observation in the learners (Das, 1985). No nation will be able to experience sustainable development without development of its people. Tolu and Abe (2011) opined that development is essential and critical to the growth and sustenance of any country. The recent economic growth of many developed nation has underlying factor of implication of physics knowledge. Physics drives economic across Information, Medicines, Agriculture, Technology, Engineering, Industry, life science, other sectors even Education. The foremost objective of the Physics National Curriculum is to provide basic literacy in Physics for functional living in the society .This is tailored to pursue national development. This can upfront carriers in Physics related subjects for the national sustenance that will promote other developments. With well established carriers in the nation ,social, political and culture are refine to meet up with human needs .

Overview to Sustainable National Development

Sustainable development is an uninterrupted development of any nation. According to United Nations (1992), sustainable development is organizing principle for human life on a finite planet. It connotes dynamism in development; with human and natural resources brought together to meet with challenges of the present and for future needs and benefits. Naomi (1995) believes that development is usually taken to involve not only economic growth, but also notion of equitable distribution, provision of health care, education, housing and other essential services all with a view to improving the individual and collective quality of life . This implies all round development that equally affects understanding of people which cannot occur without quality education and economic standout.

In other words, development involves improvement in the well being of people through socio-economic process which built a strong point on science and technology in the modern times. Also Gboyega (2003) captures development as ideal that embodies all attempts to improve the conditions of human existence. That is, development is caption on the improved welfare of all.

There are catalogue of problems in human society, and it is the duty bound on man to generate immediate and proactive solutions. This will entail skills dispense, creativity and correct attitude. The basic truth is that Physics propel resourcefulness, develop process skills and correct attitude which are needed in solving problems. This is to attain socio-economic, scientific and technology development. Summarily, no nation can experience national growth without Physics acquisition .Mustapha (2009) and Danmole (2011) are of the opinion that the development of any nation begins from classroom. This simply implies that skills development takes place in the classroom which can serve as platform for economic growth that is a germane to national development of any nation.

The relevance of knowledge of Physics and its basic concepts have been pointed to by many researchers. The studying of Physics is dynamic activity and an exciting field of human enterprise. Booth (1978) suggested that students should be given opportunities to discover, invent and get caught up in the rapid expansion of scientific and technological information. In practical class, students' skill, attitudes and processing knowledge are developed to meet with socio-economic challenges of the future expectation.

During experimentation in the Physics laboratory, scientific skill are developed through observation, description, classification, communication, measurement, recognizing variables, controlling variables and interpretation of data .In the laboratory, there is emphasis on functionality and holistic learning which equips students with knowledge and skill that make them to be well grounded and worthy in order to be able to face the challenges of the globalized world. In the philosophy and objectives of Physics curriculum , the guided – discovery method of teaching has been recommended as a aim at ensuring that learning as an activity takes place with series of well – structured experiences. These are typified with experimentation, questioning and discussion.

Towards Disaster Management Through Physics Education

Disaster is a phenomenon that has existed over decades, it is unexpected, dreadful nature that has caused great

damage or loss, destruction, devastation to life and property varied in degree as a result of physical location, climate and the type of earth surface or degrees of vulnerability. It leaves an adverse effect on lives, socio-economic, political and cultural state of affected areas. According to A Supplementary Textbook in Geography for Natural Hazards and Disasters (2006), a disaster is a result from the combination of hazard, vulnerability and insufficient capacity or measure to reduce the potential chances at risk. Although there are natural and man created disasters, if there are no proactive measures it can sink both human existence and resources up.

The scientific knowledge gives insight into conditions that call for disaster uprising and Physics plays a crucial role. In actual sense the use of right concepts in Physics enhance problem solving skills, as a result many of the natural disaster can be addressed through Physics literacy. Physics education therefore enables the learner to acquire problem solving and decision –making skills that provides ways of thinking and inquiry which help them to respond to widespread and radical changes in industry, health, climatic changes, information technology and economic development (Patriciah & Johnson ,2008) . This indicates that it is concern with well being and comfortability of all which is the goal of national development. Physics offers explanation of certain principles as related to natural phenomenon, it activities are simply about modeling the natural occurrences. The whole idea behind it is to create models to describe how the nature functions through the laws and principle. The activities of Physics accelerate the development of proper understanding of natural settings; it also sets pace for technological invention which enables man to manipulate the environment for maximum use. For example the turbulence occurred in boundary layer of the troposphere as a result of earth forcing of frictional drag, evaporation and transpiration, heat transfer, pollutant, emission can all be explained with Physics concept, principles and mathematical exactness. Physics is the study of the fundamental structures in the physical universe (Ortdick & Bord, 2008).The acquisition of the knowledge of Physics give pre-informative education of natural occurrences and disasters.

Overhaul of Strategy Towards Disaster Management

The occurrences and magnitude of disaster varies in some Africa countries especially in Nigeria .These disasters are mostly triggered by man - made influenced factors which has affected the source of many livelihood, render many homeless and impoverished the victims. Disaster management is to reduce and prevent occurrences of hazard.

In Africa society, general education will be more appropriate which involve the awareness of risk of disaster and implication of some of the natural disasters on national development. General knowledge of restrictive and warming locations should be made known to all people. According to Karanchi (2005) disaster management programme highlight and develop an awareness of risks involved in disaster events and also to empower the person with relevant skills to cope with event ,so that the person evaluates his/her resources relative to the dangers posed by the event as sufficient to deal with the threat. On this ground awareness should be shouldered by government agency such as National Emergency Management Agency (NEMA) and voluntary organization to all sundry through media and information technology like mobile phone.

Lailatul, Adila and Agusta (2013) explained that disaster mitigation can be applied in teaching and learned in the classroom not only for reaction but for preparedness. Teachers should endeavour to stretch the application of some of the laws and principles taught in sciences to natural phenomenon in order to enhance the level of awareness and preparedness. For example, Physics has interrelated concept which hinge on law and principle therefore it needs special teaching method. Holbrook (2009) stretches that enhancing scientific literacy through science education is developing an ability to creatively utilize appropriate evidence –based scientific knowledge and skills particularly with relevance for everyday life and career in solving personally challenging yet meaningful scientific problems as well as making responsible socio-scientific decisions. Physics teachers should engage in the instruction that will promote observation, discovering learning, promote critical thinking and allow students in interactive –questioning forum as these will be of great help to students’ awareness of environment.

Government and social organizations should ensure that emergent preparedness programs are organized at local government areas level on disaster managements of all sorts. There should be emergent response provision through trained personnel, provision of equipments, food and water, shelter, clothing, medicines should be prompt to the location of incidence.

On the final note the affected area should be restored to its normal state without hesitation. It involves settling people down physically to provide comfort to the victims. This might involves rebuilding destroyed property, reemployment, providing essential infrastructure, therefore , good transport network should run through all look and cranny in the country

and provision of good communications system to report any case of disasters.

CONCLUSION AND RECOMMENDATIONS

Physics lies in the heart of science and technology, it is the duty of educationist and science educator to ensure that the teaching of science is carried beyond recitation of laws and principle but see to problem solving, critical thinking, and value judgment during physics class. Hence, these call for different teaching styles. Today, few hands are found teaching the subject and schools are starve of Physics teachers in most African countries, with thousands of graduates in arts ,humanities and commercial roaming the street for job. Advancing the subject by encouraging the students to take up carrier option in Physics related discipline will provide a platform to brighten the economic growth of African countries as it is noticeable in most developed countries. Besides, this will be a route for socio-economic, political and cultural development of a nation. As to sustain national development, disaster management (natural or man- made) is imperative, Scientific Literacy coupled with general education is essential.

In order to sustain national development and towards disaster management. The following recommendations are made:

- (1) The teaching of science subjects (Physics) should be extended to life affairs and natural phenomenon.
- (2) There should be continuous training for in-service science (Physics) teachers periodically to equip them in the appropriate teaching styles, the use of instructional materials and method of improvisation to be used in teaching abstract concepts for students to see the relevant of the subject to natural occurrences .
- (3) More students should be encouraged in take up science (Physics) subject in secondary level. This can be achieved through the help of the teachers and carrier officers since science (Physics) is a key factor to national development.
- (4) There should be exchange programmes between developed and developing countries in term of personnel in education sectors, more in particular in area of sciences.
- (5) Resounding awareness of hazards to the society should be made to the public periodically based on climatic change and other factors that could constitute to disasters.
- (6) Documentary programmes of past disaster should be made available to all and sundry through the media.
- (7) There should be working laws in the country to reduce man-made disasters caused by carelessness and lethargy on buildings patterns, abuse of explosives,

war as result of communal problems, fire outbreak, flooding ,bomb blasts etc.

BIOGRAPHY

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BUSINES STUDIES TEACHERS' PERCEPTION OF EFFECTIVE STRATEGIES FOR TEACHING BUSINESS STUDIES IN PROMOTING NATIONAL SUSTAINABLE DEVELOPMENT

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ABSTRACT

This study seeks to determine the strategies considered effective for teaching business studies by Enugu State Junior Secondary School business studies teachers in promoting national sustainable development. It adopts the descriptive survey design. Four research questions and two hypotheses tested at 0.05 level of significance were used. Population of the study consists of 68 business studies teachers, while sample consisted of 45 Business Studies Teachers selected from 10 public secondary schools. A validated questionnaire containing 28 items with reliability coefficient of 0.99 were used for data collection. Mean, standard deviation and t-test were used for analysis. Findings showed that the business teachers in Enugu state junior secondary schools considered experimental instructional strategies very effective for teaching business studies, while interactive instructional strategies were considered effective. However, an indirect instructional strategy was fairly effective and direct instructional strategy was considered ineffective for teaching business studies at junior secondary school level. Based on the findings, it was recommended that government should employ competent and qualified business studies teachers and should provide funds for the building of more classrooms and typing pools where students can practice typing and shorthand drills. Experimental instructional strategies which are adjudged to be very effective are hereby recommended for compulsory application in teaching skill subjects in business education in all the secondary schools in Enugu state of Nigeria. These will help the schools to produce competent and self-reliant students that will promote national sustainable development and disaster management.

KEYWORDS: Strategies, Business Studies, Business Studies Teachers, Junior Secondary Schools (JSS), and National Sustainable Development

INTRODUCTION

Business Studies is a dynamic course which prepares students for the challenges of the 21st century by introducing them to the world of business. Umezulike and Okoye (2013) considered business studies as the key agent of economic and technological development either as a way of developing human capacity, increasing the shield of workforce for modernization, industrialization, and environmental development or as a matter of personal freedom and empowerment of the populace. Amoor (2010) noted that business studies plays a significant role in the economic development by providing knowledge and skills to the learners, thereby, enabling them to adequately impart knowledge into others, and handle sophisticated office technologies and information systems. The goal of business studies is primarily to produce competent, skillful and dynamic business teachers, office administrators and businessmen and women that will effectively compete in the world of work. It has as its primary aim, the preparation of people for roles in enterprises such roles could be as employee, entrepreneur and employer or simply as self employed.

Teaching has remained a noble profession the world over, and all over history. Teaching has also been seen as an attempt geared towards assisting the learner to change his behavior in a specific context, in this sense, It could be a change of attitude, knowledge, idea, skill or appreciation (Paul, 2006).

Teaching strategies are the practice and refinement of presentation which a teacher uses to make his teaching more effective when using a specific method or teaching aid. Okwuanaso and Nwazor (2000) stated that in teaching and learning situation, strategies are same as methods and procedures of teaching. It is the practiced refinement or presentation which a teacher uses to make his teaching more effective. Teaching strategies play very important role in the teaching and learning process. Mannison (2009) proposed six (6) instructional/teaching strategies for teaching business studies as follows: Direct instructional strategies, indirect instructional strategies, interactive instructional strategies, experimental instructional strategies, independent instructional strategies and materials/visual aids instructional strategies. Okon (2002) opined that

teaching strategies include not only the manner of presentation that the teacher employs but everything that he/she does in the way of arranging condition, grouping students, guiding activities, making assignments, and providing information to aid learning. Okon further explained that strategies are unique to subject matter and vary from teacher to teacher. The strategies a teacher employs in teaching and learning will go a long way in making the learning to be effective or ineffective.

National Sustainable Development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. United Nations (2014) defined sustainable development as the [organizing principle](#) for sustaining finite resources necessary to provide for the needs of future generations of life on the planet. It is a process that envisions a desirable future state for human societies in which living conditions and resource-use continue to meet human needs without undermining the "integrity, stability and beauty" of natural [biotic systems](#). Disaster Management on the other hand is the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters. Therefore, when a nation integrates a policy that will facilitate the effective coordination of disaster management it will be a major step towards achieving sustainable development.

Concept of Teaching Strategies

Teaching strategy is a technique employed by the teacher to enhance his teaching. Olowodun (2009) stated that teaching strategies refer to the techniques and methods used by the teachers' in the classroom, his activities, behaviors and actions taken for effective teaching of his students. He viewed teaching strategies as being unique to subject matter and varies from teacher to teacher. Taylor(2009) defined teaching strategies as the principles and methods used for instruction. He further stressed that the type of teaching strategies to be adopted or used depends on the information or skills the teaching is trying to convey. Norman(2011) posited that teaching strategies involves the use of the instructional materials, methods and other resources available to teacher that would help them meet the instructional needs of all students and enable them to progress from dependent to independent learner. Teaching strategy is the process, procedures, methods of planning and carrying out teaching task or delivering instructions in order to achieve educational goal(s). Mastery of the subject matter and an understanding as well as ability to use the appropriate strategies makes the learning effective or ineffective.

Concept of Business Teachers

Igboke (2005) stated that a business teacher is one who has the same responsibility as all other teachers to help the students develop to their maximum capacity, but in addition, he has the responsibility of helping those students who desire to work in business to develop the basic skills, knowledge and attitude which are required for initial employment. Osuala (2009) explained that a business teacher is a person who is knowledgeable in the six components of course that make business education programme. He is a professional teacher of business who is constantly aware of the state of the art in business education. He should motivate, guide and direct students while remaining in the background. Osuala stated the qualities required of a business teacher as follows:

- A vocational business teacher must be professionally qualified and occupationally competent. He must have a proper orientation in the subjects or skill he is to teach.
- He should be able to listen effectively, allow for questions and should have self-control together with being a good disciplinarian, always sensitive to students' needs.
- He should be physically, emotionally and intellectually stable and suitable to handle both the subject matter and the students he teaches.

Business studies teachers are trained at tertiary institutions to prepare youths for vocations and also furnishes them with necessary skills, attitudes and abilities that are relevant to securing jobs in business world and gain insight into the general business information so as to be a good producer and consumer of goods and services for national sustainable development.

Business Studies and Sustainable National Development

The 6-3-3-4 system of education introduced in 1982 gave birth to introduction of business studies in junior secondary schools (JSS) curriculum. Business studies as described in the business studies curriculum, as a course is comprehensive in nature. It is made of many interrelated area of study. It is a practical course which should be taught practically by making the teaching situations as real as possible (Igboke,2005). Business studies is integrated in nature which means that the subject is taught as a single subject which has five major components of bookkeeping, commerce, office practice, shorthand and typewriting. Business studies is expository and discovery in nature which enable students to discover those skills and potentials that help individuals in future for life long education. The curriculum is broad and rich in skill acquisition subjects and students are expected to cover all the various

subjects to enable them possess the pre-vocational skills therein. It helps in training the student on those skills that are relevant to develop skills, aptitudes, potentials and competencies to be useful citizens and contribute economically in the society (Esene, 2012). The National policy on Education (FRN, 2009) stated the objectives of business studies as follows:

- To enable students acquire the basic knowledge of business studies.
- To develop the basic skills in office occupation.
- To prepare the students for further training in business studies.
- To produce orientation and basic skills to start a life work for those who may not undergo further training.
- To provide basic skills for personal use in future.
- To relate the knowledge and skills to the national economy.

National Sustainable development has been defined in a variety of ways, but in practice it has come to mean development among nations that achieves a balance among economic, environmental and social objectives for both present and future generations. Development is also seen as a purposeful change in a society that contributes to social and economic well being and advancement of its people without creating any disharmony (UNESCO, 2009). Development is a dynamic process. It empowers people and promotes important changes in their lives. From purely economic perspective, development brings about improvement in human welfare, quality in life and social well being. It is about satisfying the population's needs and wants. Umezulike and Okoye (2013) noted that the services of business studies in the rebranding and economic reformation of Nigeria cannot be an overstatement because the demands of business services are indispensable towards the nation building. It could assist in ensuring stability and sustainability of Nigerian economy in the following areas: personnel services, secretarial services, administrative and managerial services, financial/accounting services, interpersonal relationship services, distributive and marketing services, and entrepreneurial services. Promoting Business studies programme through a properly coordinated education and effective teaching strategies would help in economic sustainability and national development. Business education holds the prospect of contributing, through its job creation and self-employment packages, for the attainment of vision 20:2020. A gainfully employed individual contributes to GDP per capita, reduces poverty and unemployment which are some of the indices of national development and disaster management.

The teachers are vital instruments in national sustainable development and when trained and re-trained in their areas of specialization will update their knowledge and keep abreast with new devices, technological changes and innovations coming up so as to develop the students with the right skills and knowledge of 21st century (UNESCO, 2009). The centre for Global Development (2002) reports that education gives people the skills they need to help themselves out of poverty and into prosperity; with education, people are better prepared to prevent disease and to use health services effectively; when people are self-reliant and earn wages, they in turn, contribute to national economic growth. Education supports the growth of any society, democracy, political stability, allowing people to learn about their rights and acquire the skills and knowledge necessary to exercise them. Federal Republic of Nigeria (2009) recognizes education as an instrument par excellence for national development. All the restructuring and policy formations in education are aimed at repositioning education for sustainable national development.

Types of Instructional/Teaching Strategies

Direct Instructional Strategies: Olaetan and Agusiobo (2006) explained that direct instructional strategy is used to describe teaching in which a part, or possibly the whole of the lesson is occupied by the teacher in exposition and by the students in listening. It is effective when providing information to students and developing step-by-step skills but unsuitable for teaching students to think for themselves or solve problems. Patrick (2009) defined direct strategy as a discourse given before an audience upon a given subject, usually for the purpose of instruction in a special form or procedure adopted in a branch of mental activity, whether for the purpose of teaching and exposition, or for that of investigation and inquiry. Examples are lecture method of teaching, listen and visualize method, programme instruction method.

Indirect Instructional Strategies: Mannison (2009) defined this as a group centred strategies which seek a high level of students' involvement in observing, investigating, drawing inferences from data and forming hypotheses. Igboke (2005) noted that indirect instructional strategies are effective when the learners become active participants in the process of acquiring knowledge. It enables the learners to think for themselves, reconcile available information and consider matter so as to gain knowledge. Okorie (2008) was of the view that indirect instructional strategies can be used in the process of presenting a new lecture or lesson. Its function would be to increase students' participation and ensure understanding of the subject matter, seek solution to a problem, etc. Examples are

inquiry or discovery method, read and practice method, questioning techniques, assignment method etc.

Interactive Instructional Strategies: Interactive instructional strategies are one that rely heavily on discussion and sharing among participants. Under these strategies, students can learn from peer and teachers, at the same time develop social skills and rational thinking. It can be organized into discussion method, debate and brain storming etc (Mannison, 2009). Patrick (2009) pointed out that interactive instructional strategies are very effective in the development of the students' critical and evaluating thinking ability. It has the potentials in the development of inquiry behavior in the learners, oral communication, thinking and listening skills, observational skills, interpersonal skills, intervention skills, and abilities especially in learning life skills. He also noted that under these strategies, learning is an interactive process and students need to be actively involved in tasks that are achievable, useful, relevant and challenging in order to respond positively to the ever changing socio-economic system. These strategies also encourage the learners to develop research skills as they search for information for themselves rather than remaining passive receivers of teachers' information.

Experimental Instructional/Teaching Strategies: Experimental instructional strategies are seen as learner-centred and activity oriented. These strategies involve personal and practical experience of the learner. Examples are field trips, office visits, workshops, laboratory exposure etc. Obikwere (2009) noted also that these strategies are effective in exposing students to a particular skill or experience where learning is by seeing and doing, and when subject matter requires observation, analyzing, generalizing and application. Jarolumck (2007) described experimental instructional strategies as any learning activity that is carried on by the students as a group outside the classroom under the guidance of the teacher. It thus provides the experiences that cannot be brought into the classroom when properly planned and they give valuable reforms but when they are poorly planned, they may lack purpose, and may jeopardize the safety of the students.

Problem of the Study

Ekunno (2010) stated that poor teaching methods used in teaching of business studies gave rise to inadequacy of learning of the required skills of business studies. Uzodi (2012) noted that one of the major observed problems in the education system by parents, teachers government etc, is the absence of effective strategies for teaching business studies at Junior Secondary School. Umaeiye (2005) observed that the teaching strategies adopted by most business education teachers are more

of theory than practice and inquiry, and that the type of teaching materials used are all outdated, therefore, no longer relevant for teaching in the present information technology era. The type of strategy to be adopted by any teacher depends on the information or skills the teacher is trying to convey. Students' performance in business studies cannot be improved unless teachers adopt suitable effective strategies and approaches of teaching business studies. It is generally believed that if business education students are properly taught the requisite life skills before leaving schools, they should certainly acquire the desired skills necessary for sustainable national development. This will create opportunity for paid or self employment, unemployment and poverty will be eradicated in our society. The problem of this study is therefore, how to identify those instructional strategies which could be used to impart the requisite skills in business studies students for sustainable national development.

Limitations of the Study

Due to time constraint, the researcher did not include all the strategies to be used in teaching business studies at Public Junior Secondary School. However, this did not, in any way, negate the objective of the study or the validity of the findings.

Relevance of the Paper to the Conference Theme

Business studies is a form of vocational education that is directed towards developing the learner to become productive in teaching, paid employment and self employment. It prepares beneficiaries for gainful employment for sustainable livelihood. National development cannot take place by itself, it requires an educated, skilled and competent people. Therefore, there is need to explore the effective strategies for teaching business studies so that its recipients will acquire the requisite skills, knowledge, competencies etc that will equip them for national sustainable development and disaster management.

Research Questions

1. How effective do business teachers consider direct instructional strategies for teaching business studies?
2. Do business teachers regard indirect instructional strategies for teaching business studies?
3. How effective do business teachers consider interactive instructional strategies for teaching business studies?

Null Hypotheses

1. There is no significant difference between the male and female business studies teachers on direct instructional strategies for teaching.

- There is no significant difference between the male and female business teachers on indirect instructional strategies for teaching.

METHOD

The design of the study is a descriptive survey as recommended by (Nworgu, 2006) for studies that seek opinion of a population or its representative sample on an existing phenomenon using questionnaire or interview. The study was conducted in Enugu North Local Government Area of Enugu State, Nigeria. Its headquarters are in the city of Enugu. The area comprises of fourteen (14) Public secondary school, which are located at: Trans-Ekulu, Abakpa-Nike, Enugu Town, G.R.A., Independence layout, all in Enugu North Local Government Area of Enugu State. Population of the study consists of 68 business studies teachers. This study adopted a simple random sampling technique. Out of the fourteen (14) public secondary schools, ten (10) schools were used for the study out of which forty five (45) business studies teachers were used. A validated 5-point rating scale questionnaire with 28 items was used for the study. The reliability of the instrument was determined with the split half method. The data collected were analyzed with the Spearman Brown prophesy formula. The reliability coefficient of 0.99 was obtained. The arithmetic mean and standard deviation were used to analyze data to answer the research questions and establish the homogeneity or otherwise of the respondents' means while t-test was used to test the hypotheses at 0.05 level of significance. A mean rating that is equal to or greater than 2.5 would be regarded as effective while any item with a mean rating that is less than 2.5 would be regarded as ineffective. A hypothesis will be upheld if the calculated value is less than the significant level of 0.05 and rejected if the calculated value is equal or greater than the significant level of 0.05.

RESULTS

- How effective do business teachers in Enugu State Junior Secondary School consider direct instructional strategies for teaching business studies?

To answer this research question, the data collected from the responses were computed and the results are shown in table 1

Table 1: Respondents' mean rating on the effectiveness of direct instructional strategies

N=45

S/N	Items of Direct Instructional Strategies	X	Remarks
1	Lecture Method	1.7	Ineffective
2	Advice and guidance	1.9	Ineffective
3	Listen and visualize	1.8	Ineffective
4	Compare and contrast method	1.4	Ineffective
5	Individualized instruction method	1.9	Ineffective
	Grand Mean	1.7	Ineffective

In table 1 above, the mean rating on the effectiveness of direct instructional strategies above shows that the Enugu State junior Secondary School business teachers considered all the items in Group 1 ineffective. This implies that items 1,2,3,4 and 5 were considered to be ineffective for teaching business studies by business teachers with their mean value of 1.7, 1.9, 1.8 and 1.9 respectively. No item on direct instructional strategies was considered very effective, effective, fairly effective and very ineffective. A grand mean of 1.7 implies that direct instructional strategies was considered ineffective for teaching business studies at Junior secondary school level by business teachers in Enugu State.

- Do business teachers in Enugu State Junior Secondary school regard indirect instructional strategies for teaching business studies?

To answer the second research question, the data collected from the responses were computed and the results are shown on table 2

Table 2: Respondents mean rating on the effectiveness of indirect instructional strategies

N=45

S/N	Items of Indirect Instructional Strategies	X	Remarks
6	Inquiry based Instruction method	2.3	Ineffective
7	Questioning technique	2.9	Fairly Ineffective
8	Group work method	3.8	Effective
9	Pre test	2.2	Ineffective
10	Assignment method	3.1	Fairly effective
11	Report back session method	2.2	Ineffective
12	Read and practice method	3.4	Fairly effective
	Grand Mean	2.8	Fairly effective

From table 2 above, item 8 have a mean value of 3.8 and was considered effective for teaching business studies by Enugu State Junior Secondary School Business teachers. On the other hand, items 7, 10 and 12 have mean value of 2.9, 3.1 and 3.4 respectively, these items are considered to be fairly effective. However, items 6, 9 and 11 have mean value of 2.3, 2.2 and 2.2

respectively. These items were considered ineffective for teaching business studies by Enugu State business teachers. No item on indirect instructional strategies was considered very effective. With a grand mean of 2.8, indirect instructional strategies was considered fairly effective for teaching business studies at Junior Secondary School level.

3. How effective do business teachers in Enugu State Junior Secondary School considers interactive instructional strategies for teaching business studies.

To answer the third research question, the data collected from the responses were computed and the results are shown on table 3.

Table 3: Respondents' mean rating on the effectiveness of Interactive instructional strategies. N=45

S/N	Items of Interactive Instructional Strategies	X	Remarks
13	Study Group method	3.6	Effective
14	Classroom conversation method	3.4	Fairly Effective
15	Peer partner learning method	3.5	Effective
16	Discussion method	4.2	Effective
17	Debate method	4.0	Effective
18	Brainstorming method	3.2	Fairly Effective
19	Role play method	3.4	Fairly Effective
20	Use of panel of experts	3.8	Effective
21	Story telling method	3.6	Effective
22	Question and answer method	3.6	Effective
	Grand Mean	3.6	Effective

In table 3, the mean rating on the effectiveness of interactive instructional strategies above, shows that the Enugu State Junior Secondary school teachers considered items 13, 15, 16, 17, 20, 21 and 22 with their respective mean value of 3.6, 3.5, 4.2, 4.0, 3.8, 3.6 and 3.6 to be effective. While items 14, 18 and 19 with their mean value of 3.4, 3.2 and 3.4 respectively were considered fairly effective for teaching business studies at Junior Secondary School level by the respondents. Moreover no item interactive instructional strategies were considered very effective, ineffective, and very ineffective. With a grand mean of 3.6 the respondents considered interactive instructional strategies effective for teaching business studies at the junior secondary school level.

4. Do business teachers in Enugu State Junior Secondary School regard experimental instructional strategies for teaching business studies?

To answer the fourth research question, the data collected from the responses were computed and the results are shown in table 4.

Table 4: Respondents' mean ratings on the effectiveness of experimental instructional strategies. N=45

S/N	Items of Experimental Instructional Strategies	X	Remarks
23	Workshop method	4.6	Very Effective
24	Field Observation method	4.6	Very Effective
25	Laboratory exposure method	4.7	Very Effective
26	Demonstration method	4.8	Very Effective
27	Field work method	4.5	Very Effective
28	Survey method	4.4	Effective
	Grand Mean	4.6	Very Effective

From table 4 above, items 23, 24, 25, 26, and 27 with their respective mean value of 4.6, 4.6, 4.7, 4.8 and 4.5 on experimental instructional strategies was considered very effective for teaching business studies by Enugu State Junior Secondary School business teachers. On the other hand, only item 28 with a mean value of 4.4 was considered effective by the respondents. However, no item on experimental instructional strategies was considered fairly effective, ineffective and very ineffective. With a grand mean of 4.6, experimental instructional strategies was considered very effective for teaching business studies at junior secondary school level.

Hypotheses Testing

Hypothesis One

There is no significant difference between the male and female business studies teachers on direct instructional strategies for teaching. To test the hypothesis, the t-values of the two groups of respondents were computed at 0.05 level of significance. The result of the computation is shown on table 5.

Table 5: T-test analysis of male and female business teachers in their mean ratings on the effectiveness of direct instructional strategies.

	N	X	S2	Df	A	t-cal	t-Crit	Decision
Male	19	2	1.05					
				43	0.05	0.31	2.02	Accepted
Female	26	1.85	3.38					

The data in table 5 indicates that the calculated t-value is 0.31 and the t-critical value is 2.02 at 43 degree of freedom and 0.05 level of significance. Here, the t-calculated value of 0.31 is less than the t-critical value of 2.02. therefore, the null hypothesis was accepted. This means that male and female business teachers do not differ significantly in their mean ratings on the effectiveness of direct instructional strategies for teaching business studies at Junior Secondary School level.

Hypothesis Two

There is no significant difference between the male and female business studies teachers on indirect instructional strategies for teaching. To test the hypothesis, the t-values of the two groups of respondents was computed at 0.05 level of significance. The result of the computation is shown on table 5.

Table 6: T-test analysis of male and female business teachers in their mean ratings on the effectiveness of indirect instructional strategies.

	N	X	S2	Df	A	t-cal	t-Crit	Decision
Male	19	3.58	1.95					
				43	0.05	0.58	2.02	Accepted
Female	26	3.77	1.81					

The data in table 6 indicates that the calculated t-value is 0.58 and the t-critical value is 2.02 at 43 degree of freedom and 0.05 level of significance. Here, the t-calculated value of 0.58 is less than the t-critical value of 2.02. therefore, the null hypothesis was accepted. This means that male and female business teachers do not differ significantly in their mean ratings on the effectiveness of indirect instructional strategies for teaching business studies at Junior Secondary School level.

DISCUSSION OF THE FINDINGS

Direct Instructional Strategies

The analysis on table 1 showed that business teachers in Enugu state junior secondary schools did not consider the use of direct instructional strategies effective for teaching business studies. All the items of direct instructional strategies were considered ineffective. A grand mean of 1.7 clearly indicated that the use of direct instructional strategies for teaching business studies at the junior secondary school level will not yield any effective result.

Odoh (2007), stated that many classroom teachers still use teaching method which does not arouse the interest of the students. Such teaching methods include the lecture method which is not activity oriented and is mainly teacher-centered. According to him, this method does not motivate the students and do not contribute to the child acquiring the required skills of business studies.

The tested hypothesis on table 5 indicated that there was no significance difference in the mean ratings of male and female business teachers on the effectiveness of direct institutional strategies for teaching business studies at the junior secondary school level. The result of analysis also revealed that the calculated t-test of 0.31 was less than the critical t-test value of 2.02 at 0.05 level of significance; this led to the null hypothesis

being accepted. Mannison (2009) described direct instructional strategies as teacher centered and can only be effective in providing instructional information to students and not in teaching skills. The result of the t-test analysis equally showed that the gender of the respondents did not influence their ratings of direct instructional strategies.

Indirect Institutional Strategies

The analysis on indirect instructional strategies on table 2 reveal that business teachers in Enugu state junior secondary school regarded indirect strategies as fairly effective for teaching business studies. There are 7 items of indirect instructional strategies. One of them which is item 8 rated to be effective, while items 7, 10 and 12 were rated to be fairly effective and the remaining items 6, 9 and 11 were rated to be ineffective. A grand mean of 2.8 is a proof to the above finding and also indicating that the use of indirect instructional strategies for teaching business studies will yield a fairly result.

Okorie (2008) was of the view that indirect instructional strategies are fairly effective for teaching business studies in the process of presenting a new lecture or lesson. Its function would be to increase students' participation and ensure that they understand what the teacher is saying, and if care is not taken, the reverse will be the case. The result of analysis on table 6 revealed that there was no significant difference in the mean ratings of male and female business teachers in Enugu state secondary schools concerning the effectiveness of indirect instructional strategies for teaching business studies. The calculated t-test value of 0.58 was less than the critical value of 2.02. This indicated that the null hypothesis was accepted, while gender had no influence on their responses. Igboke (2005) confirmed indirect instructional strategies as student centered which allows the students to engage in learning experience by given them the opportunity to discuss and discover things among themselves. Therefore, they are fairly effective for teaching business studies.

Interactive Instructional Strategies

The result of the analysis of interactive instructional strategies as shown in table 3 indicated that business teachers in Enugu state secondary schools considered interactive instructional strategies effective for teaching business studies. A total of 10 items were listed under interactive instructional strategies, 7 methods were considered effective while the remaining 3 were considered fairly effective. A grand mean of 3.6 confirmed the effectiveness of interactive instructional strategies for teaching business studies.

Mannison (2009) supported the effectiveness of interactive instructional strategies when he stated that they rely heavily on discussion and sharing among participants. Under these strategies, students can learn from peer and teachers, at the same time develop social skills and rational thinking.

Experimental Instructional Strategies

The analysis on table 4 showed that business teachers in Enugu state secondary schools regarded experimental instructional strategies very effective for teaching business studies. The analysis also revealed that experimental strategies have a grand mean of 4.6, while 5 out of its 6 methods were rated very effective. The findings also indicated that these methods involve the teaching of theoretical and practical aspects of the subject within and outside the school. Obikwere (2009) while confirming the effectiveness of demonstration method observed that it exposes students to a particular skill or experience. He added that demonstration is very effective when learning is by seeing and doing. This is in line with Mannison (2009) who described experimental instructional strategies as learner-centered and activity oriented.

CONCLUSION

Based on the results of the findings and test of hypothesis, it is important to conclude that business teachers in Enugu state junior secondary schools consider direct instructional strategies as ineffective, indirect instructional strategies as fairly effective, interactive instructional strategies as effective while the experimental instructional strategies was considered as very effective for teaching business studies at the junior secondary school. This shows that apart from direct instructional strategy, indirect, interactive and experimental strategies are effective for teaching business studies in promoting sustainable national development.

RECOMMENDATION

It is the recommendation of the researchers that state and local government should provide and equip all the secondary schools in Enugu North Local Government Area with the following for effective teaching:

1. Government should employ competent and qualified business studies teachers.
2. Government should provide instructional materials for effective teaching of business studies.
3. Government should provide funds for the building of more classrooms and typing pool where students can practice typing and shorthand drill, this will help the school to produce competent and self-reliant students.
4. Experimental instructional strategies which are adjudged to be very effective are hereby

recommended for compulsory application in teaching skill subjects in business education in all the secondary schools in Enugu state of Nigeria.

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THE PLACE OF ENVIRONMENTAL FACTORS IN TEACHING AND LEARNING IN EDO STATE PRIMARY AND SECONDARY SCHOOLS IN FLOOD RAVAGED AREAS

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ABSTRACT

This paper x-rayed the importance of environmental factors in every human endeavor especially as it relates to the teaching and learning environment in Edo state secondary schools. It examined environmental factors as that which helps to determine the outcome of teaching and learning at all times and in all places. Environmental factors consist of external factors that impinge on the learner including people, objects, perceptions, climate, aesthetics, noise, flood, building, interactions, socio-economic status, laws etc. This paper presents flood as a natural occurrence which often leads to disasters as a result of human-created vulnerability, which is a consequence of human-environment interactions. This paper concludes that the more enriched the learning environments is, the greater and more widespread are the benefits for academic performance and other student outcomes. It was therefore recommended that since the Nigerian learning environment is deplorable at some levels with particular reference to secondary schools; the educational institutions that are in flood ravaged communities be given serious attention as regards flood disaster and early management by government and other stakeholders in the educational System, so as to encourage sustainability and development.

KEYWORDS: Environmental Factors, Schools, Flood, Performance, Teaching and Learning.

INTRODUCTION

Teaching means imparting knowledge or skills to someone as to how to do something or cause to learn or understand something by example or experience; while learning refers to acquiring new information. Puja, (2012) identified seven environmental factors that may affect the teaching- learning process and one of these environmental factor. Environmental factor is any factor, whether biotic or abiotic that influences living organisms (Wikipedia, 2015). These environmental factors include flood, amongst others. One of the outstanding features of the environment today from research evidence is the speed at which it is deteriorating (Blaikie, Cannon, Davis, & Wisner, 1994). Although environmental problems are not new they are simply enlarging and threatening to become uncontrollable phenomena.

Physical conditions needed for learning is under environmental factor. One of the factors that affect the effectiveness of learning is the condition in which learning takes place. This includes the road, pathway to school, classroom, textbook, equipment, school supplies, and other instructional materials. In the school and at the

home, the conditions for learning must be favorable and adequate if teaching is to produce the desired results. It cannot be denied that the type and quality of instructional materials and equipment play an important part in the instructional efficiency of the school. It is difficult to do a good job of teaching in a poor environment and type of building and without adequate equipment and instructional materials.

Disaster is a serious disruption of the functioning of a community or a society. Disasters involve widespread human, material, economic or environmental impacts which exceed the ability of the affected community or society to cope using its own resources (Alan, 2015).

A common environmental problem in Nigeria is flood and it is said to occur when a body of water moves over and above an area of land which is not normally submerged. It could also be seen as the inundation of an area not normally covered with water, through a temporary rise in level of stream, river, lake or sea (Nelson, 2001). According to Sada (1988) flooding has an un-usually high rate of discharging; often leading to

inundation of land adjacent to streams, and it is usually caused by intense or prolonged rainfall. The occurrence of flood represents a major risk to riversides population and floodplains, in addition to causing substantial impacts on the environment, including aquatic fauna and flora, and bank erosion. Flooding is becoming an increasingly severe and more frequent problem in Nigeria. Unfortunately, the impact is more felt by the urban poor in such a way that recovery is unlikely to be achieved without external aid (Blaikie, et al 1994). In other words, urban poor are most vulnerable to impact of flood because they set up homes in the flood plains. Flooding is one of the most devastating hazards that are likely to increase in many regions of the world partly due to global climate change and poor governance. Floods can be referred to as disasters.

Types of Disasters

There is no country that is immune from disaster, this vulnerability to disaster varies. There are four main types of disasters;

1. Natural – flood, earthquakes
2. Complex emergencies – breakdown of authority, war, looting, etc
3. Environmental emergencies – explosions, accidents that are hazardous.
4. Pandemic – involves sudden onset of problems (disasters) that affect/disrupt services and businesses bringing economic and social loss.

According to Ade (2012) four types of urban flooding can be recognized:

- (a) Localized flooding which occurs many times in a year due to few and blocked drains;
- (b) Small streams in urban areas rising quickly after heavy rains, but often passing through small culverts under roads;
- (c) Major rivers flowing through urban areas;
- (d) Wet season flooding in lowland and coastal cities.

Floods are the most recurring, widespread, disastrous and frequent natural hazards of the world. It is worthy to note that all floods are not alike, while some floods develop slowly and last for a period of days; flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Urban flooding has resulted in major loss of human lives; destruction of economic and social infrastructure such as water supply, electricity, roads and railway lines (means of livelihood). According to UN-Water (2011), worldwide, there has been rapid growth in number of people killed or seriously impacted by flood disasters. Indeed, the amount of economic damages affects a large proportion of people in low-lying coastal zones or other areas at risk of flooding and extreme weather condition. UN-Water (2011) also clarified that floods,

including urban flood is seen to have caused about half of disasters worldwide and 84% disaster deaths in the world was attributed to flooding.

Flood is the most common and re-occurring disaster in Nigeria (Nigeria post-disaster needs assessment 2012 flood). The frequency, severity and spread of these floods are increasing. Flood is an overflow of an expanse of water which submerges the natural land. Wikipedia (2015) defined flood as an overflow of water that submerges land which is usually dry. It is an extreme weather event naturally caused by rising global temperature which results in heavy downpour. Flooding is the most common of all environmental hazards and it usually claims over 20,000 lives per year and adversely affects around 75 million people worldwide (Smith, 2012).

Disasters have major and long lasting impact on the people long after the immediate effect has been mitigated. Poorly planned relief activities/actions can have a significant negative impact on the disaster victims.

Significance of Study

This study will be of immense benefit to policy makers, Administrators, planners, school heads and stakeholders for early warning and appropriate action for flood disaster management and sustainability.

Causes of Flooding In Nigeria

Generally, causes of flood in Nigeria could be as a result of natural cause or human cause. Viz are:

- Natural Cause in form of heavy or torrential rains / rainstorm
- Oceans storms and tidal waves usually along the coast.
- Human Causes; which may be characterized by: Burst water main pipes, Dam burst levee failures and Dam spills.
- Flooding occurs throughout Nigeria in the following forms: Coastal flooding, river flooding, flash floods, urban flooding and coastal flooding occurs in the low-lying belt of mangrove and fresh water swamps along the coast.
- River flooding occurs in the flood plains of the larger rivers
- Flash floods are associated with rivers in the inland areas where sudden heavy rains can change them into destructive torrents within a short period.

Urban flooding occur in towns located on flat or low lying terrain especially where little or no provision has

been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is a phenomenon of every rainy session in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan, (Etuonovbe, 2011). Factors generally responsible for flooding are numerous. Notable among them are heavy rainfall, blockage of drainage systems, irregular topography, urban encroachment, soil type and geological formations.

The value of damage was estimated based on the number of different types of schools (primary and secondary) that were partially or totally destroyed by

the floods, combined with the unit values of repair and construction prevailing in the period just prior to the flood disaster, plus the cost involved in replacing destroyed furniture, equipment and education materials. Flood affected 4,646 schools across the 11 states concerned which included Adamawa, Anambra, Bayelsa, Delta, Edo, Jigawa, Kebbi, Kogi, Nassarawa, Rivers and Taraba states. Available data shows that 2,478 primary schools were partially damaged, while 727 were totally destroyed. Also 794 secondary schools were partially damaged and 200 totally destroyed; though Edo State is the least affected.

Nigeria Post-Disasters Needs Assessment 2012 Floods

Table 1: Number of totally and Partially Destroyed Primary and Secondary Schools in the most Affected States in Nigeria

State	Primary			Secondary		
	Number Partially Damaged	Number Totally Destroyed	Total Number Affected	Number Partially Damaged	Number Totally Destroyed	Total Number Affected
Adamawa	280	45	325	46	0	46
Anambra	1,050	256	1,306	323	93	416
Bayelsa	234	20	254	163	1	164
Delta	238	12	250	75	3	78
Edo	10	8	18	3	0	3
Jigawa	197	104	301	16	0	16
Kebbi	89	23	112	0	0	0
Kogi	105	118	223	13	33	46
Nasarawa	111	83	194	73	70	143
Rivers	116	0	116	81	0	81
Taraba	48	58	106	1	0	1
Total	2,478	727	3,205	794	200	994

Source: United Nations (2013), Estimation by the Assessment Team on the Basis of official information.

The Effect of Flood on Education in Nigeria

The impact of flooding is identified in schools under the influence enumerated below:

A) Human Resources

- Students
- Teaching/non-teaching staff

B) Material Resources

- Roads
- Schools
- School facilities/equipment.

The floods have hampered the education sector's ability to deliver on its objectives. In many states, schools were closed for at least two months (Nigeria post disaster needs assessment 2012 flood). State ministry of education officially closed schools because they were flooded, because access roads to the schools were blocked by floods, and due to the high risk of students drowning in the flooded school area.

Amadi (2013), in a study investigated the evaluation of flood on secondary school students in

Ogba/Egbema/Ndom local Government Area of Rivers State, Nigeria. The survey method was used and a total of 90 respondents drawn from the residents in flood prone areas, were sampled for the study. The instrument used to collect data for the study includes questionnaires, interview, and personal observation and newspaper reports. The findings showed that the members of staff were not happy being at home as a result of the flood as they were not paid for three months. It was also recorded that the flood destroyed important documents in the school and moreover, the flood affected the foundation of the school building which could probably lead to the collapse of the building and thus will result in extra cost for the management in future if adequate measures were not taken to reinforce the school building foundation. The case of that of Ogba/Egbema/Ndom Local Government of Rivers State is not so different from that of secondary schools in flood prone areas in Edo state.

Olaore and Aja (2014), asserts that the effect of the 2012 flood disaster on education "Educational activities

were grounded in about nine local government areas and about 332 communities in Kogi state. Over 54,000 pupils in about 270 schools in the councils were affected by the closure of schools. (Punch Nigeria Limited, 2012). The Commissioner of Education stated that the flood would affect the performance of some of the pupils eligible for the West African Senior Secondary Certificate Examinations the following year. Even Schools that were not directly affected by the flood were used as relief camps for flood victims obviously with no other alternative for pupils and students to learn. It has been projected that students from regions affected by the floods who will also write standardized external examinations may perform poorly when compared to other students in other part of the country where education or learning activities were not disrupted. Therefore students in the flooded regions are disadvantaged. Thus the ability to obtain certification for skill and knowledge-base is required to compete for gainful employment in the already saturated labor market is jeopardized. Consequently the capacity for earning an income in order to meet basic needs of food, shelter, clothing and health care is compromised”.

Edo State also has its share of the effect of flood on Education. If proper measure is not taken to curb the flood disaster in the state it will render the goals of secondary education useless. One of the goals of secondary education which includes preparing the citizens for useful living within the society; providing all primary school leavers with the opportunity for education of a higher level, irrespective of sex, social status, religious or ethnic background; offer diversified curriculum to cater for the differences in talents, opportunities and future roles; provide trained manpower in the applied science, technology and commerce at sub-professional grades; develop and promote Nigerian languages, art and culture in the context of world cultural heritage; inspire students with a desire for self-improvement and achievement of excellence; foster national unity with an emphasis on the common ties that unite us in our diversity; raise a generation of people who can think for themselves, respect the views and feelings of others, respect the dignity of labour, appreciate those values specified under our broad national goals and live as good citizens and to provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development (Federal Republic of Nigeria (FRN), 2004) and without effective teaching and learning in secondary schools, the realization of these goals will be threatened.

The incidence of flood in Edo state secondary schools is not really a new societal problem but its rate of increase on yearly basis (rainy season) calls for

immediate attention. The damages and hindrances to effective teaching and learning that has been caused by flood can't be undermined. The community of Aibotse/Igbei in Estako West Local Government Area of Edo State is being threatened by gully erosion. Some of the residents have even made appeal in separate interviews with the News Agency of Nigeria in the community (Vanguard, 2014). NAN checks in the area indicated that the end of the Aibotse/Igbei road was almost washed off by erosion, thereby inhibiting vehicular movement. It was also observed that some perimeter fences around some of the buildings in the area had been pulled down by erosion. According to Ebegbulem, (2014) a resident of the community said that ‘the heavy rains have continued to wreck havoc on portions of the roads, which have already developed into a gully. Another resident added that the present state of the area had posed a serious danger to the residents, especially the pupils of Aibotse, Igbei primary school.

Thousands of residents in Edo State have been displaced following the rising tides of the river Niger. The affected local Government includes Etsako Central Local Government, Etsako East Local Government and Esan South East Local Government Area of Edo State. The ravaging flood which took over 20 communities in the area with a population of over 500,000 people, destroyed buildings, food crop, farm-land and schools (channels television, September 25, 2012).

Statement of Problem

Flood is an environmental disaster which occurs in Edo state and Nigeria in general. Secondary schools in flood prone areas in Edo state suffer from the attack of flood though not as high as other states primary and secondary schools that are greatly affected in Nigeria. The entrance to these schools is often a problem due to gully erosion/flood and which creates difficulty in assessing the schools by both teachers and students. Cases abound that teachers with vehicles can't drive straight to their school premises because of damaged roads and resort to packing their vehicles distance away from school, walking down to school on foot. The situation is worst, when there is heavy rainfall. In schools in these flood prone areas; the students may not come to school because of the heavy flood in the school. Flood threatens the lives of our students so much that when there is heavy rain fall parents are scared to allow their children/ward to go to school. Vanguard (February 19, 2014), reported a case of a JSS 3 student of Useh secondary school, identified as Osamudiamengot drown in flood and his body was found in a pool of water.

Floods have also been blamed for loss of learning hours affecting the quality of education. In-depth interviews indicated that most teachers are failing to cover the school syllabus both at primary and secondary schools. This was said to affect the performance of the children in their areas, as they will sit for the national examinations with other pupils whose learning was never interrupted. This is in line with Amer (2007) and Okuom, Simatwa, Maureen & Wichenje (2012) research findings that disasters result in teachers failing to complete the syllabus, leading to poor performance. Flood in Edo state is caused by some environmental causes like heavy rainfall, lack of adequate town planning techniques, poor drainage system, high level of illiteracy, ignorance of dropping refuse on flood paths etc.

It was also revealed that a poor learning environment is the highest contributing factor to school dropouts and absenteeism. Children highlighted that some of the classes are conducted outside and therefore it is impossible for such classes to be conducted during the rainy season. As a result, some children choose to be absent from school, whilst others end up dropping out. Children always face challenges to access schools during the rainy season because of road damages. Floods are barriers to students who need to get to their respective schools and these were also mentioned as a contributing factor to a poor learning environment. It was indicated that students who cross floods to arrive at school get wet and untidy making them uncomfortable to learn with others so they end up dropping out or staying at home. Interviews revealed that the rate of absenteeism is high in families where there are food shortages as a result of flood.

Floods damage school infrastructure and property such as furniture, books, classrooms and toilets if it occurs in the school premises. It was reported that every time schools experience floods, some classroom walls and toilets collapse with roof tops blown off. This poses a danger to children who spend most of the working hours in school. Children highlighted that because their classrooms have cracked walls they are always afraid and feel insecure. This is supported by Simatwa, Maureen and Wichenje (2012) research findings that fear, insecurity and general high alert during floods reduced student's attention to learning, resulting to poor performance. The collapsed toilets forced some children to resort to bush toilets, leading to a high prevalence of cholera in schools as a result of water contamination. These unfavorable learning conditions have forced some children to drop out from school whilst others choose to stay away. This was said to increase the number of dropouts in the area and compromise the rights of children to education.

Therefore, the researcher's worry is that flood disaster has effect in teaching and learning in secondary schools in Edo state?

Purpose Of Study

The purpose of this paper therefore is to find out the effect of flooding on teaching and learning in Edo State secondary schools in flood ravaged areas in Nigerian environments especially secondary schools that have been affected by flood menace incidences as well as taking a look at the devastating impacts, remedial and management strategies at curbing flooding in Nigeria.

Possible Ways of addressing these Issues of Flood Related Cases are Enumerated Below;

Flood Disaster Management

A change of proactive management of natural disaster requires an identification of the risk, the development of strategies to reduce that risk and the creation of policies and programs to put these strategies into effect. Risk management is a fundamental activity geared to the evaluation of schemes for reducing but not necessarily eliminating the overall risk, as in many cases risk cannot be entirely eliminated.

For flooding events, there is need to calculate the probability and likelihood that an extreme event will occur and to establish and eliminate the social, economic and environmental implications should the event occur under existing conditions. Flood Management calls for a combination of effective strategies in flood management that employ structural and non-structural measures and a pro-active and post-recovery approach to dealing with flood risk. Because absolute protection from flooding is a myth, flood emergency management is an integral part of flood risk reduction, which aims at managing and minimizing the damaging effects of flooding. Flood risks are defined as the expected losses from actual flood events over a specified period, and consist of the magnitude of the flood hazard, the exposure of human activity to flooding and the vulnerability of the elements at risk (WMO, 2006). Flood emergency measures can reduce the exposure to flooding; for example, moving individuals away from flooded areas to prevent individuals from drowning or the spread of diseases. Similarly, flood emergency planning can contribute, when integrated into an early warning system, to the shutting down of facilities that, if flooded, are likely to have an adverse effect on the safety of the population and the environment (for example, chemical plants). It is not easy, however, to perform flood emergency planning and management properly. Early warning without appropriate action is not sufficient to ensure reduction of risk to flooding.

Flood Disaster Management Process

Disaster management involves many diverse activities. These activities can be grouped into five main stages viz: assessment, mitigation, preparedness, response, and recovery, (Lemons, 2005). The first three activities are performed before the occurrence of disaster, while the fourth and fifth take place during and after the occurrence of disasters respectively.

Assessment: This involves inventorying (identification and recording) the sensitivity and vulnerability of a region to certain types of hazards. At this stage the levels of risks, the danger to human life, environment and structures are considered and determined. The assessment will provide identification of development that increases them, thus establishing the culture of prevention.

Mitigation: This entails making necessary provisions to ensure that the region is less vulnerable to known risks and danger. Mitigation activities may include; land use and planning; moving settlement away from areas susceptible to such risks and dangers such as flood and storm areas; and the establishment and enforcement of building code etc.

Preparedness: This involves planning of emergency aid, development of scenarios and monitoring systems, and establishment of early warning system, public information and awareness of likely hazards, community involvement in disaster management programs, establishment of disaster management and reduction at local, state and national levels and establishment of proper communication channels.

Response: This happens after the occurrence of the disaster which would have caused untold human suffering and damages to the environment. At this stage rescue teams will attempt to save lives, injured people will be cured and nursed and relief will be supplied to traumatized survivors. This is the most sensational stage of disaster reduction and management system.

Recovery: This stage involves assessment of damages, rehabilitation, cleaning of the environment and social and economic reconstruction. It also entails the first three stages of disaster management process viz; assessment, mitigation and preparedness, all of which are central to strategic development aimed at preventing or minimizing the effect of future disasters.

Flood Emergency Preparedness

Flood emergency Preparedness includes the issuance of timely and effective early warnings and the temporary evacuation of individuals and property from threatened locations. Education and public awareness; coordination among governmental and non-governmental agencies; effective stakeholder participation; and early warning systems are key components of preparedness planning.

Raising Public Awareness: Awareness can be raised through education and regular training; particularly in areas exposed to infrequent hazards or within new settlements. Flood hazard maps, depicting flood-prone areas, evacuation routes and safe shelters, can play a critical role in awareness building. Women and children should be included in education strategies, as they are disproportionately affected by natural disasters. Outreach efforts should be made to minorities and ethnic groups, as their mobility may be limited or affected owing to cultural, social or economic constraints.

Emergency Preparedness Plan: Preparedness plans should be adequately linked to disaster management entities at the local, district, state and national levels. This method improves the ability of a community in a vulnerable area to respond to floods and to reduce the risk. Local inhabitants should be allowed to be active in developing and enacting flood emergency plans and to implement their own measures to reflect local conditions and real needs on the ground.

Early warning System: Successful emergency operations depend greatly on the availability and reliability of flood forecasting information and the lead time provided by warning systems. Flood early warning is a message informing authorities of the impending danger of floods, that is, the water level rising above the warning level. Longer lead time will provide sufficient time to consider and affect a number of responses, whereas reliability of the warning and confidence with likely respondents determines its effectiveness. Warnings must be provided and conveyed in an unambiguous, easily understandable manner and in the local language through a legally designated single authority. It offers guiding principles, priorities for action, practical means for achieving disaster resilience for vulnerable communities.

Flood management is very necessary in our modern society today, without which the flood disaster will continue to ravage our communities and there will be a continuous effect on the teaching and learning process in our secondary schools. Management is needed in all human endeavors to limit the occurrence of disaster in our societies. Hence, complete eradication of disaster is a myth. To be able to achieve a sustainable development in our society flood management is an inevitable action we must take against flood disaster.

Relevance to Conference Theme (Flood Disaster Management And Sustainable Development)

Sustainable development can be defined as the practice of reserving resources for future generation without any harm to the nature and other component of it (Wikipedia, 2015). Sustainable development ties together concern for the carrying capacity of natural

systems with the social, political and economic challenges faced by humanity. Education for sustainable development is the process of equipping students with the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic well-being, both in the present and for future generations. Education is seen as a tool for national and economic development. Nelson Mandela (1918-2014), ex-president of South Africa, presents education as 'the most powerful weapon to change the world'. Education is a means through which we can re-build our own nation. The importance of education to any society or country cannot be under-estimated. Education fosters the worth and development of the individual, for each individual's sake and for the general development of the society. The national educational goals of Nigeria include, building a free and democratic society; a just and egalitarian society; a united, strong and self-reliant nation; a great and dynamic economy and a land full of bright opportunities for all citizens (Federal Republic of Nigeria (FRN), 2004). By extension, education leads to not only the individuals' development but the development of the society as well. The importance of education in sustainable development cannot be overemphasized.

Disaster management is linked with Sustainable development particularly in relation to vulnerable students such as those affected by flood related cases hampers implementation of curriculum and strongly opposes goal actualization.

In order to realize these goals of education and sustainable development in our society, the flood disaster that threatens the realization of these goal and objectives by obstructing effective learning and teaching must be checked. Effective management in curbing flood disaster is a must for every society in order to be able to achieve its educational goals and a sustained political, economic, environmental and educational development.

CONCLUSION

Flooding in Nigeria is a serious issue requiring the attention of all stake holders aimed at preventing and remedying its adverse effects which threatens human existence. This paper concludes that flood disaster is prevalent in notable areas of Edo state and in Nigeria in General; although flood disaster is prevalent in notable Local Government Areas (LGA) in Edo State, the situation is not as bad as it is in other states of Nigeria. Therefore, flood management is needed to reduce the occurrence disaster of flood in our society: Flood disaster which is a threat to sustainable development in our society, when curbed can lead to a better access to

effective education which in turn can go a long way in helping the society in attaining a sustained development.

RECOMMENDATIONS

1. This paper therefore recommended that the Government should make effort to develop 'early flood warning system' (EFWS); rapid response mechanism and outfit; strict adherence to zoning and building principle; evacuation of waste and maintenance of drainage systems; mass awareness campaign of flooding and other environmental hazard.
2. State government should create a canal that will enable water to flow easily.
3. The resident in the flood prone areas should avoid dumping of refuse into the drainages and water ways.
4. Continuous rehabilitation and assistance of victims by the government, individuals and NGOs which is the synergy approach.
5. Activities should be designed to reduce the impact of disasters and provide permanent protection from disaster.

Contribution to Knowledge

Any disaster can interrupt services such as health care, education etc. The interruption can seriously affect the social and economic networks of local communities and countries. Therefore, interruption in education sector such as flooding can constitute serious problems in schools such as affecting students' performance which hampers sustainability. Hence, flood disaster and early management should be taken seriously.

Limitation to the Study

1. Study is not conferred only to that particular period the correct assessment is made only during the rainy season.
2. Flooding will be a hindrance to the study. But one will make everything possible during the rainy season to get enough information.

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THE NIGERIAN NATIONAL SENIOR SECONDARY SCHOOLS CURRICULUM AND ITS IMPLICATIONS FOR ADMISSION INTO UNIVERSITIES

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ABSTRACT

The fundamental principle of Technical and Vocational Education in Nigeria and the development of the New National Senior Secondary Schools Curriculum Structures in Nigeria is to allow everybody to acquire technical skills and to allow the youth to have an intelligent understanding of the increasing complexity of technology. This is also to match or at least to compete with what is obtainable in the developed countries of the world. A cursory look at the training of Senior Secondary School Education in the area of subject selection for the Technological subjects can cause a lot of problems to the possessor of such certificate as a dead end certificate that can never be used to gain admission to the Tertiary Institutions or University to study his intended course that is, Engineering or Technological subjects. It is however discovered that the implementation of this scheme can be haphazardly done by some Principals, Teachers and even Ministry Officials who do not even know what the introduction of the new curriculum of Technological subjects (Engineering or Technological) affects the admission to the Tertiary Institution or University in Nigeria or even in the overseas countries. The problems are identified and we try to find solution to the problems in this paper, so that our policy making bodies, teachers, principals, and ministry officials both at Federal and State levels will not award "dead end certificates" to those students who choose technological and business education subjects options in Senior Secondary Certificate Examination (SSCE).

KEYWORDS: Secondary Schools, Curriculum, Vocational, Education, SSCE.

INTRODUCTION

The National Policy on Education defines technical and vocational education "as a comprehensive terms referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life". Therefore, any education that is geared towards teaching technical skills and attitudes suitable to such skills can be regarded as technical education. Universal Basic Education (UBE) introduced in 1999 by the Olusegun Obasanjo administration was conceptualised to provide greater access to quality, basic education in Nigeria. It was meant purely as a programme of government to capture school age children that were not interested by the formal education system, and made it mandatory for the children to experience nine years of uninterrupted primary and junior secondary school education.

Under the programme, basic education ends at the Junior Secondary School level, which is disarticulated from the Senior Secondary School programme.

Goals for Secondary Education

The objective of the Secondary Education shall be to prepare the individual for;

- Useful living within the society; and
- Higher education

Goals of Technical and Vocational Education

The objectives of the programme as specified in the implementation guideline by government in 1999 are as follows;

- Provision of trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels;
- Provision of the technical knowledge and vocational skills necessary for agricultural, commercial and economic development;

- Giving training and impart the necessary skills to individual who shall be self-reliant economically.

The Problem

Universal access to education has been prime target for Nigeria in the last four decades. So at both National and International levels, Nigeria is committed at providing basic education to all citizens. For technical and vocational studies some of the condition in pursuance of these objectives or goals as stated by National Policy on education are as stated below thus;

- Trainees completing technical college programme shall have three options;
 - Secure employment either at the end of the whole course or after completing one or more modules of employable skill;
 - Set up their own business and become self-employed and be able to employ others;
 - Pursue further education in advance craft/technical programme and in post-secondary (tertiary) technical institutions such as Science and Technical Colleges, Polytechnics or Colleges of education (technical) and universities.
- This research therefore set to assess the problem in the area of implementation of the scheme as related to the introduction of trade subjects into the curriculum of Senior Secondary Schools. It is observed in this research that when one set to opt for Technological and Business Education aspect of the scheme while entering Senior Secondary Schools, the combined subjects arranged presently in the curriculum are not appropriately chosen since the possessors of such certificates will not have the basic qualification to enter the University for either Engineering, Technological and Business Based subjects. This negates the goal of the Senior Secondary School to secure admission to "Higher Education". This automatically gives the possessor of such certificate what I describe as "dead end certificates"

RESEARCH METHODOLOGY

The Research design adopted for this study is a cross sectional survey which is being both descriptive and exploratory entails a once and for all observation of some of the stakeholders of the Technology option of SSCE as postulated by the Federal Ministry of Education on National Policy of Education in Nigeria and the minimum entry requirements for Engineering and Technological subjects in the Tertiary Education and Universities in Nigeria prepared by Joint Matriculation Board (JAMB). We also make use of some of the seminars and write up of West African Examination Council (WAEC).

RESULTS AND DISCUSSION

In our research we discovered that there is a new Senior Secondary Education Curriculum Structure with new Trade Subjects introduced to our Secondary Schools in which the Vocational and Technological subjects called "Trade Subjects" are to be taken from. We need to emphasised that there are prerequisites to all students thus;

"All students must offer;

- all 5 compulsory core crossing subjects.
- Students will offer 3-4 subjects from their field of specialization.
- One (1) elective may be offered outside their field of specialization provided the total number of subjects is not more than nine (9).
- The minimum number of subjects is eight (8).

The Table below shows the new structure;

Compulsory Cross-cutting Core Subjects

1. English Language;
2. General Mathematics;
3. One Trade with entrepreneurship studies;
4. Computer Studies/ICT; (now been removed as a core compulsory Subject, but some secondary schools still allow it to remain as one of their core subject)
5. Civic Education

Senior Secondary (Science and Mathematics)

1. Biology;
2. Chemistry;
3. Physics;
4. Further Mathematics;
5. Agriculture;
6. Physical Education;
7. Health Education

Senior Secondary (Business Studies)

1. Accounting;
2. Store Management;
3. Office Practice;
4. Insurance;
5. Commerce.

Senior Secondary (Humanities)

1. Nigerian Languages;
2. Literature in English;
3. Geography;
4. Government;
5. Christian Religious Studies;
6. Islamic Studies;
7. History;
8. Visual Arts;
9. Music;
10. French;
11. Arabic;

12. Economics.

Table 1: Comparing Each Subject Combination with Matriculating Compulsory Subjects to Gain Admission to Tertiary Institutions or Universities

SNo	Subject Areas	Subjects to be Offered in the New Senior Secondary Education Curriculum Structure	Matriculation Compulsory Subjects for Gaining Admission to the Universities	Areas of Defficiencies or Implications for admission into Umniversities
1	Science and Mathematics	<ol style="list-style-type: none"> 1. English Language; 2. General Mathematics; 3. One Trade with entrepreneurship studies; 4. Civic Education 5. Computer Studies/ICT; 6. Biology; 7. Chemistry; 8. Physics; 9. Further Mathematics; 10. Agriculture; 11. Physical Education; 12. Health Education 	English Language, Mathematics, Chemistry, Physics, Biology can be used to enter any Science Based Courses, Engineering Based Courses and some Humanity Based Courses	There is no area of deficiency in this subject combination to enter into any tertiary Insttution or University of their choice.
2	Business Studies	<ol style="list-style-type: none"> 1. English Language; 2. General Mathematics; 3. One Trade with entrepreneurship studies; 4. Civic Education 5. Computer Studies/ICT; 6. Accounting; 7. Store Management; 8. Office Practice; 9. Insurance; 10. Commerce 	Classified under Faculty of Administration has UTME as Five SSCE credit passaes including English Language, Mathematics, Economics and any other two relevant subjects: Accounting, Business Methods, Commerce, Government, Goegraphy and Statistics	Economics is required here for this subject combination to survive. Note that in the subject combination there is no Business Methods, Government, Geography and Statistics in the subject combination
3	Humanities	<ol style="list-style-type: none"> 1. English Language; 2. General Mathematics; 3. One Trade with entrepreneurship studies 4. Civic Education 5. Computer Studies/ICT; 6. Nigerian Languages; 7. Literature in English; 8. Geography; 9. Government; 10. Christian Religious Studies; 11. Islamic Studies; 12. History; 13. Visual Arts; 14. Music; 15. French; 16. Arabic; 17. Economics 	Classified under Arts/Humanities – Five SSCE credit passes to include English Language and the subjects to be combined	Economics is not required in Humanities for admission. The subject combination here is free and wide enough to choose from.
4	Technology	<ol style="list-style-type: none"> 1. English Language; 2. General Mathematics; 3. One Trade with entrepreneurship studies; 4. Civic Education 5. Computer Studies/ICT; 6. Technical Drawing; 7. General Metalwork; 8. Basic Electricity; 9. Electronics; 10. Auto-Mechanics; 11. Building Construction; 12. Woodwork; 13. Home Management; 14. Food and Nuitrition; 15. Clothing and Textile 	To enter any Engineering /Environmental/Technology courses in the University you need to have Credit in English Language, Mathematics, Physics, Chemistry, Biology (In some Universities) and any one of other relevant Science/Technical subjects.	This is at variance to the subject combination of this set of people. This is a seriouss problematic area where the students will not be able to gain admission to any tertiary Institutions or the University. The UTME Subjects is Mathematics, Physics and Chemistry. Physics and Chemistry was not part of the subject combination for this option.

Senior Secondary (Technology)

1. Technical Drawing;

2. General Metalwork;
3. Basic Electricicity;
4. Electronics;
5. Auto-Mechanics;
6. Building Construction;
7. Woodwork;
8. Home management;
9. Food and Nuitrition;
10. Clothing and Textile

Trade Subjects

1. Auto body repairs and spray painting;
2. Auto Electricalwork
3. Auto Mechanical works
4. Auto parts merchandising
5. Airconditioning Refrigerator
6. Welding and Fabrication, engineering craft practice
7. Electrical Installation and Maintenance work
8. Radio, TV and Electrical work.
9. Blocklaying, Bricklaying and Concrete work.
10. Painting and decorating
11. Plumbing and Pipe Fitting
12. Machine woodworking
13. Carpentry and Joinery
14. Furniture Making
15. Upholstery
16. Catering craft practice
17. Garment Making
18. Textile Trade
19. Dyeing and Bleaching
20. Printing Craft Practice
21. Cosmetology
22. Leader Goods Manufacturing and Repair
23. Keyboarding
24. Shorthand
25. Data Processing
26. Store Keeping
27. Book Keeping
28. GSM Maintenance
29. Photography
30. Tourism
31. Mining
32. Animal Husbandry
33. Fisheries
34. Marketing
35. Salemanship

In the Fig. 1 below, two optional subjects give critical path that cannot be stopped out of the four optional subjects thus;

- Science and mathematics option; and
- Humanities

But other two optional subjects have a lot of problem that give the critical path leading to dead end thus;

- Technolgy; and
- Business Studies.

These two optional subjects will bar the possessor of such certificates from gaining access or entrance to higher institutions or universities as enumerated in Fig. 1 and the Table 1.

The Technological lines is the most hit. Unless admission criteria are changed from the present admission system, which stipulates credit in Physics, Chemistry and Biology, it is very difficult for such students who are not offering these subjects to gain admission to higher institution or university studying engineering, technology, or environmental based courses.

In like manner, like that of Technological line, the Business – Oriented Students who do not offer economics as part of their subject combination, will have restrictions as to what Business subject the candiate will offer in the tertairy institutions or university. Their condition is what I termed **“Partial Dead End”**.

The West African Examination Council, Alagbaka, Akure conducted a training wich is very useful to this discussion in the areas of the criterion for the selection of subjects according to the New Senior Secondary School Curriculum structure in Nigeria. They make the following declarations;

- Students are to select one (1) Trade subjects from the list of 34 Trade/Entrepreneurship Studies
- It is not expected that a school would teach all the trade subjects. Schools are free to select those trades for which they have the teachers and facilities and which meet the needs of their communities.
- Students are to select two (2), three (3), or four (4) subjects from each field of study depending on their potential, interest and capability
- Students are to select a minimum of eight (8) subjects or a maximum of nine (9) subjects

NOTE:

- If a student selects four (4) subjects from his / her field of study, he/she has eight subjects and **can select one or more form other fields of study** making of nine (9) subjects
- If a student selects three (3) subjects, he/she **can take one (1) or two (2) electives from any other field of study** making a minimum

of eight (8) subjects and maximum of nine (9) subjects

- If a student selects two (2) subjects from his/her field of study, he/she **can take two**

(2) Or three (3) (electives) from any other filed of study making a minimum of eight (8) subjects and a maximum of nine (9) subjects.

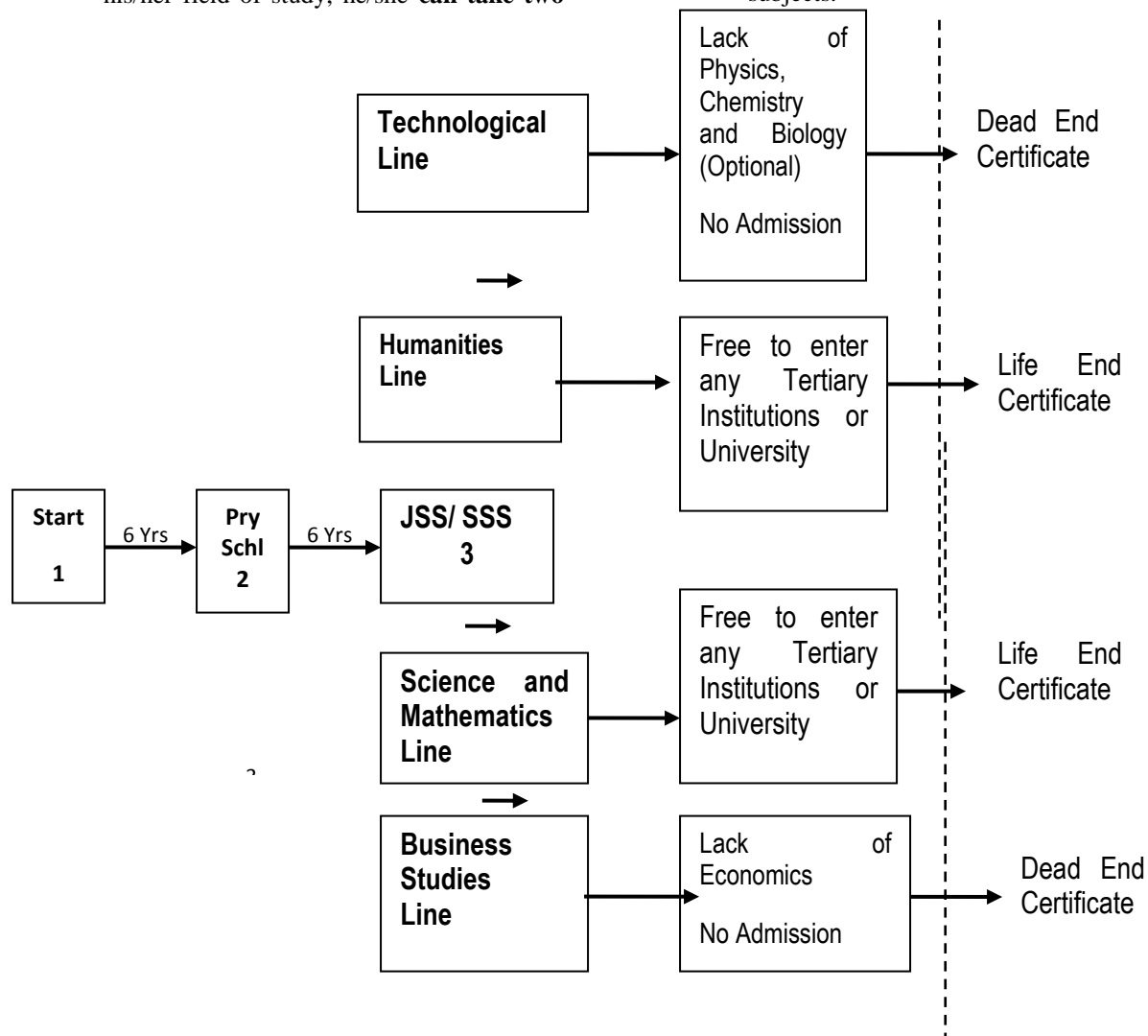


Fig.1 Critical Path Development of the Typical Problem and its Implications for admission to University and the Presentation of Life and Dead End Certificates in the New Senior Secondary Schools Curriculum in Nigeria

Fig. 2 below shows the amendment and suggestions to improve the Dead End Line that does not allow the candidates to go to their tertiary Institution or University of their choice. I will cite Technological field and choose Mechanical Engineering my field of specialization as a good example;

The student or candidate can have the following combination of nine (9) subjects;
English, Mathematics, Civics
Trade/Entrepreneurship (Welding and Fabrication Eng. Craft Practice)

Computer Studies
Technical Drawing
General Metalwork
Physics and Chemistry

OR

English, Mathematics, Civics
Trade/Entrepreneurship (Auto body Repair and Spray Painting)
Computer Studies
Technical Drawing
Auto - Mechanics
Physics and Chemistry

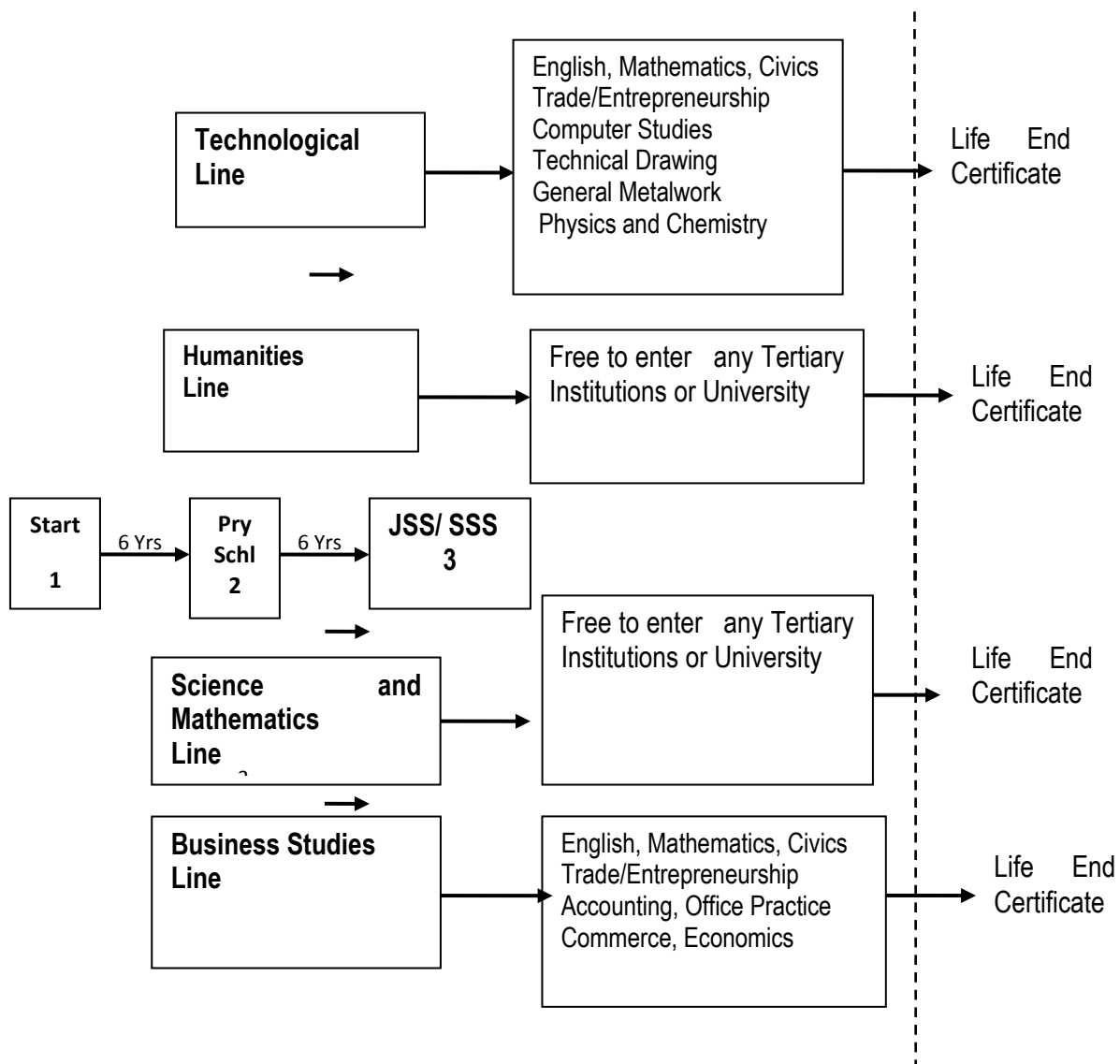


Fig.2 Suggested Critical Path Selection of Subjects that Bring Continuity of Study and its Implications for admission to University in the New Senior Secondary Schools Curriculum in Nigeria

CONCLUSION

The problem of dead end certificates for those students who choose technological subjects option in Senior Secondary Certificate Examination (SSCE) has been examined in this paper. It was however discovered that the UTME Subjects required to enter the Engineering, Technological subjects in the University are Mathematics, Physics and Chemistry. Physics and Chemistry are not part of the subject combination for the Technology option of the new curriculum for Senior Secondary School in Nigeria.

To enter any Engineering /Environmental/Technology courses in the University you need to have Credit in

English Language, Mathematics, Physics, Chemistry, Biology (In some Universities) and any one of other relevant Science/Technical subjects. So also that of Business Studies you will be expected to have Credit passes in English, Mathematics and Economics and any other two relevant subjects: Accounting, Business Methods, Commerce, Government, Geography and Statistics.

This is at variance to the subject combination of this set of people which can be used to fulfil the second conditionality of the objective of the Secondary

Education which should be to prepare the individual for Higher education.

This is a seriously problematic area where the students will not be able to gain admission to any tertiary Institutions or the University of their choice in Nigeria. It was however discovered that the implementation of this scheme might be haphazardly done by some Principals, Teachers and even Ministry Officials who do not even know what this introduction of new curriculum of Technological subjects (Engineering or Technological) in gaining admission to the University is all about.

RECOMMENDATIONS

From this research it is therefore recommended that;

- Physics and Chemistry should be included in the subject combination of Technology option of Senior Secondary School Curriculum
- Economics should be included in the subject combination of Business Studies option of Senior Secondary School Curriculum.
- Or if this is not possible, change the subject combination for Technology option and Business Studies used for both JAMB and admission combination to study Engineering, Environmental, Technological, Business Studies courses in the Tertiary Institutions or University to reflect the new syllabus just introduced.
- Or if these two options are not acceptable, scrap Technology or Business Studies option of the curriculum and stop all the Trade Subjects which are not making any impact in the development of a child in the area of continuity of their educational development beyond School Certificate level.
- As an experienced marker and the chairman of some of the sessions where WAEC is developing of the Trade Subjects, there must be a stop to this move, if the possessor of such certificate cannot use the certificate obtained in WAEC or NECO to fulfil the condition of admission to enter the University, I quote "The objective of the Secondary Education shall be to prepare the individual for; useful living within the society and higher education".
- The Federal Ministry of Education and the State Ministry of Education should as a matter of urgency see to the solution of these identified problems so as not to award what I call "**Dead End Certificates**" to our future generation of youth who in their life time will continue to curse this generation of curriculum developers, like what is currently happening to the possessors of some technological certificates presently in

Nigeria in the areas of continuity of their educational development and job satisfaction after obtaining such certificates.

- This is a warning and a lone voice crying in the wilderness for all and sundry for their timely intervention.

I hope that the Government or the Curriculum Developers in Nigeria are not trying to mortgage the future of our young ones to only secondary school level as presently done for Vocational and Business Schools as evident in their objectives 1 and 2 and the neglect of objective 3 as quoted above and what we are witnessing in our tertiary institutions and university in the treatment meted out to this category of students seeking admission and life after graduating from such schools.

I want to sincerely thank the organisers of this programme for inviting me to contribute my life time experience in the world of Academics, which I have adjudged to be too rough to pass through for a willing soul who is interested in academics like me and mistakingly found himself or herself in choosing a dead end line for himself in life. I pray and hope you will choose a blissful life end for your children and our future generation.

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Track Two:

Emerging Trends in Economics, Business and Management (ETEBM)

CORRUPTION AND POVERTY IN NIGERIA: EVIDENCE FROM ARDL BOUND TEST AND ERROR CORRECTION MODEL

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ABSTRACT

Nigeria has been described as a country with a great and strong potential that its economy has grown consistently at an average rate of 6% per year. Despite this growth potential, the level of poverty, unemployment, and income inequality have continued to be on the increase. The number of people living in poverty increased from 27.2% in 1980 to 69% in 2010. It has also been observed that about 110 million Nigerians were still living below the poverty line despite the policies of past governments to improve their welfare. This relates to the high level of corruption and wrong policy formulation that has bedevilled the society. This study therefore empirically examines the relationship between corruption and the level of poverty in Nigeria for the period 1986 to 2014. The data for the study were secondary in nature that were sourced from the publication of World Bank Development Indicator (2015) and Country Risk Guide (2012). The poverty index was generated using Principal Component analysis (PCA). Autoregressive Distributed Lag (ARDL) model was used in analysing the data for the study. The result of the study showed that corruption has a serious and adverse effect on the welfare of the citizens by reducing the expenditure on health, education and other social services thus increasing the level of poverty in Nigeria.

KEYWORDS: Corruption, Poverty, ARDL, Economic Growth, Error Correction Model (ECM), Nigeria.

INTRODUCTION

Corruption and poverty are conceptually related issues in the developing countries. Both are considered to be an undisputed monumental disaster in any economy. Many developing countries have experienced poverty at different levels. However, Poverty is multidimensional, and a number of factors contribute to its endemic nature in developing countries, including war, exploitation and illiteracy. The dimensions of poverty in Nigeria include household income poverty, food insecurity, poor access to public services and infrastructure, unsanitary environment, illiteracy and ignorance, insecurity of life and property, and poor governance (Aye, 2013).

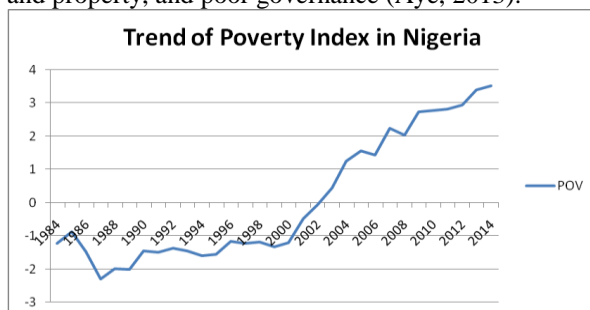


Figure 1: The Trend of Poverty Index generated through Principal Component Analysis (PCA) in Nigeria for the periods of 1984 to 2014.

The graph in figure 1 depicts the trends of poverty index (POV). The poverty index was negative from 1984 to 2002. The graph shows that the level of poverty was on a decrease from 1985 to 1988 before increasing

henceforth. It reached its lowest negative value in 1987. Before these periods, emphasis was on agricultural productivity before the discovery of oil resources in commercial quantity by early 1970s. These periods also coincided with minimal level of corruption in Nigeria.

However, corruption is a significant contributing factor to the perpetuation of poverty and the continuation of underdevelopment of a nation's society, government and economy (Ellis, 2015). Recently, Nigerian government is committed to reducing poverty through a massive and entrusted war against corruption because corruption is considered as a clog in the wheel of progress of any nation, and a major cause of the present downturn in Nigerian financial status, which has made it almost impossible for the governments at various levels to perform their civic and financial responsibilities to the masses especially when the price of the crude oil dropped to as low as \$28US per barrel in the international market.

This endemic corruption is linked to the huge incidence of poverty in the country. Corruption is related to the massive stealing of public resources that would have been invested in providing wealth creating infrastructure and social services for the citizens, which will help in reducing the level of poverty in the country (Action aid 2015).

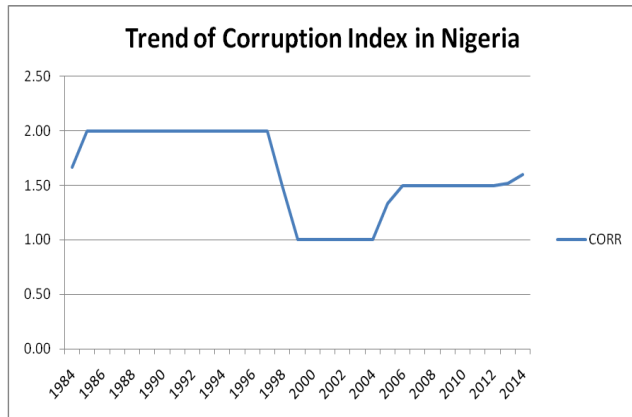


Figure 1: The Trend of Corruption Index in Nigeria for the periods of 1984 to 2014.

Given the range of the control of corruption from 0 to 6.0, tending towards 0.0 point represents low or poor level of corruption control while tending towards 6.0 point means good or high level of corruption control. Thus, figure 2 shows that the control of corruption had not scored more than 2.0 in Nigeria since 1984 and the index was as low as 1.0 from 1999 to 2004 before the introduction of Economic and Financial Crimes Commission (EFCC) in 2003 and the enactment of EFCC Establishment Act in 2004 which put it in full operation. The low level of corruption control during these periods was perhaps as a result of the exposure to democratic government in 1999. Though, Independent Corrupt Practices Commission (ICPC) was inaugurated in year 2000 following the recommendation of President Olusegun Obasanjo, but it was not popular till EFCC was established. The operation of EFCC and ICPC began to have effect on the control of corruption since 2005.

Furthermore, corruption is an economic, legal, environmental and social issue. It is defined by Transparency International as the abuse of power for private advantage. Corruption could be viewed as the misuse of public office for private gain; this includes but not limited to: embezzlement, nepotism, bribery, extortion, influence peddling and fraud. Hoffman (2012) described corruption in the public sector more simplistically as “theft from the poor”. Thus, corruption may result in enriching government officials as well as private individuals who obtain a large share of public benefits or bear a lower share of public costs. By so doing, corruption distorts government’s role in resource allocation, and this may be detrimental to the poor (Gupta, Davoodi and Alonso-Terme, 2002). In the same vein, corruption has the capacity to render any society unstable and insecure, especially when it becomes endemic; it is destructive to the achievement of the type of society that was envisaged by the foremost

nationalists. Thus, corruption is a cancer in any society (Hoffman, 2012).

Emphatically, corruption in the public sector is the misuse of public office for private gain which have severe adverse effects on the socioeconomic development of a country through a reduced income, poor health and education status, vulnerability to shocks and other characteristics (as a result of diverted funds) in countries already struggling with the strains of economic growth and democratic transition. All these are viewed as exacerbating conditions of poverty, (Chetwynd, Chetwynd F. and Spector, 2003).

Potentially, Corruption affects the lives of poor people through many channels, namely: diverting government spending away from socially valuable goods, such as education; diverting public resources from infrastructure investments that could benefit poor people, such as health clinics; tending to increase public spending on capital intensive investments that offer more opportunities for kickbacks, such as defence contracts; lowering the quality of infrastructure, since kickbacks are more lucrative on equipment purchases; and also by undermining public service delivery (World Bank, 2001: 201). However, corruption, by itself, does not produce poverty. Rather, corruption has direct consequences on economic and governance factors that in turn produce poverty. Thus, the relationship examined by researchers is an indirect one (Chetwynd *et al.*, 2003).

Nigeria has made significant economic advances in recent times. The country has managed to sustain an economic growth rate of about 6-7% for the past decade. Also, the country has been recognised as one of the fastest growing economies in the African continent and one of the 10 fastest growing economies in the world. Ironically, the country harbours some of the poorest people in the world with about 70% of the population (NBS 2012). Yet improvements in macroeconomic statistics have not translated into increase in the standard of living of Nigerians. Despite the various poverty alleviating programmes and policies of the government, poverty still remain wide spread or endemic in contemporary Nigeria. This in no doubt has been as a result of the high level of corruption in the country. Nigeria has been ranked 136 out of 175 corrupt countries in the world (CPI 2014).

The contradiction of rising poverty in a rapidly expanding economy has led to the conclusion by policy makers and researchers that corruption leads to poverty or contribute to poverty (Aina, 2014). Corruption has manifested itself in many forms, such as waste and misallocation of public funds by government

officials which denies the provision of social services and infrastructures thereby creating poverty. Several instances of corrupt practices have been reported in the radio and media over the years. Specifically, the recent government of President Buhari has indicted Sambo Dasuki of misallocating or diverting \$2.1 billion public funds, which were distributed among the top public officials for election purposes. Also, the recent alleged ₦23 billion (\$115m) Diezani bribe were equally distributed among various government officials to manipulate the result of the 2015 presidential election. All these cases are being investigated by the Economic and Financial Crime Commission (EFCC) and those involved has been arrested for interrogation (The Punch, May 6, 2016).

This study is relevant at this time when the federal government of Nigeria is battling seriously with different cases of corruption which has depleted both the foreign and national reserves of the country. This is a serious disaster to the economy which needed quick and immediate response by the government.

Therefore, this study empirically investigate the impact of corruption on poverty level in Nigeria and proffer possible solutions on how the issue of corruption can be tackled, in order to reduce or eradicate poverty to a minimum level in the country. The study covered the period 1986 – 2014 and employs principal component analysis (PCA) to measure poverty index using life expectancy at birth, agricultural value added per worker, per capita real gross domestic product and household per capita consumption. Also, corruption index provided by International Country Risk Guide was employed to proxy control of corruption.

LITERATURE REVIEW

The theoretical underpinnings linking poverty to corruption are based on the position that poor people are more likely to be victims of corrupt behaviours by governments officials as the poor often rely heavily on services provided by governments (Chetwynd *et al*, 2003; Justesen and Bjornskov, 2014). Regardless of the general belief that corruption is the root cause of poverty in the developing nations, there are no empirical evidences or unanimity among researchers to support the claim or hypothesis that corruption is directly responsible for increasing level of poverty in the literature (Chetwynd *et al*, 2003; Aina, 2014).

However, in the literature, there seems to be a general consensus about the indirect relationship between poverty and corruption. The consequences of corruption are centred on the economic and governance factors which later result in poverty. According to Ellis (2012), corruption is not a primary cause of poverty, rather

corruption fuels poverty through a reduction of the quality and quantity of public services (education, health, housing etc.) which benefit mainly the poor. Therefore, Wickberg (2012) concluded that the influence of corruption on poverty occurs through its impact on income, access to services (economic factors), and resource distribution (governance factor). Similarly, taking an inverted approach, Rothstein and Holberg (2011) showed that the correlation between poverty levels and control of corruption is relatively weak but it is reinforced by the strong correlation between control of corruption and economic growth (proxied by GDP per capita). This buttressed the point that the relationship between poverty and corruption is indirect through economic growth.

Estefania (2010) applied both direct and indirect measures of corruption to show correlations between different poverty measurements and corruption indicators for 18 Latin American countries, and concluded by presenting a significant negative relationship between poverty and corruption levels. In the same way, Gupta, Davoodi and Alonso-Terme (2002) concluded that policies that reduce corruption have a tendency to reduce income inequality which will in turn have a decreasing effect on poverty level. They presented evidence that rising level of corruption increases income inequality and poverty by showing that an increase of one standard deviation in corruption increases the Gini-coefficient of income inequality by about 11 percentage points and income growth of the poor by about 5 percentage points yearly.

On the other hand, in a causal analysis between corruption and poverty, Vahideh, Zakariah and Hesam (2010) investigated the Granger causal relationship between corruption and poverty, using dynamic panel system GMM estimators, and focusing on capability poverty proxied by human poverty index (HPI) with a sample of 97 developing countries for the periods of 1997 to 2006. They concluded that a bidirectional causal relationship exists between corruption and poverty. Using microlevel survey data from the Afrobarometer, and multilevel regressions across 18 countries, Justesen and Bjornskov (2014) showed that poor people are much more prone to experience having to pay bribes to government officials. Most importantly, they found that poverty strongly increases the frequency with which individuals face demands for bribes in return for obtaining services from government officials, particularly in urban areas. These findings therefore support the claim that poverty also has a feedback effect on the level of corruption.

Action aid report (2015) on a study of corruption and poverty in Nigeria using content analysis method found

out that there is a strong correlation between corruption and poverty because Nigeria scored high in the corruption perception index and scored low in the Human Development Index. The implication of this is that high incidence of corruption will adversely affect the welfare of the citizens. This study therefore empirically examines the relationship between corruption and poverty in both the short run and long run using auto regressive distributed lag approach.

METHODOLOGY

Stemming from the survey of literature, two models have emerged: the economic model and the governance model. The “economic model” postulates that corruption affects poverty by first impacting economic growth factors, which, in turn, impact poverty levels. That is, an increased level of corruption will lead to a reduction in economic growth and increased income inequality that will eventually transcend to an increase in poverty level. Similarly, the “governance model” asserts that corruption affects poverty by first influencing governance institutions, which in turn, impact poverty levels. This occurs as increased level of corruption leads to reduced governance capacity in providing the necessary public services and later ensures increased poverty. Thus, this present study focuses on the direct relationship between corruption and poverty.

In the process of linking poverty to corruption, economic growth and income distribution are key factors to be considered. Economic growth and income inequality are important because they link corruption to poverty (Chetwynd *et al*, 2003). Studies show that the absence of economic growth (or negative growth) increases poverty. Conversely, a reduction in the level of poverty could be ensured through an increase in GDP that produces an increase in the income of the poor. Hence, the functional dependence between poverty and corruption is expressed below:

$$Pov_t = f(RGDP_t, COR_t, Z_t) \quad (1)$$

Where, Pov_t represents poverty level at time t , $RGDP_t$ is the real gross domestic product (a proxy for economic growth) at time t , COR_t is the level of corruption at time t and Z_t represents all other factors that affect the level of poverty. As regards other variables (Z) that affect the level of poverty, studies have shown that exchange rate and inflation rate are indispensable to the analysis of economic growth and poverty level of any economy. Thus, real exchange rate (EXC) and inflation rate (INF) are incorporated into equation 1 which gives:

$$Pov_t = f(RGDP_t, COR_t, EXC_t, INF_t, \varepsilon_t) \quad (2)$$

As a result of the perceived non-linear relationships between the level of poverty and corruption level, we

use log-linear specification for our empirical purpose. Log-linear specification provides efficient results and it improves the precision power of the results (Shahbaz, 2012; Farooq, Shahbaz, Arouri and Teulon, 2013).

$$\ln Pov_t = \alpha + \beta \ln RGDP_t + \delta \ln COR_t + \sigma \ln EXC_t + \pi \ln INF_t + \varepsilon_t \quad (3)$$

The Autoregressive Distributed Lag (ARDL) model which is a dynamic framework is specified to circumvent the problem of endogeneity or reverse causality and non-stationarity of variables. The fundamental importance of this model is that we can simultaneously discuss long run and short run relationship within the same framework regardless of whether the variables are integrated of the same order, that is, whether all variables are I(1) or I(0) or the combination of I(1) and I(0) variables. Moreover, while other cointegration techniques require large data samples for validity, the ARDL procedure provides statistically significant result in small samples (Pesaran and Shin, 1997; Pesaran and Shin, 1999; Narayan, 2005; Udoh and Ogbuagu, 2012). That means it avoids the problem of biasness that arise from small sample size.

$$\Delta \ln Pov_t = \alpha + \sum_{j=1}^p \theta_j \Delta \ln Pov_{t-j} + \sum_{j=0}^p \beta_j \Delta \ln RGDP_{t-j} + \sum_{j=0}^p \delta_j \Delta \ln COR_{t-j} + \sum_{j=0}^p \sigma_j \Delta \ln EXC_{t-j} + \sum_{j=0}^p \pi_j \Delta \ln INF_{t-j} + \lambda_1 \ln Pov_{t-1} + \lambda_2 \ln RGDP_{t-1} + \lambda_3 \ln COR_{t-1} + \lambda_4 \ln EXC_{t-1} + \lambda_5 \ln INF_{t-1} + \varepsilon_t \quad (4)$$

In examining the effect of corruption on the level of poverty in Nigeria, this study employed time series data from 1986 to 2014. The variables such as Per capita consumption, agriculture value added per worker, life expectancy at birth, gross domestic product per capita, real gross domestic product, inflation rate and exchange rate were sourced from World Bank Development Indicator Database (2015), and corruption control index was sourced from International Country Risk Guide (ICRG), 2012. Moreover, poverty index (POV) was generated through the help of Principal Component Analysis (PCA) from the frequently used proxies for poverty, which include Per capita consumption, agriculture value added per worker, life expectancy at birth, gross domestic product per capita.

ANALYSIS AND INTERPRETATIONS

Unit Root Test

The unit root test provides guidance to ascertain whether ARDL is applicable or not because it is only applicable to the analysis of variables that are integrated of order zero [I(0)] or order one [I(1)], but not applicable when higher order of integration such as I(2) variable is involved. Testing the stationarity of the variables is important to avoid spurious regression. Thus, the Augmented Dickey-Fuller (ADF) of Dickey and Fuller (1981) technique were used to investigate the stationarity of the variables. The Augmented Dickey-

Fuller test results from table 1 shows that all variables are stationary at first difference.

Table 1: The Results of Augmented Dickey-Fuller (ADF) Test

Variable	Level	First Difference	Order of Integration
POV	0.8614 (0.9935)	-4.9454 (0.0004)	I(1)
COR	-2.0404 (0.2690)	-3.7416 (0.0086)	I(1)
RGDP	-1.3096 (0.9981)	-4.1681 (0.0030)	I(1)
EXCR	-0.41798 (0.8936)	-5.17102 (0.0002)	I(1)
INF	-2.5117 (0.1228)	-4.82064 (0.0006)	I(1)

Source: Authors' Computation, 2016.

Note: POV, COR, RGDP, EXCR, INF represent poverty index, corruption control index, natural logarithm of real gross domestic product, real exchange rate and inflation rate respectively.

Tests for Cointegration

Having confirmed the stationarity of the variables which revealed that the variables of the study were all stationary at first differenced, the next step of our analysis was to test for cointegration among the variables. Therefore, ARDL bounds testing approach is employed to test for the existence of long run relationship. However, in order to do this, it is important to identify an appropriate lag length to calculate the F-statistics. The ARDL model is sensitive to the lag order. In addition, optimum lag order would be helpful in reliable and consistent result in the analysis. Thus, the Akaike Information Criterion (AIC) is considered to obtain the optimum lag length. The choice of this criterion is based on the stricter penalties imposed by AIC. This AIC provides better and consistent results compared to other lag length criteria (Uddin, Shahbaz, Arouri, and Teulon, 2013). Based on the lag selection criteria test, the AIC maximum lag length of 2 was selected and employed in the estimation of ARDL model.

Table 2: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-297.0638	NA	1614.452	21.57598	21.81388	21.64871
1	-185.9571	174.5961*	3.560348	15.42551	16.85287*	15.86187*
2	-157.2168	34.89902	3.294077*	15.15834*	17.77517	15.958333
3	-133.1506	20.62814	6.158220	15.22504	19.03134	16.38867

Source: Author's computation

Note: * indicates lag order selected by the criterion; LR, FPE, AIC, SIC and HQ indicate sequential modified LR test statistic, Final Prediction Error, Akaike Information Criterion, Schwarz Information Criterion and Hannan-Quinn respectively.

Table 3: ARDL Bound Test Result and Pesaran et al. (2001) Critical Value Bounds

Test Statistic	Value	K	I(0)	I(1)
F-statistic	4.973587	4	2.86*	4.01*

*Pesaran et al. (2001) critical bound @ 5% level of significance

Note: K is the number of observations minus 1.

The computed F-statistic is compared with upper and lower critical bounds generated by Pesaran et al. (2001) to test for the existence of cointegration. The null hypothesis is $H_0: \lambda_j = 0$, (where $j = 1, 2, \dots, 5$) in equation (4). This implies no long run relationship among the variables, against the alternative hypothesis, $H_1: \lambda_j \neq 0$, implying the existence of long run relationship among the variables. The results in table 3 showed that the computed F-statistic (4.973587) is greater than the upper bound (4.01) at 5% level of significance with unrestricted intercept and no trend (Upper bound is 4.01 and Lower bound is 2.86). This implies that there is evidence to reject the null

hypothesis of no long run relationship among the variables. Hence, the alternative hypothesis is accepted that there is long run equilibrium relationship among poverty, corruption, real GDP, exchange rate and inflation rate.

Results of the Effect of Corruption on Poverty level in Nigeria

The Error Correction Model (ECM) associated with equation (4) was estimated to show the short and long run effect of corruption on the poverty level. In addition to the fact that ECM comprises the short run transitory effects and the long run relationships, the speed of adjustment of the dependent variable to changes in the independent variables is also determined within the framework.

Table 4: Results of the Error Correction Model (ECM) associated with ARDL Cointegrating Form

Variable	Coefficient	Std. Error	t-statistic	Probability
D(COR)	0.019863	0.021553	0.9216	0.3672
D(COR(-1))	0.056746	0.01821	3.116282	0.0052*
D(RGDP)	6.639687	1.214412	5.467408	0.0000*
D(EXCR)	0.007813	0.005301	1.473928	0.1553
D(INF)	-0.002026	0.002635	-0.769017	0.4504
ECT(-1)	-0.917892	0.123646	-7.423537	0.0000*

Table 5: Results of the Error Correction Model (ECM) Long Run Coefficients

Variable	Coefficient	Std. Error	t-statistic	Prob.
COR	0.023865	0.027113	0.880192	0.3887
RGDP	7.233624	1.150036	6.289908	0.0000*
EXCR	0.008512	0.005436	1.565782	0.1323
INF	-0.002208	0.002764	-0.79876	0.4334
C	-96.027249	14.037439	-6.840795	0.0000*

Source: Author's Computation, 2016.

Note: *indicates significance at 5% level; *POV*, *COR*, *RGDP*, *EXCR*, *INF* and *ECT* represent poverty index, corruption control index, natural logarithm of real gross domestic product, real exchange rate, inflation rate and Error Correction Term respectively.

The results of the ECM in table 4 and 5 showed the short and long run effect of corruption on poverty level. The results show that corruption is significant ($p < 0.05$, $t = 3.116282$) and it has a positive effect on the level of poverty in the economy. This means that a 1% change in the corruption level, other things being equal, will change the level of poverty by 0.0568% in the same direction, while economic growth (proxied by RGDP) is also significant ($p < 0.05$, $t = 5.467408$) in the short run. This means that a 1% increase in economic growth will increase the level of poverty by 6.6397%. This is in contrary with the *a priori* expectation of negative relationship between growth and poverty where an increase in economic growth is expected to reduce poverty. However, the positive relationship between poverty level and economic growth in Nigeria is worthy of concern. This serves as evidence that growth in the economic activities, aggregate incomes or outputs has not trickled down to the bottom poor people. This implies that, larger part of the economy resources are in the hand of the few rich called the capitalist.

Furthermore, in the long run, only economic growth exerts significant effect on the level of poverty ($p < 0.05$, $t = 6.2899$). This implies that there is no direct relationship between corruption and poverty in the long run. This means that the effect of corruption on poverty level would have spread out in the long run.

Moreover, the coefficient of the Error Correction Term (ECT_{t-1}) is the speed of adjustment of poverty level to shocks in exogenous variables in the model. The negative and statistically significant of the coefficient of the Error Correction Term (ECT) indicates a stable process of adjustment to the long run equilibrium, and the value implies that 96% of disequilibrium in the preceding year is corrected annually.

Stability Test of the Model

The stability of our model was tested via Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative

Sum of Squares of Recursive Residuals (CUSUMSQ) tests.

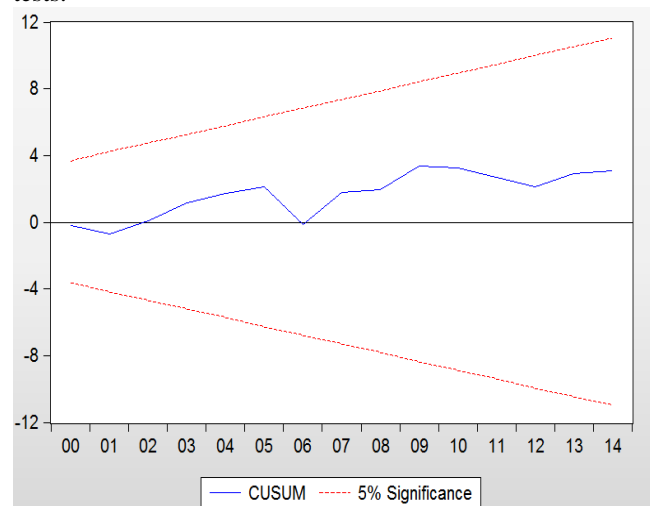


Figure 3: CUSUM test for stability

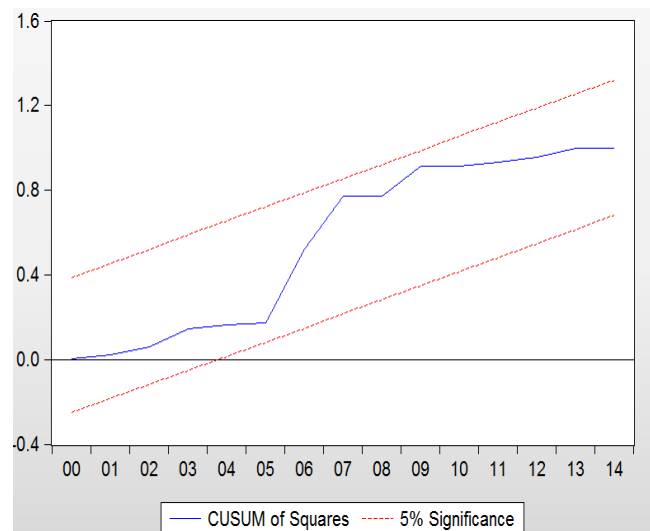


Figure 4: CUSUM of Squares test for stability

In figures 3 and 4, it was observed that the model used in the study is stable since the blue line lies between the upper and lower limits (the two red lines) in both Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) respectively. The diagnostic tests results demonstrate that there is no considerable problem of serial correlation, no problem of heteroskedasticity. Thus, it can be concluded that the model is robust, desirable and worthwhile.

CONCLUSION

The results from the above analysis indicated that corruption affects poverty level in the same direction in the short run but exhibits no direct relationship in the long run. This supports the result of action aid 2015

which uses descriptive analysis to examine the impact of corruption on poverty in Nigeria. Corruption has a direct effect on poverty because corrupt activities have the effect of depriving the poor of the finances and resources that could have been used to improve their lives through the provision of poor health and education facilities, poor infrastructures, vulnerability to shocks and other poverty characteristics (as a result of diverted funds) in Nigeria. This is in line with the postulations of Vahideh, Zakariah and Hesam (2010) and Rothstein and Holberg (2011). The result also supports the view that high level of corruption will aggravate income inequality where lower income earners use a higher proportion of their income for bribes to access basic social services, having little to spend on essential goods and services.

RECOMMENDATION

The negative implication of corruption on the life of the citizens is a major disaster in the economy and harmful to the growth and development of the citizens in particular and the economy in general. For effective sustainable and management of this disaster, government should embark on policies that will reduce the level of corruption significantly so as to have positive influence on the standard of living of the citizens in terms of quality and efficient education, sound management of our natural resources, provision of good health facilities and other infrastructures that will transcend to the growth of the economy. Also, the leading EU and US need to join hands with the fast growing economies to stop the corrupt officials from getting away with it by imposing reasonable sanctions that will serve as a deterrent to others. This may be in form of arresting and conviction of several individuals that are found guilty of the offence. Furthermore, the G20 needs to prove its global leadership role and prevent money laundering into their country. This can be done by signing international pacts with the nations and return the billions of stolen assets to the affected countries.

There should be adequate funding of anti-poverty agencies and programmes and the agencies should be properly monitored in order to carry out the necessary programmes that are meant for the poor.

Finally, anti-corruption efforts need to be strengthened and sustained. This will help in eradicating high level of poverty among the people.

CONTRIBUTION TO KNOWLEDGE

This study has contributed to knowledge by empirically investigating the impact of corruption on poverty in Nigeria where it was found that high level of corruption has led to an increase in the level of poverty in Nigeria.

The study therefore suggested that for national sustainable development and disaster management (corruption and poverty), the EU and the US should join hands together with the fast growing economies to stop the corrupt officials from getting away with their corrupt practices. Also, they can help in preventing money laundering through their economy. This will surely reduce or eradicate corruption which will translate to reduction in poverty with a high level of sustainability.

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ANALYSIS OF CAPITAL STRUCTURE AND EFFECTIVENESS OF BUSINESS ENTERPRISES FOR NATIONAL SUSTAINABLE DEVELOPMENT AND DISASTER MANAGEMENT

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ABSTRACT

Managing capital structure is one of the most important and difficult problems to be solved in the process of funding, sourcing and providing finance for an enterprise. Instant response to changing external and internal environment requires significant update of many management functions in order to reduce their financial risk. The research aims to enhance the analysis of capital structure and effectiveness of business enterprises for national sustainable development and disaster management through the use of combinatorial methods for the analysis of 31 selected companies listed in the Nigeria Stock Exchange Bulletin from 1999 to 2013, certified by the Securities and Exchange Commission (SEC). The method of analysis is the panel estimation technique where the study seeks to analysis both the short-run dynamics and long-run nexus between capital structure and the effectiveness of business enterprises. The results obtained are highly instructive as valuable conclusions were drawn; and policy suggestions, which are deemed to benefit the investors and shareholders, lenders and finally, academicians who will see new empirical evidence in the accounting literature emanating from an emerging economy like Nigeria were proffered.

KEYWORDS: Analysis of Capital Structure, Corporate Effectiveness, dynamic panel model, static model of panel data and National Sustainable Development.

INTRODUCTION

The development of market economy and increased competition will intensify the search for optimal enterprise management solutions, including the formation of an optimal capital structure. The analysis is aimed at evaluating, formulating and forecasting the situation of financial activity. Given the nature of the analysis and its attendant purposes, financial analysis involves the stages of collection, separation and processing of aggregate management information that may be expected to clarify the diagnosis and prognosis of financial activities. In the last few years, there has been a significant expansion of information sources; which are constantly subject to updating, that are transferred to financial analysts. Analysis of financial decisions belongs to the scope of the decisive accountants and financial managers. The results directly affect the decision on capital structure and financial activity.

Analysis to determine the optimal capital structure of the company required interaction of market economy primarily due to economic interests - increasing economic efficiency. But the most effective management of financial resources can be achieved using a policy of asset financing, the main objectives of which is to improve their profitability. Problems in the theory and practice of analyzing the capital structure and effectiveness of enterprises have pioneer studies from foreign and local researchers such as Abor, E.

Altman, M. Arellona, S. Bond, BH Baltahi, A. Bevan, Babalola, RM Bushman, Clark, T. Eldomiati, EF Fama, R. Ferguson, Gitta – Gopinath, W. Green, Garba, Gupta, R. Heinkel, S. Hsyao, E. El-Seida, KS Im, M . Jensen, B. Kester, J. A. Knight, TR Lewis, A. Melis, Mayers & Majluf, Modigliani and Miller, P. O'Connell, IM Pandey, Titman and Wessels, Lee, Smith, P . L. Watts, Yinusa and Zeitun & Tean. Despite a lengthy investigation of the structure of capital; approaches on its short-term and long-term effectiveness are somewhat controversial. Much of the theoretical developments of the analysis of capital structure, as a field of knowledge, do not include the combinatorial techniques for analyzing both empirical and statistical data, which eliminates the shortcomings of historical analysis. The relevance and importance of the problem of eliminating the shortcomings of current methods of data analysis resulted in the choice of research topic; define its goals, objectives and practical significance.

There are two objectives for which this study is set out to achieving. The first is to establish the relationship of financial structure and financial performance while the second is to analyse both the short-run dynamics and long-run nexus between capital structure and the effectiveness of firms in Nigeria. In addition to the introductory section, the remaining part of the study is divided into three other sections. Section 2.0 addresses the methodological framework; which encompasses the

theoretical framework and model specification, technique of analysis, data sources and variable definitions for the empirical investigation while section 3.0 considers estimations and discussion of findings. Section 4.0, being the last, concludes and proffered necessary policy suggestions.

Significance of the Study

The benefit of this kind of study is very numerous particularly to different stakeholders such as owners of firms, investors, banks, government, finance experts and the academic community. This study will provide enhanced understanding to owners of firms on the roles and behaviours of managers. The analysis of capital structure and effectiveness of business enterprises for national sustainable development will avail the opportunities to understand how to mitigate the excesses of these managers such that the managers can deploy the firms resources to enhance the value of the firm and disaster management rather than their benefits which could be very detrimental to the owners.

The outcome of this study that will suggest that there is possibility of reverse causality from performance to capital structure. Owners can now appreciate that the level of performance of their firm can as well influence their choice of debt and equity. With the econometrics methodology that will be employed in this study, the finance specialist can now use robust and parsimonious econometrics based methods to analyse the financing choice of firms in a dynamic framework and identify the factors that drive firms to make capital structure decisions. The findings of this study serve as guide to present and future government in the formulation and implementation of relevant policies that can ease these national sustainability constraints especially the poor

institutional quality and unfavorable macroeconomic environment.

Statement of the Problem

In developing countries, the firms are operate in an environment that is characterize with poor institutional quality, macroeconomic imbalances that promote capital market inefficiencies, high transaction costs, poor corporate governance and moral hazard as well as other agency related problems. These persistent features of developing countries have high tendency to serve as constraints and impediments to financing choice of firms. The financial liberalization resulting from the structural adjustment programmed that changed the operating environment of firms and the macroeconomic environment has not been conducive for business, both monetary and fiscal policies of government have not been stable. The combination of high cost of borrowing and the massive depreciation of naira culminated in inflation spiral in Nigeria. This was not conducive to investment in general. Therefore, the research aims to enhance the analysis of capital structure and effectiveness of business enterprises for national sustainable development and disaster management.

METHODOLOGY

There are three major theoretical positions relating capital structure of firms to its level of effectiveness. These theories include the static trade-off theory, pecking order theory and the agency cost theory (see Table 1). In this study, the framework for investigating this relationship is based on the static trade-off theory. The theoretical expectations of these theories provide us with apriori information regarding what relationship is expected between capital structure and its various determinants (see Table 1).

Table 1: Expected Signs for the Firm-Level Determinants of Capital Structure

Proxy	Static-trade Off theory	Pecking Order theory	Agency Cost theory
Tangibility	+	+	+
Size	+	-	+
Growth Opport.	-	+	-
Lev.(Debt ratio)	+/-	-	+

Note: “+” means that profitability is directly linked with the factor while “-” means that profitability is indirectly linked with the factor

From a methodological standpoint, this study employed the use of panel estimation technique to investigate both the short-run dynamics and long-run nexus between capital structure and firm’s performance. Also, the researcher obtains some descriptive analyses through the use of calculations of various financial ratios. Data for the study were selected from the statistical bulletin of the Central Bank of Nigeria; National Bureau of Statistics; Securities and Exchange Commission (SEC);

annual report on the accounts of the Central Bank of Nigeria and the annual financial statements of companies spanning the periods; 1999-2013. Also, methodical approaches to the study of effectiveness of the enterprise take into account the macroeconomic factors that directly or indirectly affect it. Table 2 shows the variables included in the model empirical analysis.

Table 2: Variable Definitions

Variable	Measurement.
Firm size (fsiz)	Natural Logarithm of Total Assets.
Asset tangibility(ATAN)	Fixed Assets / Total Assets
Return on Assets (ROA): Index of Profitability	Gross Profit or Operating income / Total Assets.
Growth Opportunities (GOP)	Percentage change of sales turnover
Inflation (INFR)	This is measured as the rate of inflation in the Nigerian economy.
Interest rate (INTR)	It is measured as the lending rates by the banks to firms in Nigeria.

By combining specific internal factors of the enterprise and macroeconomic factors that determines firms' level of effectiveness; for which the summary measure of return on asset serves as an indicator, the model for empirical investigation is specified as:

$$ROA_{it} = a_0 + a_1DEB_{it} + a_2TOTASSET_{it} + a_3FSIZ_{it} + a_4ATAN_{it} + a_5GOP_{it} + a_6INF_{it} + a_7INT_{it} + a_8MCAP_{it} + \varepsilon_t \quad (1)$$

The choice of performance indicators is one of the most critical issues facing the company. Research ways to measure the effectiveness offer its measure in two directions - analysis of profitability and solvency analysis. The choice of the dependent variable is due to empirical research by studying various performance measurement tools of businesses. The choice of independent variables is reasonably due to large number of empirical investigations. In addition, the model also included macroeconomic variables such as the interest rate, inflation and capitalization as explanatory variables that impact on the efficiency of firms.

ESTIMATIONS AND DISCUSSION OF FINDINGS

Descriptive Statistics and Computation of Financial Ratios

This section analyzes capital structure and efficiency of economic activity on the example of the manufacturing sector of Nigeria. The analysis in Table 3 is systematized. The results show that the ratio of debt to equity in 18 companies ranges from 0.01 to 0.5, 4 of which have zero debt relative to equity; 6 companies with debt relative to equity within 0.5 to 1.0, while the 3 companies have debt ratio higher than 1.0 in relation to equity. The result of the difference in coefficients is that 30% of manufacturing companies of Nigeria (9 of 31 selected companies) have high leverage as much debt than equity ($K4 > 1$), so most of the fund assets of

these companies at the expense of debt; approximately 60% of manufacturing companies (18 out of 31 selected companies) have low leverage, since less than 50% of debt used to finance fixed assets of these companies, while 13% (4 of 31 selected companies) manufacturing companies have no leverage at all. This means that companies with high leverage will be highly-g geared while those with low leverage will be lowly-g geared. The implication is that most firms in Nigeria are lowly geared and are not largely affected by their non-payment of principal and/or interest rate of debt capital sourced.

The coefficient K1, designed to measure the degree in which the assets are financed with long-term loans, and gives grounds to consider the capital structure of production companies in Nigeria on the other. According to this ratio, only 37% (11 out of 31 selected companies) manufacturing companies in Nigeria have value not less than 1, while the rest has fixed assets financed mainly from long-term loans. Complementing this computation of financial ratio is K2, which is a ratio that indicates the extent to which current liabilities used to finance current assets. K2 must be greater than 2 for better outcomes for the firms. Approximately 50% (15 out of 31 selected companies) manufacturing companies in Nigeria fall under the category of "about 2 and above", while the other 50% have an extremely low rate. This analysis of manufacturing companies found that half of them are unable to finance current assets due to short-term liabilities. In addition, most companies in Nigeria are unreliable, as evidenced by the low coefficient of solidity (K3). Return on equity (ROCE) is high enough. This suggests that management companies in the manufacturing sector of Nigeria have made considerable progress in the use of resources that are available to shareholders and owners, maximizing shareholder welfare.

Several companies have greater turnover ratio for the return on assets, indicating that most manufacturing firms in Nigeria have succeeded in judiciously utilizing the assets at their disposal to the wealth maximization benefits of the shareholders. Overall results from the summary statistics show the trending pattern of the manufacturing sector in Nigeria; in terms of their capital structure arrangement and level of effective.

Table 3: Analysis Of Capital Structure And Effectiveness Of Business Enterprises Nigeria

№ s / n	Business Enterprises	capital structure ratios				Financial performance ratios					
		Acc / Ratio 1 (K1)	Acc / Ratio 2 (K2)	Solidity (K3)	Debt / Equity (K4)	(ROCE)	NPM	ROA	ATO	WC/CL	Coeff. quick ratio
A	Б	1	2	3	4	5	6	7	8	9	10
1	Chemical and Allied Product Plc.	1,492	1,165	3,537	0,173	32,15	4,16	12,40	4,74	1,17	0,83
2	Chellarams Plc.	1,018	1,076	3,735	0,166	15,72	1,68	11,50	6,45	1,08	0,99
3	Tyre & Rubber Plc.	1,216	1,140	2,414	0,126	54,55	8,51	7,70	4,44	1,14	0,94
4	Wire & Cables.	1,578	1,884	2,234	0,147	33,91	6,24	7,70	3,85	1,88	0,99
5	PZ Plc	2,396	1,725	1,459	0,055	14,22	4,85	7,60	2,29	1,72	1,57
6	Livestock Feeds Plc.	1,236	2,280	5,470	0,200	20,60	7,15	11,50	1,90	2,28	0,80
7	Brewery (beers)	1,432	1,990	5,281	0,216	25,51	7,55	3,90	2,12	1,99	0,86
8	RT Briscoe Plc.	1,583	1,796	4,860	0,248	24,33	8,46	2,90	1,92	1,80	1,07
9	Lafarge Wapco Plc.	1,321	1,960	4,772	0,266	24,11	7,92	2,60	1,98	1,96	1,29
10	Nigerian Ropes Plc.	1,118	1,160	3,429	0,257	19,94	13,14	0	1,25	1,16	0,82
11	Secure Electronics Technology Plc.	1,011	2,516	2,933	0,165	21,27	13,11	3,56	1,24	2,52	2,31
12	Thos Wyatts Nig Plc	0,563	2,246	2,547	0,205	18,67	13,18	3,54	1,14	2,25	2,11
13	Avon Crown Caps & Container	1,211	2,519	11,732	0	116,41	17,67	18,30	4,51	2,52	0,37
14	Bata Glass Plc.	0,768	0,889	8,120	0,077	88,90	17,00	7,90	3,53	0,90	0,42
15	NCR-Textiles	1,171	0,898	7,537	0,128	89,45	16,32	11,60	3,70	0,90	0,42
16	Afprint Plc.	1,104	0,898	7,537	0,128	89,45	16,32	-2,10	3,70	1,12	0,64
17	United N Textile Plc.	0,054	1,119	10,683	1,039	-20,14	1,48	-1,50	-10,71	1,50	1,23
18	Tripple Company Plc.	0,083	1,504	12,290	1,441	259,89	22,13	-4,50	9,72	2,00	1,77
19	Enamel Plc.	0,873	2,000	4,651	0,381	91,43	35,34	1,99	1,76	0,87	0,65
20	First Aluminium Plc.	0,878	1,753	2,335	0	89,53	2,48	1,90	24,41	0,88	0,69
21	W.Aluminium Products Ltd.	0,781	2,225	2,431	0	88,26	2,22	2,38	25,57	0,87	0,73
22	Smart Product Ltd.	0,672	0,873	1,901	0,795	64,77	3,39	6,90	17,99	5,92	4,83
23	First G. Aluminium	1,225	0,878	1,693	0,732	58,43	2,19	9,90	17,35	0,64	0,34
24	Interlink Technology	0,782	0,872	91,900	0,982	-791,39	-4,61	19,10	104,17	0,46	0,30
25	Hallmark Products	1,211	5,922	26,509	0,892	-60,74	0,39	17,30	-11,38	1,77	1,40
26	Wires and Cables	0,753	0,637	177,574	0,534	-2,98	-10,80	26,10	0,39	2,01	2,05
27	Academy Press Plc.	0,992	0,456	1206,618	4,386	-60,55	-27,83	20,00	2,18	1,58	1,37
28	Longman Plc.	1,021	1,216	33,468	0	-526,50	-34,18	17,10	15,36	2,40	1,70
29	Vono Products Plc.	1,771	1,578	33,631	0,059	9,09	2,43	2,71	1,04	1,52	2,57
30	Leather Bags & Footwear	1,916	2,141	17,526	0,721	9,09	2,43	2,71	1,04	1,52	2,57
31	Lennards Nigeria Plc.	2,007	2,396	31,819	0,045	4,29	2,63	2,94	1,11	1,33	2,07

Trend Analysis of Capital Structure of Firms in Nigeria

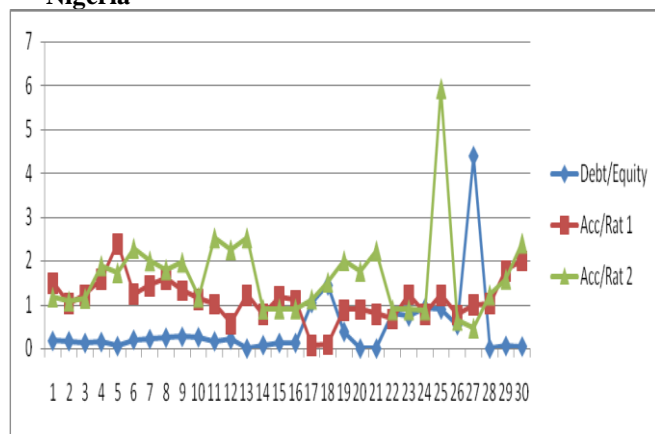


Figure1: Financial Leverage, Long-Term Liabilities to Long-Term Loans and Current Ratio

Share-to-Fund Ratio

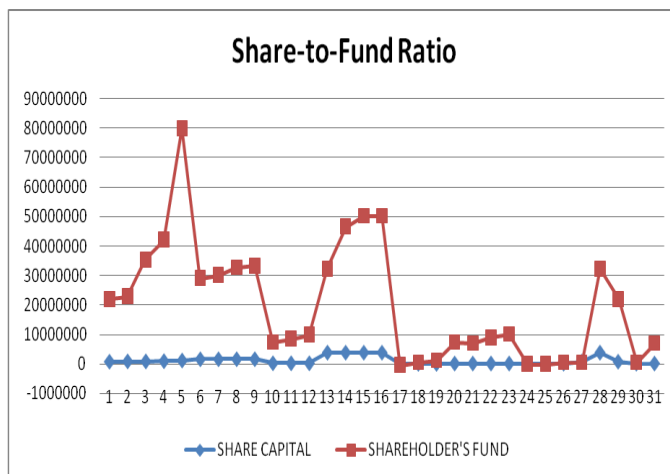


Figure 2: Financial Ratio Proxy for Firms' Size

Estimations of Dynamic and Static Panel Analyses

According to the dominant paradigm of corporate financial, capital structure choice is a compromise between costs and benefits of debt involved. Short-run panel data were analyzed for major evaluation of linear panel data. The result obtained shows that the growth opportunities of the company (abbreviated gop), rather than capital structure (deb), is the main factor of importance for the efficiency of corporate companies in Nigeria, while the long-run situation revealed that capital structure and the value of total assets (totasset) are factors of importance for corporate effectiveness in Nigeria.

It is instructive to note that this article examines the similarities and differences between short-run and long-run empirical situation and found that there is significant difference between the two situations: the situation in the short-run is that the ratio of debt / equity value of total assets and corporate companies are insignificantly negative factors, while in the long situation - on the contrary. In addition, if the proportion of tangible assets (short atan) and size (fsiz) had a negative impact in the short-run assessment of the situation, the effect of long-run situation is positive.

Also changed to the opposite (from positive to negative) impact of market capitalization (abbreviated mcap). Table 4 shows the results of the evaluation of dynamic and static panel data.

Growth opportunities of enterprises (gop), caused an increase in turnover and is important for the efficient utilization of assets only in the short-run with a coefficient 0.0004 at T-statistic values of 2.64. The analysis of the short-run dynamics and long-run nexus confirms the static-trade off theory; that large companies are more likely to preserve high rates than medium-sized companies with the same coefficient of leverage. The results contradict the pecking-order hypothesis. Using the estimates presented in Table. 5, it can be concluded that the short and long term situation of capital structure have diametrically different impacts the effectiveness of firms in Nigeria. In addition, if the coefficients of tangible assets (atan) and size (fsiz) negatively impacted on firms' effectiveness in the short-run situation, the effect of long-term situation is positive. Also, the impact of market capitalization alternates; changed to the opposite (from positive to negative).

Table 4: Evaluation of Dynamic and Static panel data

Dynamic Panel Estimations (Short-Run Dynamics)									Static Panel Estimations (Long-Run Nexus)					
Differenced Dynamic Estimates			Systemic Dynamic Estimates			Linear Dynamic Estimates			Fixed-Effect			Random-Effect		
Var.	Coeff.	Prob.	Var.	Coeff.	Prob.	Var.	Coeff.	Prob.	Var.	Coeff.	Prob.	Var.	Coeff.	Prob.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Roa_1	0,0765694	0,603	Roa_1	0,31807	0,006	Roa_1	-	-	Roa_1	-	-	Roa_1	-	-
Atan	-0,034247	0,143	Atan	-0,04021	0,109	Atan	-0,051266	0,190	Atan	0,092475	0,458	Atan	0,043629	0,503
Deb	-0,0001156	0,547	Deb	-0,00007	0,712	Deb	-0,000088	0,662	Deb	-0,000124	0,066	Deb	-0,00013	0,005
Fsiz	-0,0645714	0,245	Fsiz	0,004482	0,925	Fsiz	-0,125864	0,152	Fsiz	0,0294273	0,741	Fsiz	0,066383	0,167
Gop	0,000544	0,016	Gop	0,000253	0,140	Gop	0,0009872	0,019	Gop	0,0005617	0,012	Gop	0,000057	0,514
Infr	0,0011987	0,660	Infr	0,000897	0,762	Infr	0,0012815	0,728	Infr	0,0032982	0,294	Infr	0,003628	0,114
Intr	0,0129284	0,029	Intr	0,007355	0,204	Intr	0,0102976	0,150	Intr	0,0064046	0,490	Intr	0,006287	0,446
Mcap	-9,59e-06	0,739	Mcap	-0,00005	0,083	Mcap	0,0000141	0,715	Mcap	9,64e-06	0,699	Mcap	-0,00001	0,352
Totasset	-5,99e-10	0,178	Totasset	-4,36e-10	0,356	Totasset	-5,33e-10	0,452	Totasset	-1,16e-09	0,004	Totasset	-7,96e-10	0,001
_cons	0,504734	0,169	_cons	0,069477	0,823	_cons	0,9544392	0,087	_cons	-0,17226	0,768	_cons	-0,35844	0,252

Source: Calculated by the author in STATA 11.

Table 5: signs and significance of short and long-run situations

Signs and Significance of Short and Long-Run Situations					
Short-Run Signs and Significance			Long-Run Signs and Significance		
VAR.	Signs	Significance	Var.	Signs	Significance
ATAN	- ve	Not Signif.	Atan	+ve	Not Signif.
DEB	- ve	Not Signif.	Deb	-ve	Significance
FSIZ	-ve	Not Signif.	Fsiz	+ve	Not Signif
GOP	+ve	Significant	Gop	+ve	Not Signif
INFR	+ve	Not Signif.	Infr	+ve	Not Signif
INTR	+ve	Not Signif.	Intr	+ve	Not Signif
MCAP	+ve	Not Signif.	Mcap	-ve	Not Signif
TOTASSET	-ve	Not Signif.	Totasset	-ve	Significance
_cons	+ve	Not Signif.	_cons	-ve	Not Signif.

Source: STATA 11 Outputs. Note: Linear Dynamic Estimates is for Short-run Analysis while the Random-Effect depicts the Long-Run Situation

CONCLUSION AND RECOMMENDATION

The calculations of financial ratios employed to relate financial capital structure of firms to their efficiency show that approximately 60% of manufacturing companies are lowly geared, that is, these businesses will feel less risk exposures. On the other hand, less than half of the manufacturing firms analyzed are unable to finance their short-term financial obligations. This suggests that the management of companies in the manufacturing sector of Nigeria has made considerable progress in the use of resources that are available to shareholders. Several companies have greater turnover coefficient for return on assets, indicating a low return on sales, but most companies reverse.

We undertake the panel models for long-run and short-run situations for the empirical estimations. As a summary, for the measure of efficiency, we used return on assets (ROA); calculated as the ratio of gross profit to total assets. The independent variables include both firm-specific variables (such as the total assets, growth opportunities, firm size, shares of tangible assets in their total value) and macroeconomic variables such as the interest rate, inflation and market capitalization. The choice of independent variables is informed by the theoretical framework employed for the study. The short-run panel data were analyzed for basic linear panel data estimates. It was found that the growth opportunities of the firms (proxied as GOP), rather than capital structure (DEB), is the main factor of importance for the corporate enterprise's efficiency, while the situation in the long-run situation show that the financial structure and the value of total assets

(Totasset) are factors of importance for corporate effectiveness in Nigeria. Besides, if the proportion of tangible assets (proxied as ATAN) and size (proxied as Fsiz) had a negative impact in the evaluation of short-term situation, the effect of the long situation is positive. Also, the opposite (from positive to negative) impact of market capitalization (proxied as MCAP) on corporate effectiveness was found.

The results for the short and long run situations proves the inaccuracy of the static trade-off theory of capital structure which presupposes that large companies are more likely to preserve the high rates than medium-sized companies with the same level of leverage ratio. This is evident in the computed financial ratios analysed. The results contradict the hypothesis that the proportion of tangible assets of the enterprise is a factor for the effectiveness of firms. The survey also revealed a nonlinear relationship between the effectiveness of corporate firms (indicated as ROA) and capital structure (indicated as the ratio of debt and equity). The results obtained enabled us draw conclusion that the analysis of capital structure on effectiveness of business enterprises are of importance for national sustainable development and management of resources and responsibilities for dealing with all financial and humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to wage war against likely form of disasters.

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MANDATORY INTERNATIONAL FINANCIAL REPORTING STANDARD ADOPTION AND FOREIGN DIRECT INVESTMENT

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ABSTRACT

This study examined the mandatory International Financial Reporting Standard Adoption in Nigeria and its effect on Foreign Direct Investment in Portfolio. Data were mainly gathered from various issues of quarterly publications of the Central Bank of Nigeria Statistical Bulletins. Analysis of data was done through the use of descriptive statistics and pair t-test analysis. Findings show that there was an initial increase in Foreign Direct Investment into the country in the year of adoption and a year after. But a decline occurred in 2014 and 2015 which can be referred to as post adoption period. It is recommended that the government should be more transparent and maintenance of security of life and property should be prioritized.

KEYWORDS: Harmonization, Convergence, Foreign Direct Investment, IFRS.

INTRODUCTION

The International Financial Reporting Standards (IFRS) is a form of accounting pronouncements that is published by the IASB to assists in the financial report preparations, all over the world there is a desire to have a financial information that is transparent, comparable, uniform and of a high quality (IASB,2001)the harmonization of various accounting principles and the changes that brought IFRS development had been a subject of discussion among scholars all around the world, both develop and developing countries are undergoing transition to a unify system of accounting reporting.Accounting standards (GAAP systems) had made attempts to reduce information asymmetry bycontrolling financial reporting through legislations. The financial reporting system is described as mechanism that is designed to reduce information asymmetries between market practitioners (Gassen&Sellhorn, 2006.) The International Accounting Standard Board (IASB) aims to have one set of accounting standard that is understandable, that is of high quality and an accounting standard that encourage transparency when preparing financial statement. IASB (2010) wishes to design accounting standard that meet the fundamental theory of accounting reporting that measures economic activity in and outside the stock exchange market.

The adoption of the International Financial Reporting Standard (IFRS) had been proven through various researches to enhance accounting information quality few nations, thereby making financial statements to be more useful to the users of financial records.Many

nations of the world possess their domestic accounting standards that are developed, regulated and issued by their respective local standard setting bodies before the campaign for global convergence to International Financial Reporting Standards (IFRS).The Nigerian Accounting Standards Board (NASB) developed, issues and regulate accounting standards since 1982 in Nigeria till July 20th, 2011 when the Financial Reporting Council Bill was signed into law. Globalization and internationalization of the stock market had made IFRS to be popular, IFRS had become a world standard that was set and based on principles of accounting standards developed and issued by the International Accounting Standards Board (IASB) to assist in public company financial statements preparation. Every countries of the world are required to adopt IFRS in preparation of accounting financial statement, as at December, 2013, about 150 countries are reported to have adopted IFRS (Umoren&Enang, 2015).

The motivation for this study come from the various benefits that were attributed to the adoption of IFRS by countries that among other benefits that after the adoption of IFRS Nigeria will enjoy inflows of Foreign Direct Investment into the country, since there will be uniformity and comparability in the financial statement prepared in the country. This implies that foreign investor shall be able to assess and examine the financial records where interpretations shall no longer cause any hindrance to investment decisions.

The motivation for the study lead to the objectives of study which intend to examined whether the after the mandatory adoption of IFRS in Nigeria there have been an increase in the inflow of foreign direct investment into the country compare to the period when the country was using the Nigeria Generally Accepted Accounting Principle (NGAAP)

The Need for IFRS Mandatory Adoption by Nigeria

Umoren and Enang, (2015) stated that main reason for adopting a single set of standard is to help countries to have an internally consistent accounting standard with high quality and meet global standard. Therefore need for a global harmonization of accounting standard or for an international standard setter that will meet the following criterial;

- (i) To examines the increasing desire to have international accounting standards.
- (ii) To ensure that no single standards setter possess the best solutions to accounting challenges.
- (iii) To make sure that there is no single domestic standard setter should have the only power to provide the best answer to accounting challenges and issues.
- (iv) To make it known that there are lot of financial reporting areas wherelocal accounting standards setter finds difficult to decide on their own.

The process of adoption or convergence received a significant attention in 2002 when the European Union adopted a regulation 1606/2002 requiring all public companies in the territory to convert to IFRSs beginning in 2005 (Iyohaand Faboyede, 2011). African countries including Nigeria, Ghana, Sierra Leone, South Africa, Kenya, Zimbabwe and Tunisia among others have likewise adopted or made their intentions to adopt the standards know. Nigeria adopted IFRS in September, 2010. TheHonourable Minister, Federal Ministry of Commerce and Industry, Senator Jubriel Martins-Kuye (OFR) announced the adoption according to Madawaki, 2012. The adoption was made to begin with Public Listed Companies in 2012 and by 31st December, 2014 all other stakeholders would have converged. Meanwhile banks in Nigeria have fully adopted IFRS as shown in their financial statement (Abata, 2015). Uniform accounting standard was refer as a welcome ideal for developing economies most importantly to nations that had no resources to create their own standards (Okpala, 2012).

Conceptual Framework

Obazee (2007) suggested that convergence could be either through adoption or when there is a complete change from a nation's accounting standards to IFRS or

by adaptation or by modifying the IASB's standards to meet the requirements of its country's market and business without either compromising the accounting guidelines or the necessary requirements that need to be disclosed in respect to IFRS's standards. Convergence wishes to bring standards such as the US GAAP and IASB's standards closer so as to harmonies them in order to produce an identical standard that will have two types of approaches to IFRS adoption around the globe: convergence and endorsement approaches, SEC (2010) classed those that do not change to IFRS as issued by the IASB as nations that converge to IFRS as following the convergence approach.

Alajekwu&Achugbu, (2012) worked on the role of stock market development on economic growth in Nigeria, the study carried out a 15-year time series analysis from 1994-2008. The research method adopted use stock market capitalization ratio as a proxy market size while value traded ratio and turnover ratio were used as proxy market for liquidity. The findings revealed that market capitalization and value traded ratios have a very low negative relationship with economic growth while stock market capitalization has a high positive relationship with stock turnover ratio. The result implies that liquidity has a tendency to achieve economic growth in Nigeria and the market capitalizations have effects on market liquidity. It was recommended that government should make laws that will enhance the interest of local investors in Nigeria as this might improve positively investors' interest and improve stock exchange market trading. Earlier,

Ibiameke&Abanyan (2010) carries out a research on the usefulness of financial statements to investors in Nigeria, they recommended that the Nigeria Security and Exchange Commission (SEC) should mandate all quoted companies in the country to adopt IFRS in the preparation their financial statements.

Hypothesis Development

The study carried out by Ibiameke&Abayan, (2010) test whether financial statements are useful to investors in Nigeria and whether the adoption of International Financial Reporting Standards (IFRS) has any impact on the value relevance of financial statements in Nigeria. The study used an innovative research design known as "same year-firm" design. Same year firm design is a research design that varies GAAP in the sample composition while the sampled firms and period remains the same. The study comprises two models and the sample of 35 Nigerian quoted companies. The first model contains two important accounting measures namely book value per share and earnings per share to test whether they are reflected in equity prices. The second model extends the first by including adjustments

of book value and earnings to IFRS to see whether such adjustments convey any new information to investors. The study found that the adoption of IFRS has resulted to a significant increase in financial statement value relevance.

In recent time business has become globalized and this has made significance impact on national identity of a country. In Okafor & Ogiendu (2011) it was predicted that the adoption of IFRS will improve foreign direct investment when there is improvement on uniformity and comparability among firms in Nigeria. Existing academic literature stated that improved comparability will likewise encourage across the border listing investments; previous studies further reveal that investors are reluctant to make cross-border investments because of the high costs of acquiring and processing information about foreign companies (Kang & Stulz 1997; Bradshaw, Bushee & Miller 2004; Chan, Covrig, & L. Ng. 2005; Covrig, DeFond, & Hung. 2007). Therefore this led to the first hypothesis which states that;

H₁; There was a significant increase in FDI in Nigeria immediately after the mandatory adoption of IFRS.

Researchers such as Zeghal & Mhedhbi, (2006); Hassan, Romilly, Giorgioni, & Power, (2009); Gyasi, (2010) argued that international accounting convergence assist developing economies to have a financial statement that is well prepared and with good accounting quality framework and principles Cerne (2009) argued that the accounting information that are prepared in relation to developed nation's accounting systems are irrelevant to the decision models of developing nations. He explained that the final decision to converge to IFRS by developing nations should depend on whether there are motivating factors or demotivating factors in these countries.

Irvine and Lucas (2006) stated substantial benefits that had been proposed by the convergence of IFRS, which include increase in capital movements, reduction in cost of capital, more efficient resource allocation, increase in comparability of financial statements and decrease in earnings managements. In Armstrong, Bath, Jagolzer & Reild (2007) they found out in their study that investors desires benefits after IFRS adoption in Europe, such benefits like improvement in information quality of financial statements and reduction in information asymmetry.

Though, IFRS became effective in 2001 in European countries it was aimed at the provision of a uniform high quality and globally acceptable accounting standards that is enjoyed by develop and developing countries so

as to enhance comparability of accounting report by its users and encourage total confidence in the report, as well as assist businesses that wish to enter the stock market where full application of IFRS is required. (Armstrong et al ,2007, IASB 2009, Iyoha & Faboyede, 2011, Iyoha & Jafaru, 2011, Ikpefan & Akande, 2012, Kargin, 2013, Odia & Ogiendu, 2013, Okoye, Okoye & Ezeji for, 2014, Umoren & Enang, 2015).

In Asein (2010) Nigeria was reported to have an estimated population of 214 451 .541 million, this imply that the country happened to be the largest African market for goods and services. The estimated Gross Domestic Product (GDP) amounted to US\$214.4 billion in 2008. While 864,902 companies were registered with the Corporate Affairs Commission, 26 are licensed commercial banks, 49 insurance companies and 2 are reinsurance companies. The Nigeria stock exchange has 216 listed companies with a market capitalization of N5.4 trillion about US\$35 billion as at January 13, 2010.

Nigeria has been perceive to be a risky country, Obazee (2010) observed that the decrease in inflow of cross-border Investments in Nigeria are attributed to poor and limited reporting system of businesses in the country in terms of disclosure level of financial statements. Since this firms find it difficult to provide investors with required and sufficient economic information which can assists in understanding the risk and economic profile of the entity in to make decisions and economic judgements.

Though as mentioned earlier business has become more global and this has a significant part on financial national identity. Though Nigeria is part of this globalization, Nigeria companies have raised capital from international stock markets, likewise there lot of Non-Nigerian issuers. Better information is also required to enhance comparability among countries, in competition for foreign investments (Ovute & Eyisi, 2014). The second Hypothesis;

H₂; there was a consistent increase in Foreign Direct Investments in Nigeria after the Mandatory Adoption of IFRS

The expectation of this study is to examine the impact which the mandatory IFRS adoption by the country whether it Led to improve Foreign Direct Investment as it has being predicted and evidenced in other countries.

Iyoha, (2011) emphasized that comparability facilitates investors' resource allocation decisions and improves investor confidence. Comparability is not a characteristic of a particular item of information, but

rather a characteristic of the relation between two or more items of information. In the context of mandatory regulations in Nigeria, this means that comparability is not an inherent characteristic of regulations, but rather a potential outcome of the adoption of a common set of accounting standards and rules across firms in Nigeria.

Foreign Direct Investment was defined by Kumar, (2007) as the creation of a long term relationship with enterprises in foreign countries; it is the foreign direct inflows of investments in portfolio into the economy. Okpala, (2012) stated various advantages of FDI in an economy such as; Domestic export opportunities, Technology transfer, provisions of long-term relationship with enterprises in foreign countries

Benefits of Foreign Direct Investment (FDI) to an Economy

FDI can help developing economies by providing the capital to start business so that they can grow and contribute to a company's GDP. When businesses are given chances to develop this can create jobs which should in turn increase consumption and then lead to economic growth. Since the benefits of FDI generally outweigh the negatives, but that does not mean disadvantages do exist.

As mentioned in Okpala (2012) foreign investments will bring their technical knowledge and understanding of a particular market to the business that they are investing in. most of the time foreign investments, have accumulated wealth from successful ventures in the fields they invest in so their enterprise can bring a fresh perspective to the target market benefit derive by.

Apart from the countries that enjoy foreign direct investment, the investors also have benefits that they derived, such as economic of scale that can be gained directly while investing in another country. These include the potential for using local goods and services to reduce transport costs, a local workforce that understands the nuances of the domestic market and using favourable domestic conditions to produce output for other countries. Therefore, making businesses to be more competitive, production of superior goods and services at cheaper prices, for example Telecommunication services in Nigeria.

Downslides to Foreign Direct Investments (FDI)

1. In Nigeria governments were criticized for making policies that suit foreign direct investments investors generally, than they suit the needs of domestic investors and the public. The government of the former President Olusegun Obasanjo was criticized for allowing the telecommunication corporations to have excessive profit.

2. Foreign Direct Investors most of the time has greater spending power than the average domestic investors. This can make the domestic investors to be price out of the market.

3. Foreign Direct Investors were also criticized that they are merely a tool that is use to enter a foreign market to avoid protectionist trade policies that are used against importers for example Dangote Cement in Cameroun.

Theoretical Framework

Value relevance is described as the ability of a financial statement to gather and summarized necessary information needed to be disclosed in relation to enterprises worth (Tharmila and Nimalathan, 2013).The information provided by financial statements along with capital market returns is used as a measuring tool through their statistical relationship to measure value relevance. The main objective of financial statements is to make available relevant information about an organization in order to assist investors and other users to make better decisions (Germon and Meek, 2001). Prediction of future actions is based on amount of knowledge gathered by users of financial statement, which aid their decision capacity.

Also the signaling theory provide the sign given by an high quality financial statement through the information provided to an investor, for example two firms wishes to borrow from a bank, one firm was able to provide a better collateral compare to the other firm this implies that the firm with the collateral has sent a signal to the bank that it is less risky. Allen &Faulhaber (1989) through an empirical evidence developed a model which is consistent with the observation that made the assumption that firm with most favourable prospects find it optimal to signal their issue of shares and investors know that only the best can recoup the cost of this signal from subsequent issues. In Grinblatt& Hwang (1989) and Welch (1989) as cited in Allen &Faulhaber (1989) stated that underpricing is a signal that a firm is good.

Research Method

This study used mainly secondary source of data, where data are sourced through Published financial reports of Central Bank of Nigeria quarterly bulletin. This is a quantitative research because of the use of statistical analysis since variables have been mathematically measured. Under this research design data relating to the variables are collected at about the same time to basically describe the relationship between the variables under study. The research is to examine whether there have been any evidence of foreign investment attraction into the country after IFRS adoption.This study adopted the use of observation and review of performance;

through publish reports from regulating institution like the Central Bank of Nigeria (CBN) quarterly statistical bulletins

This research involves analyzing information from statistical reports while pair-t test was used to test the relationship between the pre and post adoption values of the independent variables. The pair t-test analysis was used to analyze the pre and post adoption period of FDI inflows into the country.

Model Specification

$$Y = \beta_0 + \beta_1 X_1 + \epsilon \tag{1}$$

Equation 1 can be defined as;

$$IFRSMDA = \beta_0 + \beta_1 PEFMDI + \beta_2 POMFDI \tag{2}$$

Where;

IFRSMDA =International Financial Reporting Standard Mandatory Adoption

PEFMDI = Pre Mandatory Adoption Value of Foreign Direct Investment was measured using value publish in the different issues of CBN statistical bulletin on foreign direct investment in portfolio between 2010 and 2011.

POMFDI = Post Mandatory adoption value of Foreign Direct Investment was measured using value publish in the different issues of CBN statistical bulletin on foreign direct investment in portfolio between 2013 and 2015.

β = Coefficient of parameters

ϵ = error term

$(t-1)$ = time coefficient.

FINDINGS

The Central Bank of Nigeria was the main source of data used to achieve the objectives of this study. The information was interpreted using pair t-test for analysis of data. The findings in this work agree with the study carried out in Okpala, (2012) that there was no significant relationship between IFRS adoption and FDI in Nigeria, the finding shows that there was an increase in foreign direct investment in portfolio immediately the country adopts IFRS that is in 2012, though the difference were not significant this agrees with prediction made in Okafor &Ogiedu, (2011)

Table1 Foreign Direct Investment in Portfolio between 2010 and 2015

S/N	YEARS	FDI #'billion
1	2008	157.16
2	2009	70.14
3	2010	556.59
4	2011	792.36
5	2012	2647.62
6	2013	3,059.47
7	2014	793.94
8	2015	208

Table 1 shows the value of foreign direct investment in portfolio from year 2008 to 2015 in billions of Naira. While the highest value for FDI was recorded in 2012 and 2013 respectively.

Though a drastic inflow was witness immediately the country adopt IFRS in 2012 and the increase was sustain till 2013, until 2014 when there was a decline. These findings in 2012 and 2013 agree with the findings made in (Mark et al, 2010; Okafor &Ogiendu, 2011; Okpala, 2012; Odia and Ogiendu, 2012, Abata, 2015) that having a uniform standard in the preparation of financial statement will improve cross-border investment. But 2014 witness a serious decline in FDI in portfolio which might be as a result of the country' peculiarity as mentioned in Okpala, (2012).

Figure1

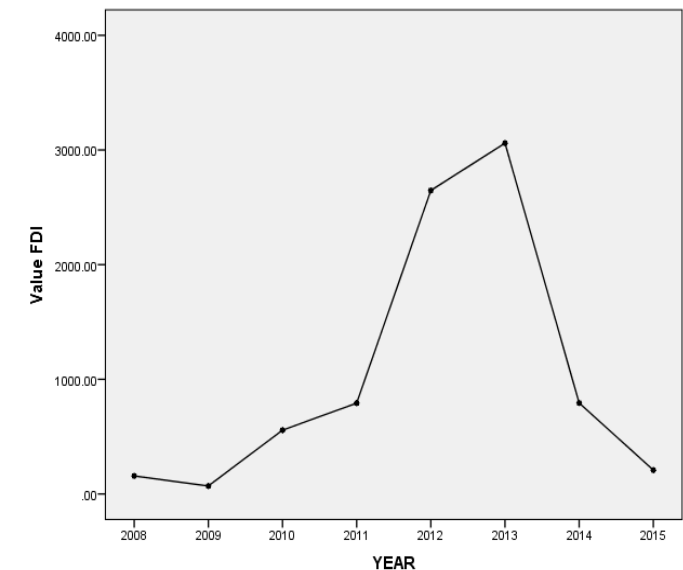
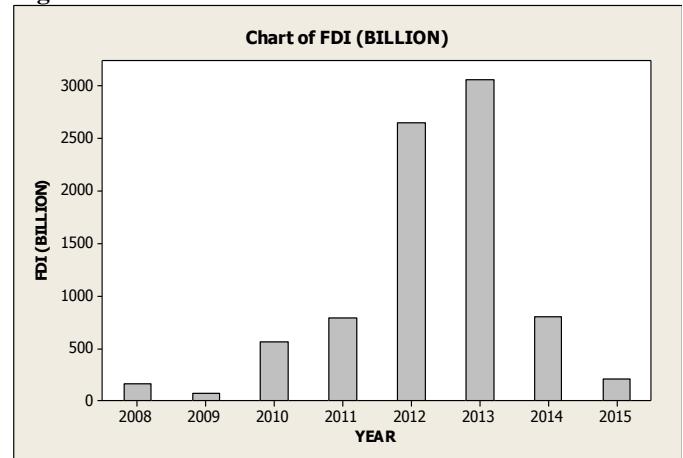


Figure 2 aboveshow the movement of FDI from 2008-2015, there was an increase in 2012 and 2013 but this increase could not be sustained in 2014 and 2015.

Table2 Paired Sample Statistics
FDI Analysis
T-Test

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	473296666666.6667	3	367851924873.76404	212379407847.78964
	Post	1269005706666.6667	3	1298467491055.10470	749670555494.64270

The table above shows the mean and standard deviation with the standard errors of mean for pre and post adoption period for Foreign Direct Investments from 2010-2015, where 2010-2011 were pre adoption periods, and 2013-2015 were the post adoption periods.

Table 3; Paired Samples Correlation and Paired Samples Test

Paired Samples Correlations			
	N	Correlation	Sig.
Pair 1 pre & post	3	-.992	.080

There is a negative correlation (-.992) between the pre and post adoption period as shown in table 4.3.6 and a significant level of .080.

Table 4

Paired Samples Test

	Paired Differences				T	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 pre - post	-795709040000.00000	1664079622540.94210	960756818026.98380	-3338093905709.209 4929511985709.21000	50	-.828	2	.495

This table 3 shows that there is a very strong negative relationship ($R = -0.992$) between the pre and post adoption in FDI. This simply means that as the FDI decreased during post adoption period, it increased during pre-adoption period.

Table 4 above indicates that the t-value is -0.828 with degree of freedom of 2 and significant value is 0.495. We then conclude that the test is not significant, that is there is no significant difference in FDI in post and pre adoption period. However, looking at the mean for the pre-period and post period, it shows that the FDI is high in post-period compared with pre-period but not significant.

CONCLUSION

This finding contributed to knowledge in respect of FDI inflows into the country because the sustenance of FDI is relevant since it is very easy for the investors to withdraw their investment any time therefore after the adoption of IFRS and subsequent inflow of FDIs, sustenance of tempo is important so as not to witness a decline as evidence in 2014 and 2015 due to the uncertainty of the political atmosphere in the country.

Policy Implication of Findings

1. It was evidence that there was significance increase in foreign direct investment in portfolio after the mandatory adoption in January, 2012.
2. There was a higher increase in foreign direct investment in portfolio between 2013- 2015 which was the post adoption period.

Meanwhile the increased in foreign direct investment is not dependent on the adoption of IFRS only in Nigeria because after the increase in 2012 and 2013, 2014 and 2015 witnessed a decline in FDI, if this should persists to the end of 2015, that means the country is following the law of diminishing return on FDI, since foreign direct investments also depends on other non- financial implications such as transparency in governance, accountability, security of life and properties. Okpala, (2012) attributes decline in flow of foreign investments to political unrest in certain section of the country in 2010.

Policy Recommendation

1. It is recommended that to have Foreign Direct Investment, there should be an enabling environment free of insecurity and uncertainty.
2. The government should make economic laws that will attract foreign investors into the country. Government should be transparent, accountable and exhibit body language that give room for global world practices in financial regulations.
3. The theory of value relevance of financial statement should be employ; there should be full disclosure of financial report concerning businesses in the country.

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A COMPARATIVE ANALYSIS OF MANAGERIAL BEHAVIOUR IN THE PUBLIC AND PRIVATE SECTORS IN NIGERIA

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ABSTRACT

Managerial ethical behaviour in the public and private sectors need to take cognisance of possible value conflicts and ethical differences with respect to specific norms, attitudes and cultural expectations. This study is a comparative analysis of managerial behaviour in the public and private sectors in Nigeria. The objective is to determine how managers in either public or private organisations are encouraging honesty and openness among workers in their organisations. Four public and four private sector organisations are selected using stratified random sampling. A sample size of 350 was used for the analysis. The collected data for the study was analysed using Pearson Correlation Coefficient. The study concludes that encouraging openness and honesty by managers' will reduce unethical practices in either the public or private organisations in Nigeria. The study recommends that effective corporate governance mechanism and control system should be enshrined in the operations of the public and private sector organisations, which will help foster the efficient running of the corporations or enterprises.

KEYWORDS: Managerial Behaviour, Values, Ethics, Honesty, Public Sector, Private Sector, Nigeria.

INTRODUCTION

There have been research attention on values that regulate managerial behaviour in literature, with arguments abounding that the values of public and private sector organisations should be different in line with their mandates (Van der Wal, De Graaf & Lasthuizen, 2008). Some research efforts have compared managerial behaviour, values and strategies within a particular sector in a country while other studies looked at comparative analysis between two different countries, along cultural perspectives.

Van der Wal, De Graaf and Lasthuizen (2008) carried out a comparative analysis of organisational values between the public and private sectors in Netherland, to ascertain similarities and differences, with a survey of 382 managers. The study showed two distinct values systems and a uniformity in organisational qualities of accountability, expertise, effectiveness, efficiency and expertise. Altinas (2008) carried out a comparative analysis of Turkish and German managers personal values with the small and medium scale sector and found no difference between the two sets of managers in terms of universal values but there found differences in vital values within their operations that impacts on the style of leadership and decision making in the two countries.

Jeronimo and Medeiros (2012) comparatively analysed the management practices and

behaviour of small and medium information technology enterprises in Brazil using a qualitative multiple case study of 13 firms based on Mintzberg 5P's of information technology, which are plan, position, pattern, perspective and play/ploy and found different ways of strategic thinking in the organisations that lead to strategic innovation, new ideas and skills of managers.

Behaviour is the particular way a subject or an individual does a thing in a particular way (Asika, 2006). Ethical behaviour therefore, "is acting in ways that are consistent with one's personal values and commonly held values of the organisation and society" (Naran, 1992, Pg.11). Managerial ethical behaviour in the public and private sectors needs to take cognisance of possible value conflicts and ethical differences with respect to specific norms, attitudes and cultural expectations. Perhaps, nowhere does value conflict play out more dramatically than in the workplace where rights and needs of various stakeholders must be continuously negotiated and harmonized (Uche, 2012). This view is further supported by Kuye, Uche and Akaighe (2014) that individual unethical behaviours have been transferred to organisational context because individuals come together to form an organisation.

Organisations in the private sector are more oriented towards the bottom-line approach and recently, public

sector organisations are developing such methodologies through commercialization and such other strategies, all of which have the tendencies to promote unethical actions as organisations drive for more profitability (Korac-Kakabadse, Kouzmin, Knyght&Korac-Kakabadse, 2000; Wiley, 1995). The “bottom-line mentality” provides for financial success as the major value and this drive for financial profitability can cause serious challenges for the organisation in the long run. For the public organisations, the conflict of minister-civil servant relationship and parliament civil-servant relationship, leading to the political bottom-line mentality still largely persists (Korac-Kakabadse, Korac-Kakabadse&Kouzmin, 2003; Wolfe, 1991).

Public servants are expected to behave in the public interest as servants of the government, the people and the law. They are also expected to be politically neutral, protecting the interests of the public, guard confidential information, be effective and efficient in their duties, be accountable and avoid conflict of interest in their parastatals (Kernaghan& Langford, 1990). Also, private sector organisation should not be different, as more is expected from private sector managers who source for their own capital and resources and engage in business activities for the maximization of profit and shareholders wealth. The issue therefore is to what extent do profit mentality affects the managers’ willingness and ability to factor in ethical values and behaviours in the public and private sector organisations; encouraging openness and honesty by the top management staff, to reduce or eliminate unethical practices in the organisation. This is under investigation, in the wake of commercialization and privatization of state owned enterprises to become competitive; increasing efficiency and the financial bottom line of the enterprises. Also, considering the fact that sustainable development and disaster management is highly desired in this 21st century by organisation both in the public and private sector from the human resource and organisational behaviour standpoint, it behooves on managers to inculcate values of honesty, fairness, integrity, and corporate governance throughout the line and staff in the effective and efficient management of organisations, to deliver better services to the populace and bring the desired sustainable economic development that the country yearns for.

Several authors have considered organisational core values for the public sector (Schmidt & Posner, 1986; Kernaghan, 1994, 2003; Goss, 2003; Vrangbaek, 2006; Beck, 2006; Beck & Bozeman, 2007) while other authors have examined value related research for employees in the private sector (Agle& Caldwell, 1999; Posner & Schmidt, 1984, 1993; Hemingway & Maclagan, 2004; Watson, Papamarcos, Teague& Bean,

2004). However, empirical comparative research that offers a side by side analysis of how managers are encouraging honesty and openness amongst workers in the public and private organisations in Nigeria has not received much research attention. Therefore, this study fills the gap in literature and evaluates managerial behaviour of public and private organisations on a comparative analytical basis.

Objective of the Study

To determine how managers in either public or private organisations are encouraging honesty and openness among workers in their organisations.

Significance of the Study

The study is significant to many stakeholders relating to the public and private sectors of developing countries and the Nigerian economy in particular, as the country seeks to build capacity in leadership and ensure a vibrant working economy, through healthy collaborations between the public and private sectors and ensure sustainable development. The behaviour and values disposition of managers in both sectors is germane to upholding honesty and integrity and building strong institutions. The recommendations of the study if implemented will help managers in the public and private sectors to encourage honesty, good values and openness in management thereby stimulating good governance.

LITERATURE REVIEW

Public and private sector managers mostly agree that management, learning and development competencies comprises of “the skills and abilities practiced in daily actions, knowledge, expertise and experience in making the decisions and the personal qualities, attitudes and values they espouse” (Demeter & Tapardel, 2013, 162). The combination of these three elements makes up the behaviours of a manager, with the argument that there really isn’t much difference between a manager in the public sector and the private sector. Besides the fundamental elements that makes a manager in either the public or private sector, the public manager has a political role. The public sector manager “represents the whole society, to whom the public services are provided. The public managers are mostly political figures, elected or appointed for a determined period of time. This is the leadership definition for the public managers” (Demeter & Tapardel, 2013, Pg. 163), while the private managers are responsible to the board of directors and owners/shareholders.

Theoretical Framework: Leader-Member Exchange (LMX) Theory

Leader-Member Exchange (LMX) developed by Dansereau, Graen and Haga (1975) is a managerial

behaviour theory. It explains the relationship between a leader and his/her subordinates (Grean&Uhl-Bien, 1995). Leader-Member Exchange (LMX) theory explains the exchanges that occur between members of a “dyadic” relationship, which leads to the influence a leader makes on his followers. These exchanges have been classified as either those of close relationship that makes the leader have high leader-member exchange or as those of formal relationship with subordinates, that make the leader have low leader-member exchange (Mowbray&Ingley, 2011). The theory explains that leader-member exchange between a manager and the subordinates are relatively long lasting, which influences the performance of the employees under the leader (Mowbray&Ingley, 2011). Steiner (1997) asserted that high leader-Member exchanges have been linked to some organisational outcomes such as reduced employee turnover, increased performance and productivity (Keller & Dansereau, 1995). Conversely, low leader-member exchanges have a negative relationship with the elements above (Mowbray&Ingley, 2011).

LMX theory has been hailed as one of the hallmarks of organisational efficiency and effectiveness (Northouse, 2010). Also, organisations that put LMX theory into practice largely attain their goals (Harris, Wheeler&Kacmar, 2009). The implication of LMX theory to this study is that the behaviour displayed by managers in the workplace, both in public and private sector organisations, in relating with subordinates and performing managerial roles is germane in encouraging openness and honesty in order to reduce unethical behaviours and ensuring effectiveness and efficiency in the running of the enterprises, either public or private organisations.

Public and Private Organisations: A Comparison

An organisation can be defined as “a consciously coordinated social unit, composed of two or more people that functions on a relatively continuous basis to achieve a common goal or set of goals” (Robbins & Judge, 2013, 39). Sekaran (1989) describes an organisation as a purposeful system with several sub-systems where individuals and activities are organized to achieve certain pre-determined goals through division of labour and coordination of activities. Ogundele (2012) posit that an organisation has a relatively identifiable boundary, which helps distinguish members from non-members. The boundary which can change with time may not be perfectly clear. Organisations also have some continuing bonds which may not mean life-long membership, since organisations face constant change in their membership.

Organisations can be differentiated in two generic groups: private enterprise organisations and public sector organisations. Private enterprise organisations are owned and financed by individuals who are partners and/or shareholders in the company and are accountable to their owners or members. They vary widely in nature and size and the type of goods and services they provide. The main aim establishing a private enterprise is for commercial nature such as profit, return on capital employed, market standing or sales level (Mullins, 1999). Public sector organisations on the other hand are established by the government. “They have political purposes and do not distribute profits. Any surplus of revenue over expenditure may be re-allocated by improved services of reduced charges. The main aim is for service and the well-being of the community” (Mullins, 1999). Public sector organisations are usually owned and controlled by the federal or state governments, headed by ministers appointed by the government. The appointment of the ministers is usually political and most of the ministers are posted to organisations where they know little or nothing about (Ogundele, 2012).

Public and private organisations both have similarities and differences in the tasks, activities, contexts, personal demands and rewards of public and private executives’ jobs. Individuals are likely to weigh the relative importance. The similarities and differences are in sharply different ways depending on their personalities, values, cognitive styles and expectations. Thus, comparisons between government and business almost invariably contain significant elements of subjectivity and for this reason are difficult to interpret (Uche, 2012). However, in drawing dichotomies between public and private sector organisations, it is best done by analysis of the organisations’ ownership and purpose; the relationships of the organisation with the environment; the scope and content of executive decisions and the structure of organisational authority (Uche, 2012).

RESEARCH METHODS

Population

The population of this study consists of all managers currently working in the public and private organisations in Nigeria. One epistemological implication of any study of organisation static and dynamics is that the organisation is treated as an ongoing concern (Barbie, 1986; Kerlinger, 1973). This fact is crucial in determining the organisations to be included within the study sample space. The sampling size therefore comprises a list of all ministries and parastatals established by the Federal government of Nigeria and private organisations quoted on the Nigerian Stock Exchange.

Sample

Four public sector organisations have been chosen and consist of two ministry establishments- Federal ministry of Information and Communication and Federal ministry of Finance and two government parastatals- Nigerian Television Authority and Nigeria Ports Authority. Similarly, four private organisations have been considered. These are one banking institution- Union Bank Plc, two manufacturing companies- Cadbury Nigeria Plc and Nestle Nigeria Plc and one telecommunication service organisation- Mobile Telephone Network (MTN) Nigeria. A total of 480 managers are selected which comprises of top management, senior managers, middle and lower managers. The stratified random sampling is considered appropriate for the study because it ensures that the sample is representative and the result of the data analysis on the sample can be generalized to the population (D'cruz & Jones, 2004).

Instrumentation

Data have been generated using copies of the validated survey questionnaire on managerial ethical and unethical behaviours using 5 point scale. The instrument consisted of 35 items which provided data of continuous measures. The standardization of the instrument was achieved with the inputs of experts in the field of managerial ethics, further validated and adapted to the Nigerian environment via the principal components (factor) analysis (PCA). Factor scores obtained in the

analysis involves using the varimax (variance maximization) technique which ensures that the variables loaded high (conventionally set at $r = .70$) on one axis or another. It also ensures that the variables have low cross-loading on all other axis or irrelevant latent factors (in most cases $r < .40$).

Method of Data Analysis

In analyzing the collected data from the field survey, the inferential analysis involving the use of the Pearson Product Moment Correlation coefficient (r) was employed to determine the degree of relationship between identified variables (inter-variable, inter-construct and inter-indicator), with the aid of statistical package for social sciences (SPSS, version 21), thus providing solutions to the research question of the study. 480 questionnaires were distributed to the managers out of which 220 questionnaires were received and adjudged usable for the analysis.

RESULTS

The analysis of bio-data reveals that 58% and 42% of respondents are male and female respectively. Concerning age distribution, 32% are between the ages of 20-29, 30% are between 30-39 years, 22% are between 40-49 years while the remaining 16% are 50 years and above. On marital status, 58% of the respondents are married while 38% are singles while 4% are divorced/ separated.

Table 1: Correlation matrix among variables from selected public sector organisations

Variables	1	2	3	4	5	6	7
ECHST	1						
KLTMC	.384	1					
NTCKE	.013	.533**	1				
DEFRD	-.194	.047	.168	1			
CHKMT	-.086	-.037	-.095	.036	1		
GODFR	.135	-.090	.056	-.149	.042	1	
DECPT	-.085	.157	.216	.292	.146	-.094	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

KEY: *ECHST* = Encouraging Honesty; *KLTMC* = Kleptomaniac attitude; *NTCKE* = Belief in the share of national cake; *DEFRD* = Colluding with top

management to defraud; *CHKMT* = Top management lack of control to checkmate unethical practices; *GODFR* = God fearing management staff; *DECPT* = Some God fearing executives are deceptive

Table 2: Correlation matrix among variables from selected private sector organisations

Variables	1	2	3	4	5	6	7
ECHST	1						
KLTMC	.625**	1					
NTCKE	.497*	.382	1				
DEFRD	.054	-.089	.404*	1			
CHKMT	.372	.261	.215	-.157	1		
GODFR	.200	.117	.299	-.109	.419*	1	
DECPT	-.138	.096	-.283	-.365	.340	.047	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

KEY: *ECHST* = Encouraging Honesty; *KLMTMC* = Kleptomaniac attitude; *NTCKE* = Belief in the share of national cake; *DEFRD* = Colluding with top management to defraud; *CHKMT* = Top management lack of control to checkmate unethical practices; *GODFR* = God fearing management staff; *DECPT* = Some God fearing executives are deceptive.

From tables 1 and 2 above, actions associated with encouraging honesty ECHST correlate positively with only two variables in the public organisation, KLMTMC ($r = .384$) and GODFR ($r = .135$). It however, displays negative correlation coefficient values with other variables. In the private sector organisation, positive values are recorded for the variables, with the highest coming from KLMTMC ($r = .625^{**}$) and NTCKE ($r = .497^{*}$). Between KLMTMC and other variables in the public organisation, there is a high correlation coefficient value with NTCKE ($r = .533^{**}$) while others displays very low values. It however correlates negatively with two other variables CHKMT ($r = -.037$) and GODFR ($r = -.090$). In the private sector organisation, only NTCKE, a moderately high value of ($r = .382$) while others are very low comparatively. NTCKE correlates positively with other variables in the public organisations, the coefficient value comparatively lower than the coefficient values for private organisations. DEFIRD correlates negatively with GODFR ($r = -.149$) and KKTMC ($r = -.090$) in the public organisations while it correlates negatively with only GODFR ($r = -.109$) in the private organisations.

DISCUSSION OF FINDINGS

The study finds out that encouraging openness and honesty by managers will reduce unethical practices in either the public or private organisations in Nigeria. The key variables of measurements in the public and private sectors included kleptomaniac attitude which is the disposition to stealing, belief in the share of national cake, colluding with top management to defraud, top management lack of control to checkmate unethical practices, God-fearing management staff and deceptive executives.

The study finds that kleptomaniac attitude is prevalent both in public and private sector organisations since human beings are basically the same irrespective of which sector they work in. This implies that where ethical values are weak in either public or private organisations, employees' irrational urge to stealing will likely manifest in the organisation, to unduly enrich themselves with the resources of the organisation. Also, the belief in share of national cake is more prevalent in the public sector because of the mentality of employees in government owned enterprises that government resources is 'nobody's property', so they can go ahead

and indirectly or indirectly embezzle the resources through exploiting the loopholes in the system. This belief in the share of national case is less prevalent in the private sector organisations because of stringent internal control, accountability and auditing of the books.

Further still, the lack of top management control to checkmate unethical practices in the public sector is higher when compared to the private sector where there are better practices of corporate governance, due diligence and probity in the discharge of responsibilities from the managerial positions to the lower echelon of the organisation, from the private sector perspective. Also, the management and ownership structure of private organisations is such that there are high expectations and demands from the board of directors and shareholders to the management team. From the public sector perspective, there appears a lukewarm attitude of some managers in the in accepting the organisation's work procedures to checkmate unethical practices because they benefit from them. This implies that public organisations in Nigeria have not enshrined the application and implementation of codes of conduct for public officers enough to checkmates unethical practices in the system as much as private organisations enforce code of ethics and professionalism against employees who circumvent their ethical values. Again, the study found that colluding with top government officials to defraud the organisation is more prevalent in the public institutions than in the private sector organisations. This is manifested in how some top managers in the public organisations show hostility to those who attempt to report unethical behaviour in which they may be directly or indirectly involved. Lastly, the study established that there are different attitudes of managers in the public and private organisations in Nigeria, with the integrity of managers directly proportional to their value orientation in the sector they operate. This finding of the is consistent with the position of Kuye, Uche and Akaighe (2014) that the extent to which ethical leadership is being modeled by senior management is pivotal in promote ethical climate in organisations. The findings of the study is also consistent with the findings of Van der Wal, De Graaf and Lasthuizen (2008) that managers in various public and private organisations share two distinct value systems in accordance with the value disposition of the sector they operate.

CONCLUSION AND RECOMMENDATIONS

The study focused on comparative analysis of managerial behaviour of public and private sector organisations in Nigeria, to determine how managers in either public or private organisations are encouraging honesty and openness among workers in their organisations. The key variables of measurements in the

public and private sectors includes kleptomaniac attitude which is the disposition to stealing, belief in the share of national cake, colluding with top management to defraud, top management lack of control to checkmate unethical practices, God-fearing management staff and deceptive executives. The study concludes that encouraging openness and honesty by managers' will reduce unethical practices in either the public or private organisations in Nigeria. The private sector due to its ownership and managerial structure are mostly set up by individuals who seek to maximize profit from the private resources employed in the organisation. On the other hand, public organisations and parastatals are adopting strategies such as re-engineering and commercialization to be able to compete favourably in the business environment. Thus, the public sector managers seek to ensure efficient use of resources to gain competitive advantage and are now under pressure to deliver better public services to wide population of people due to the huge allocations and subventions received from governments, the globalization and huge demands of customers and citizens to get value for services rendered by government agencies.

The public sector systems in any country or high performing economy depends highly on how well it's public managers and administrators are constantly working with their employees to improve the quality of their services. Managers in the public and private sector have to go head-to-head in ensuring best practices and display of ethical behaviours for the smooth running of the enterprise with the resources available to them and curbing to a large extent such behaviours in the workplace that are contrary to professionalism and honesty. Public and private organisations have to do more in encouraging their staff to desist from engaging in unethical behaviours, set up policies and systems to make it difficult for unethical behaviours to thrive in the workplace. Also, that organisational-based factors exemplified by top management actions should be encouraged, which is capable of changing the attitudes and values of employees positively in the execution of their duties in the organisation.

The study recommends that effective corporate governance mechanism and control system should be enshrined in the operations of the public and private sector organisations, which will help foster the efficient running of the corporations or enterprises. Also, managers in the public and private sector organisations should be above board in their behaviours. Since it takes two to tangle, the support that employees get from top management which encourages them to carry out unethical behaviours with impunity should be detected through an effective whistle blowing system and such unethical behaviours 'nipped in the bud'. The whistle

blowers should be protected and assured of their safety since they stand the risk of being victimized by managers and subordinates who are reported for their unethical behaviours. Since brazen unethical behaviours with impunity thrives in a system where punishment is non-existence or weak, there should be immediate and consistent disciplinary measures against behaviours that circumvent organisational objectives. Managers in particular that are caught displaying a pattern of unethical infraction and fraudulent practices should receive stiffer punishment which will serve as a deterrent to subordinates who may be involved in such unwholesome practices that circumvent accepted work procedures in the organisation. Lastly, efforts should be made to reduce or totally prevent acts of embezzlement in either the public or private organisations through the use of control system while motivating programme capable of giving rewards to hard working employees should be in place in the organisations.

CONTRIBUTION TO KNOWLEDGE AND LIMITATIONS OF THE STUDY

The study has contributed to knowledge in managerial behaviour in the public and private sectors with implications for building a strong and vibrant sector, as countries seek to ensure sustainable development and disaster management in all frontiers including human resources, leadership and management. The study extensively dealt with how ethical values relate to effective managerial leadership building from the leader-member exchange theory. The study will undoubtedly leave managers and academics alike with the clear picture that ethical values are a key component of effective managerial leadership and based on the belief that virtuous values that align with ethical behaviour will result into a better way of creating healthy relationships in organisations. The study constitutes a basic input for finding solutions to issues related to cut-backs and other associated vices, knowledge of which organisations cannot undermine in building strong institutions and ensuring sustainable development. The study furthermore strengthens the existing knowledge and contributes to the systematization of the fragmented knowledge on ethics needed by the academic community as benefit and provides a framework for finding the knowledge needed to reduce the unethical behaviour prevalent in our society. However, the study is without limitations. The limitations of the study include the nature of the survey which is limited to a few private and public organisations which is not representative of all public and private organisations in Nigeria. Also, the public parastatals sampled in the study are Federal agencies while the private sector organisations are from a sample frame of publicly quoted companies, which may differ from state government agencies and companies not

listed in the Nigerian Stock Exchange, in the practice and application of managerial values.

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AN ASSESSMENT OF THE CONTRIBUTION OF MANAGED FUND ON CAPITAL MARKET DEVELOPMENT AND ECONOMIC GROWTH: *THE NIGERIAN EXPERIENCE*

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ABSTRACT

The study examines the contribution of managed fund on Capital market and Economic Development in Nigeria, aimed at measuring the extent to which Managed Funds Nets Assets Value (MFNAV) has contributed to the growth and development of capital market and economics proxy by MCAP and GDP respectively. The study employed longitudinal research, design using descriptive statistics. Regression analysis is used to test the hypothesis stated for the study. The study reveals that Managed Fund Nets Assets Value (MFNAV) has significant and positive contribution on capital market and economic growth and development in Nigeria. The study recommend that, the Securities and Exchange Commission (SEC), Central Bank of Nigeria (CBN) and Nigeria Stock Exchange (NSE) as apex regulatory bodies of the financial market should encourage the mobilization of managed fund firms such as mutual fund, Units Trust Scheme to register and participate in the financial market through investment in equities, Stock and Bonds at the Nigeria Stock Exchange in Other to increase the Net Value of managed funds and in turn contribute significantly to market capitalization and Gross Domestic Product.

KEYWORDS: Managed Fund, Capital Market, Economic Development, Market Capitalization, Gross Domestic Product, Net Assets Value, financial market, Equality Market

INTRODUCTION

In the last decades, the equity market in Nigeria has grown significantly as a result of privatization, new issues by companies listed on the Nigerian stock Exchanges (NSE) and price increase. But beyond this, an urgent need, exist to increase the component of the Nigerian businesses because of the increased vulnerability of Enterprise as a result of increasing interest rate and rising of debt/equity ratio; Anyanwu (1998). He opined that if corporate managers in the country can take a cue from their counterpart in the developed economics and cut down on debt obligation their businesses will be better. Equity Financing is regarded as one of the cheapest and flexible sources of finance from the capital market.

According to Araw (2010), there is no advanced remarkable economics development without the establishment of capital market. Thus, an emerging economy which aspires to emulate the achievement of advanced economics must establish and develop its capital market. Globalization and capital market development in the third world countries are also nexus of economic growth. Liberalization is also one of the catalysts that increase as opportunities, especially among the third world countries.

According to Okoye and Nwisiemp (2014), the growth and development of and economy, depends greeting on

how the country's capital market thrives. The capital market can be an important facilitator of economic growth (Applegarth 2004). Osaze (2000) is of the view that capital market drives economy growth and development because of the formation stem from it.

The role of capital market in the economics developments of Nigeria has continued to attract increasing attention among policy makers. Nnanna et al, (2004). This derives from the recognition that a deeper, broader and better functioning capital market provides long term finance market, provides long – term finance, which is necessary for economic growth and development.

A capital market is a network of financial Institutions and facility that interact to mobilize and allocated long – term saving in any economy. The long – term funds are exchanged for financial assets issued by borrower or traded by holders of outstanding eligible instruments. Therefore, it provides services that are essentials to a modern economy mainly by contributing to capital formation through, financial intermediation, financial advisory service and managerial skill development. In addition, the capital market. Facilitates portfolio diversification that allows savers to maximize returns on their assets and reduce risk consequently, an efficient capital market optimizes the amount of saving that finances investment at any level of saving Nnanna et al (2004).

Nnnana et al (2004) and Orbunde (2010) are of the view that, in Nigeria, capital market provides funds to industries and government to meet their long term capital requirement for fixed investment like building plant, and others public infrastructure. Empirical – evidence however, indicates that the role the capital market play in Nigeria is limited as compared to other developed economy. This is shown by how its contribution to the level of capital mobilization and investment as evidenced by the low market capitalization over the years.

This study thus examined the contribution of managed fund to capital market and economic development in Nigeria, specifically how the Net asset of managed funds has contributed to market capitalization and Gross Domestic Product (GDP) as variable for measuring the level of economic growth.

The study covered the period of 2000 to 2014, due to the availability of data collected from Securities and Exchange Commission (SEC) department of collective Investment Scheme (CIS) and also published in SEC quality magazine of various editions.

The remaining part of the paper is made up of section two which is literature review will focus on conceptual, empirical and theoretical framework work, second, three is the methodology, section four deals with data analysis, interpretation and discussion of the findings while section five conclusion and recommendations.

Statement of the Problem

The situation in the Capital Market where the investors cannot access it directly except through market operators/intermediaries has made many people to be skeptical about securities transaction, many others are discouraged and therefore would not want to trust their money to someone for a business they don't understand its operation, yet others believe that big companies inflate the profit stated in their financial statement thereby misleading investors in the choice of investments in the securities markets. Our problem here is to determine the contribution of alternative sources of capital for business enterprises in Nigerian Capital Market. What is a Managed Funds? How has this unit been able to influence the Nigerian Capital Market? These and other questions are what this research work seeks to answered. The study examine how effective Managed Funds have been use to develop the Nigerian Capital Market and the overall financial economy.

Research Hypothesis

The hypotheses are stated in the null form that:

H01: Managed Fund Net Asset: has no significant contribution to market capitalization.

H02: Managed Fund Net Asset has no significant contribution to Gross Domestic Product (GDP)

The results of the tested hypothesis enabled the researcher to conclude whether managed funds has contributed to the development of the Nigerian capital market and economy in general as compared with other developed nations like U.S, U.K, etc.

Significance of the Study

This paper is aimed at assessing the impact of the Managed Fund on Capital Market development in economic growth and its significance to the Nigeria Economy hence it provide avenue for low income earners to mobilize their funds to together to be managed by expert funds managers for investment in different instruments in the financial market. Managed funds firms invest their fund into capital market instrument (i.e.) (Equities and bonds) Money market instruments i.e. Treasury Bills Commercial papers) and other sectors of the financial economy. This being an margining sector in the Nigeria Economy for the past three decade it become relevant to the theme of the conference because the sector is relevant to development the financial market and sustainability the Nigeria economy. The study is specifically significance to capital market operators, regulators economic and the potential investors in the financial market.

REVIEW OF RELEVANT LITERATURE

The Concept of Managed Fund

The Investment and Securities Act N0 29 of 2007 which regulate the Nigeria capital market defined Managed Fund which is also known as Collective Investment Scheme as any arrangement in which participant pool their resources for the purpose of sharing the profit or income arising from the management of their money or property solely from the effort of a third party.

Onogwu (2003) further gave a layman definition, which is more helpful in this respect. He define Collective Investment Schemes as "schemes into which members contributes their money to be managed by professional managers, who generate and share the profits that arise from investing and managing such funds and property for the fund holders. Also Itseuwa and Uwaleke (2014) defined collective investment scheme as a way of investing in a pool of fund along side other investors in order to share from the gain of been part of investors group. The Securities and Exchange Board in India described collective investment Scheme (CIS) as any scheme of arrangement made or offered by any company under which a contributions or payment made by the investors are pooled and utilized with a view to receive profit, income, produce or property, and is managed on behalf of the investors.

Collective Investment Scheme therefore, involve s collecting money from different investors and then combining all the money collected to fund an investment on behalf of the investors. Such money are invested in stocks, bonds, money-market instruments or other securities according to the investment objectives that have been identified for the scheme. Depending on the Jurisdictions, collective Investment Schemes are referred to as mutual funds, investments funds, managed funds, or simply funds. By pooling resources through collective Investment Schemes, investors gain advantages of professional investment management, diversification of the portfolio to reduce risk, volume discounts on large brokerage commission and liquidity. Collective Investment Scheme provides almost absolute control of the investment in company pooling and investing the money, (Itseuwa and Uwaleke 2014, Ako 1999).

The Role of Managed Fund to Capital Market Development

Akele (2001) opined that, the low level of development of the Nigerian Capital Market has continued to be of concern to investors, government and the institutions in the market. In spite of the size of the Nigerian economy, the Nigerian Capital Market is characterized by low liquidity; lack of depth, low level of infrastructure development, few listings etc. He said that, effort have been on by the both government and investors to redress the situation in the Nigerian Capital Market. Akele describe the roles and contributions of each of the Collective Investment Schemes to include unit trusts.

A Unit Trust Scheme manager raises funds from shareholders and invests in stocks, bonds, options, future or money market instruments. The shareholders, who own units of the fund share in the dividends accruing to the Unit Trusts on the basis of the units that they own. Costs of the operations are divided among all shareholders and are deduced from earnings before distribution.

While there was an initial euphoria over unit trusts, resulting in the establishment of several of them a few years back, some of the unit trust companies became either victims of the bank failures or were mismanaged. However, the fact that several of them survived and are still making profits for unit holder is some testimony to the fact that unit trusts have become part of the Nigerian Capital Market.

Unit Trust Schemes are essential for the development of the Capital Market. By virtue of the fact that they pool investments of several investors, (many of whom may not have been able to invest directly in the market because of the high unit price of shares). Unit Trust

encourages more participation in the Capital Market by making more funds available. Unit Trust companies can be major investors in the Capital Market. The investments that they make obviously entitles them to monitor corporate performance of the companies that they invest in. the monitoring and the voting rights of the Unit Trusts become significant when they are used to directly or indirectly influence corporate governance in the right direction for profitability. This obviously helps to engender confidence in the Capital Market and encourages more investors to participate in it.

Unit Trusts are managed by professional managers who keep proper records about the market. These records are positive contributions to the Capital Market as they are often done on the basis of individual companies and sectors. Since Unit Trusts also diversify their investments, many sectors benefit from it for productive purposes. Unit Trusts have indeed become a major vehicle for developing the Capital Market especially as they are able to enhance participation of small investors who would otherwise not have been able to participate. The Unit Trust Scheme either is open – ended or close – ended (Akele 2001).

Empirical Review on Managed Fund Capital Market Development and Economic Growth in Nigeria

The study of Ricky (2014), on institutional investors, stock repurchases and information asymmetry seek to determine if institutional investors influence stock repurchases specifically his study tested whether institutional investors encourage stock repurchases in firm with high information asymmetry. Risky study employed firm and year fiscal effect regressions to examined these effects of changes in institutional investor levels to subsequent changes in stock repurchase levels. He also run regressions using difference – GMM – regressions and regressions for different time periods on the same relationship for testing the robustness of stock repurchases of institutional investors. His study revealed that, institutional ownership leads to increase in stock repurchases and this relationship is stronger in firms with higher information asymmetry. The results of this study indicate that institutional investors encourage management to increase repurchases so as to exploit their informational advantage over less informal investors about the true value of the firm. Investors are the dominant force in US Stock ownership. The results of Risky paper also indicate that institutional investors are using their informational advantages in firm that are difficult to value in an attempt to boast their return at the expenses of their less informal shareholders.

The study on the impact of managed funds on capital market development in Nigeria will serve as a medium

for the encouragement of institutional investors in Nigerian stock market repurchases. Managed Fund otherwise known as collective investment scheme form the major category of institutional investors firms in Nigeria, if information about their existence is publicized to the potential investors, it will boost the Nigerian stock market.

According to Serpil and Mehmet (2014), financial system play key role in fostering growth by efficiently channeling the funds to investment, however, financial system is also considered as the source of instability especially during crisis periods. How to redesign financial system globally and nationally in order to achieve and maintain global financial stability without sacrificing the benefits of it is. One of the priority issues for policy makers.

Serfil and Mehmet study surveys the benefits obtained from and damages caused by the financial system. The survey further overviews policy implications and suggestion about improving the financial system which help achieve long term global financial stability.

The role of finance for a well-functioning economy has been a discussion issue for a long time for financial economist. It is well documented that financial system plays a key role in economic growth by efficiently channeling the funds to investments (Serpil and Mehmet 2014) they are also of the opinion that both theoretical and empirical works indicate a positive impact of financial sector development on economic growth.

The works of Wasean et al (2014) on the determinant of economic growth in Pakistan used GDP as the major dependent variable while independent variables were identified to include export, import and government expenditure. The study finds a high significant result between government expenditure and GDP while the effect of export and import was less significant. This might be in construct with the research which is based on assessing the impact of managed fund on capital market and economic development in Nigeria making use of managed fund total investable funds and net asset of managed funds as independent variables while market capitalization, managed fund investment such as equities and bonds and GDP at both 1990 basic price and current price were used as dependent variable. The result of the study will measure the extent to which managed total investable fund and net assets affect the capital market and economic development in Nigeria. (Anyanwu 1998, Ariyo and Adelegun 2005).

Okoye and Nwisiyenyi (2013) study examined the impact that capital market has on the Nigerian economy, using time series data for 10 years period 2000 – 2010. The

model specification for the analysis of the data was multiple regression and ordinary least squares estimation techniques, their study identify gross domestic product as the dependent variables. The result of their study shows that there are significant relationship between share index, market value and market capitalization on the GDP. This implies that the GDP is affected by the movement of the capital market's share index, market value and market capitalization which means that capital market has impacted significantly on the economy for the years under the study.

The findings of the study on the assessment of the contribution of managed funds on capital market and economic development in Nigerian will also serve as basis for measuring the extent of the growth of capital market and economic development in Nigeria.

Ewah et al (2009) appraised the impact of capital market efficiency on economic growth in Nigeria, using time series data on market capitalization, money supply, interest rate, total market transaction and government development stock that ranges between 1961 to 2014. The model specification for the analysis of data was multiple regression and ordinary least squares estimation technique. The result shows that the capital market in Nigeria has the potentials of growth inducing, but it has not contributed meaningfully to the economic growth of Nigeria. They opined that, it is as a result of low market capitalization, low absorptive capitalization, illiquidity, misappropriation of funds, amongst other. The study submit that capital market remain one of the mainstream in every economy that has the power to influence economic growth, hence, the organized private sector such as managed fund is encouraged to invest in it. This will enable the capital market improve its illiquidity status for economic growth and development.

Orbunde and Jata (2011) study on the impact of portfolio mix on returns seek to ascertain the actual impact a portfolio mix of different investment will affect returns. The study adopted both primary and secondary data by used questionnaire and observation for primary source of data while secondary data was taken from the Nigerian Stock Exchange Fact Book. The study employed content analysis and simple percentages to analyze the content of financial statement of quoted insurances companies and other selected financial institutions. The study found a strong and positive relationship between portfolio mix and returns and therefore investor both institutional such as managed funds and individual should pay particular attention to the type of investment they wish to hold in a portfolio as this could further increase or decrease their

returns and in turn affect the level of capital market and economy development in Nigeria.

The study of Obazevbanu (2012) on the impact of capital market reforms on asset pricing characteristics of the Nigeria stock market was concern with an appraisal of the impact of various capital market reforms on the efficiency of the market with special interest on asset pricing characteristic. The paper have a comparative book at military vis-à-vis civilian eras. The researchers made use of daily stock prices of twenty nine sampled firms for the period of January 1995 to December 2009 divided into two sub-period were collected. The paper use non-parametric runs test and found that asset pricing is not efficient in the two sub-periods and over the entire period. The researchers opined that, the results of the study was because stock prices were found to exhibit regularities which can easily be exploited for abnormal returns without assummsurate level of risk. All of statistic values were statistically significant and negative, implying that, assets prices exhibit positive serial correlation and sequence of past prices were consequential in assessing distribution of future prices. The paper submit that there is need for more securities should be listed by relaxing listing requirement and cost of listing for small and medium scale enterprises as well as managed funds firms so as to deepen the stock market.

Hsim, Land Alani R (2007) in the research on economic growth and financial sector developments estimated an Odedokun-type “supply-leading” model of Financial Sector Development (FSD) which incorporates both banking and capital market variable as potentials drivers of economic growth. The findings illustrate the impact on economic growth of various measures of FSD which includes basic intermediation services, as measures by M^2 and money market mutual funds, and more advanced financial products such as stock market development and risk management services. The empirical findings of this study document an important shift from an exclusive reliance on basic banking services, among emerging/developing countries towards an expanding role for the capital markets. An even stronger emphasis on the role of capital markets is documented for a group of advanced countries.

Tsai and Wu (1999) find that countries which adopt more effective public policies tend to experience more rapid financial development and economic growth than countries which do not. Levine and Zeros (1998) examine the impact of capital market development using total stock market capitalization and various measures of market liquidity, they also calculated the value of recent trading activity and measures of international integration at the global level. The study

also shows that stock market liquidity and banking development both positively predict economic growth, capital accumulation, and productivity improvement. Suleiman and Aamar (2008) examines the casual relationship between financial development and economic growth for six Middle Eastern and North African countries (Algeria, Egypt, Israel Morocco, Syria and Tunisia) within a quadrates vector auto regressive framework. They employ four different measures of financial development and apply the augmented Vector Auto Regression (VAR) methodology to Todo and Yamamoto to test for Granger causality, their empirical result strongly support the hypothesis that finance lead to growth in five out of the six countries, only in Israel could weak support be found for causality running from economic growth to financial development but no causality in the other direction.

The findings suggest the need to accelerate the financial reforms that have been launched since the mid 1980s and to improve the efficiency of these countries financial systems to stimulate saving/investments and consequently long-term economic growth.

According to Susanne (2004), the June 2001 summit, the group of 15 (G15) Heads of State emphasized the importance of stable financial market through reform. The Committee on Trade, Investments and Technology requested the Cairo and Alexandria Stock Exchange to coordinate the efforts of the G15 countries in the area of capital markets. Susanne reveals that, in March 2001, experts from the G15 Stock Exchange met to emphasize cooperation in capital market development. Also the advancement of technology in promoting global financial services has been tremendous are largely irrelevant, as investors now have the potential to move their networth to whatever jurisdiction offers, the highest reward with the lowest risk. Susanne submits that without a strong national financial system, a set of international standards will be hard to implement. She identify four tools that can generally promote stable national financial systems amongst which include (1) having independent rating agencies (2) having some safety net (3) reducing government control of national financial assets and (4) allowing capital market participants to offer a wide-range of services.

The study of Xiaoling (2010) on the revelations of US financial crisis for the financial development of China reveals that, the financial crisis of 2008 occurring in US not only largely destroyed the financial system and the macro economic system of US but also directly impacted the economy of China because of the increasing mutual infiltration of global capital markets. As viewed from financial regulation and financial innovation, the relation of the financial crisis for the

financial development of China were respectively analyzed in the paper. Xialing is also of the opinion that, the financial institution and the financial market of China are in key stage continually developing and deepening. He opined that after the financial crisis of 2008 in US, the revelations and lessons of the crisis offer a good change for the learning and self-examination of the financial development in China.

Nicholas (2008) study examine the direction of causality between financial development and economic growth in Kenya using a dynamic Granger causality model. The study has been motivated by the current debate on the inter-temporal causal relationship between financial development and economic growth in developing countries. He opined that, the trust of the debate has been whether there exists a finance-led growth response or a growth-led finance response between the two variables. The study made use of three proxies of financial development against real GDP per capita as proxy for economic growth. The empirical result of the study reveals that, although the causality between financial development and economic growth in Kenya is sensitive to the choice of measure for financial developments, on balance the demand following response tends to predominate. The study submits that, the argument that financial developments unambiguously leads to economic growth can only be taken with a pinch of salt.

According to Fatih (2009) financial development and trade openness policies reduce inefficiency in the production process and positively influence economic growth. This argument is strengthened by the fact that growth rates in countries with trade openness and financial policies outperform those with restrictive financial and trade policies. Fatih (2009) in his study on the causal relationship between financial development, trade openness and economic growth the case of Turkey examine the causality relations between financial development trade openness and economic growth (GDP) of the Turkish economy he employed Augmented Dickey-Fuller (APF) for unit root, Ohusen and Juselius for cointegration and Granger causality test for causal relationship. The study reveals that while trade openness has a positive effect, financial development has a negative effect on growth. He opined that grander causality test results revealed the same of bicausal relationship between financial development, trade openness and growth, indicating that economic policies aimed at financial development and trade openness have a statistically significant impact on economic growth. Fatih is also of the opinion financial development follows economic development, economic growth causes financial institutions to change and develop and finance as well as credit market to grow.

Nikolaos and Antomos (2004) study empirically examine the causal relationship between the degree of openness of the economy, financial development and economic growth by using a multivariate auto regressive (VAR) model in Greece for the examined period 1960 – 2000, in the findings, the result of cointegration analysis suggest that there is one cointegrated vector among GDP, financial development and the degree of openness of the economy. Granger causality test based on error connection models show that there is a causal relationship between financial development and economic growth; but also between the degree of openness of the economy and economic growth.

Managed Funds Global Cases

Khapper, Sulla and Vittas (2004) in their study on the development of mutual funds around the world revealed that, with few exception, mainly in Asia, mutual funds grew explosively in most countries around the world during the 1990s. Equity funds pre – dominate in Anglo – American countries and in bond funds in most of continental, Europe and middle – income countries. their study revealed that capital market development (reflecting investors' confidence in market integrity, liquidity and efficiency) and financial system orientation are found to be the main determinants of mutual fund development.

The work Nanli and Yanlin (2011) on Understanding Emerging Market Equity Mutual funds; the cases of china contributions to individual investment by investigating the characteristics if the Chinese stock market through a study of the Chinese equity funds. The study revealed that Chinese funds outperform the stock market benchmark significantly with their shape ratio values, but when performance is measured by asset pricing models, the evidence fines, also large funds, outperform small or medium sized funds, regardless of the model and measurement selection. They results suggest individual investors should choose indexed funds if market – risk adjusted return is the objective. Investors should generally prefer larger equity funds over smaller funds when investing in Chinese stock market.

Sarish and Ajay (2011) in their study on an analysis of financial instrument and mutual fund aimed at to compare and contrast the performance of various schemes (managed funds). They revealed that, mutual funds can be win – win option available to the investors who are willing to take any exposure directly to the security markets as well as it helps the investors to build their wealth over a period of time. They also submit that, the Indian Equity market has grown significantly during the last three year; mutual funds are not left far

behind. Both the avenues have created wealth for the investors, they are of the opinion that, for the creation of wealth through this avenue a proper understanding of the mutual funds is must.

Sarish and Ajay view mutual funds as a trust that pools the saving of a number of investors who share a common financial goal. The money thus collected is then invested in capital market instruments such as share debentures and other securities. The income earned through these investments and capital appreciation realized is shared by its unit holders in proportion to the number units owned by them.

Theoretical Framework

Financial intermediation theory was first formalized in the works of Goldsmiths (1969), McKinnon (1973), and Shaw (1973) who see financial market as playing a pivotal role in economic development, attributing the difference in economic growth across countries to the quantity and quality of services provided by financial institutions.

These contrasts with Robinson (1952), who argued that financial market such as capital markets are essentially hand maidens to domestic industry, and respond passively to other factors that produce cross country different in growth.

“There is general tendency for the supply of finance to move with the demand for it. It seems to be case that where enterprise leads, finance follows. The same impulses with in an economy, which set enterprises on foot, make owners of wealth venture some, and when a strong impulse to invest is fettered by lack of finance, devices are invented to release it and habits and institutions are developed.”

The Robinson school of thought therefore believes that economic growth will lead to the expansion of the financial sector Goldsmith (1969) attributed the positive correlation between financial development and the level of real per capital /GNP to the positive effect that financial development has on encouraging more efficient use of the capital stock. In addition, the process of growth has feedback effect on financial (capital) markets by creating incentives for further financial development.

Though the McKinnon – Shaw framework informed the design of financial sector reforms in many developing countries, however, country experiences later showed that while the frame explains some of the quantitative changes in savings and investments at the aggregate level, it glosses over the micro level interactions in the financial markets and among financial markets and

among financial institutions which affect the supply of savings and the demand for credit by economic agents, and the subsequent effect on economic growth.

Methodological Framework

The research design for this study is longitudinal research design using descriptive statistic of 52 managed fund registered with the department of collective of investment scheme and published in SEC quarterly magazine of various editions for the period 2000-2013.

The study make use of main economic and capital market indicators like GDP and 1990 basic price, market capitalization and managed fund Net Asset Value (NAV) to assess the contribution of managed funds on capital market and economic development in Nigeria.

The study employed regression analysis using Ordinary Least Square (OLS) to test the impact of independent variables on the dependent variables. Augmented Dickey Fuller test is also to test for unit roots of the data to establish the stationarity of the data.

Model Specification

The model specification for this study is stated as:

$$MCAP = f(MFNAV) \text{-----} 1$$

$$GDP = f(MFNAV) \text{-----} 2$$

Thus, linear equation (1 and 2), we obtain:

$$MCAP = \beta_0 + \beta_1 MFNAV + \mu \text{-----} 3$$

$$GDP = \beta_0 + \beta_2 MFNAV + \mu \text{-----} 4$$

Where;

β_0 = The intercept or autonomous parameter estimate

β_1, β_2 = Parameter estimate representing the coefficient of MFNAV

MFNAV = Representing Managed Fund Net Asset Value

MCAP = Representing the Market Capitalization

μ = Error term (or stochastic term).

We then differentiate partially with respect to of each variable to obtain *a priori* sign expectation of equation (3 and 4);

$$\frac{\partial MCAP}{\partial MFNAV} = \beta_1 > 0 \text{-----} 5$$

$$\frac{\partial GDP}{\partial MFNAV} = \beta_2 > 0 \text{-----} 6$$

EMPIRICAL RESULTS AND DISCUSSION OF FINDING

Pre-Estimation Diagnostics Tests

Normality Statistics (Descriptive Statistics)

This test is necessary for checking whether the variables have normal distribution. The normality statistics for the variables: MCAP, GDP and MFNAV, are as shown in Table 1. The mean for MCAP, GDP and MFNAV are all different. This indicates that the variables exhibit

significant variation in terms of magnitude, suggesting that estimation of the variables in levels will not introduce some bias in the results. The Jarque-Bera statistics for all the variables are significant as all their probability values are all less than 0.05; hence we reject the null hypothesis and conclude that the series are normally distributed (or have a normal distribution).

Table 1: Summary of Normality Statistics

	GDP	MFNAV	MCAP
Mean	24081.51	13.77119	19.21598
Median	11517.60	13.50000	18.30625
Maximum	105689.6	26.00000	29.80000
Minimum	102.0000	6.125000	13.54250
Std. Dev.	28360.77	4.218255	3.544055
Skewness	1.320090	0.715393	1.262441
Kurtosis	4.210445	4.374826	4.830062
Jarque-Bera	8.435730	3.937293	9.724161
Probability	0.014730	0.039646	0.007734
Sum	577956.3	330.5086	461.1835
Sum Sq. Dev.	1.85E+10	409.2546	288.8876
Observations	14	14	14

Source: Authors Computation, 2015 (E-views 7.0)

Unit Root Test

Macroeconomic time series data are generally characterized by stochastic trend which can be removed by differencing. Unit root test therefore is a test of stationarity or non-stationarity of series data used in the model. This is to find out if the relationship between economic variables is spurious or nonsensical. This test is conducted by adding the lagged values of the

dependent variable so that the error term is serially uncorrelated. Thus, the study used or adopted Augmented Dickey-Fuller (ADF) Techniques to test and verify the unit root property of the series and stationarity of the model.

The variables tested are: MCAP, GDP and MFNAV and are presented in table 4.1.2 below;

Table 2: Summary of Unit Root Test Results

Variables	ADF Test Statistic(at first difference)	Order of Integration
MFNAV	-3.965454(-3.673616)**	I(0)
GDP	-3.653371(-3.622033)**	I(0)
MCAP	-4.003974(-3.710482)**	I(1)

Source: Authors Computation, 2015 (Eview-7.0): Note:

MacKinnon critical values for the rejection of hypothesis of unit root are in parenthesis in Columns 1 and 2 and the tests include intercept with trend; * significant at 1%; ** significant at 5%; *** significant at 10; Mackinnon critical

respectively at 5% and 1%. These stationary variables were subsequently used for further analysis in computing and analyzing of our results. The next specification test that shall be computed is the co-integration test of these variables.

Co-Integration Estimate

From the table 2 above, it was discovered that MFNAV and GDP were found stationary levels. That is the ADF test statistic of 3.965454 and -3.653371 are greater than the tabulated values of -3.673616 and -3.622033 respectively at 10% level of significance. However, MCAP was found stationary at first difference as seen in table 2. It shows that the ADF test statistics of -4.003974 is greater than the critical values of -3.710482

If two or more time series are not stationary, it is important to test whether there is a linear combination of them that is stationary. Economically, variables are cointegrated if they have a long term, or equilibrium relationship between them. It is a pretest to avoid spurious regression situations. Since the variables were found to stationary at first difference (that is at order

1(I)), it was safe for us to employ and proceed with Johansen co-integration test.

Table 3: Summary of Co-integration Estimates

Date: 03/08/15 Time: 16:45				
Sample (adjusted): 2000 2013				
Included observations: 14 after adjustments				
Trend assumption: Linear deterministic trend				
Series: MCAP, GDP and MFNAV				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized				
No. of CE(s)		Eigenvalue	Trace Statistic	0.05 Critical Value Prob.**
None				
At most 1				
At most 2				
At most 3				
Trace test indicates twocointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized				
No. of CE(s)		Eigenvalue	Max-Eigen Statistic	0.05 Critical Value Prob.**
None				
At most 1				
At most 2				
At most 3				
Max-eigenvalue test indicates twocointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Authors Computation, 2015 (Eview-7)

From the co-integrated result in table 3, the trace test indicates twocointegrating equation at 5% level. Moreso, the Max-eigenvalue test equally confirms that there are twocointegrating equation at 5 %level. Thus, the model shows that there exists a long-run equilibrium relationships among the four variables used in the analysis. It shows that the variables move together in the long run.

Model Evaluation and Test of Hypothesis

The two hypotheses formulated in this study were tested using student t-statistics. The level of significance for the study is 5%, for a two tailed test. The decision rule is that we shall accept the null hypothesis if the critical/t-value (± 1.96) is greater than the calculated

value, otherwise reject the null hypothesis. That is, using the student t -test (t -statistic), we say that a variable is statistically significant if t^* (t -calculated) is greater than the tabulated value of ± 1.96 under 95% (or 5%) confidence levels and it is statistically insignificant if the t^* is less than the tabulated value of ± 1.96 under 95% (or 5%) confidence levels. Thus;

$H_0: \beta_0 = 0$ (Null hypothesis)

$H_1: \beta_1 \neq 0$ (Alternative hypothesis)

Hypotheses One: H_{01} : Managed Fund Net Asset has no significant contribution to market capitalization

Model one:

$$MCAP = \beta_0 + \beta_1 MFNAV + \mu \text{-----} 7$$

Table 4: Regression Result MCAP and MFNAV

Dependent Variable: MCAP
 Method: Least Squares
 Date: 03/08/15 Time: 20:54
 Sample: 2000 2013
 Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.021365	0.432042	2.049451	0.0010
MFNAV	12.120554	0.030051	4.011663	0.0006
R-squared	0.522473	Mean dependent var		1.638810
Adjusted R-squared	0.396221	S.D. dependent var		0.782376
S.E. of regression	0.607931	Akaike info criterion		1.922146
Sum squared resid	8.130772	Schwarz criterion		2.020317
Log likelihood	-21.06575	Hannan-Quinn criter.		1.948191
F-statistic	16.09344	Durbin-Watson stat		2.157207
Prob(F-statistic)	0.000586			

Source: Authors Computation, 2015 (Eview-7.0)

$$MCAP = 10.02 + 12.12MFNAV \text{-----} 8$$

$$SEE = 0.43 \quad 0.03$$

$$t^* = 2.04 \quad 4.01$$

$$F^* = 16.09; \text{Prob (F-statistic)} = 0.000586$$

$$R^2 = 0.5224; \text{Adj.}R^2 = 0.3962$$

$$DW = 2.15$$

Test of Hypotheses One: H_{01}

From the regression result in table 4, the calculated t-value for MFNAV is 4.01 and the tabulated value is ± 1.96 . Since the t-calculated is less than the t-tabulated ($4.01 > 1.96$) it thus falls in the rejection region and hence, we reject the first null hypothesis (H_{01}). The conclusion here is that *Managed Fund Net Asset has significant contribution to market capitalization*

The coefficient of determination (R-square), used to measure the goodness of fit of the estimated model, indicates that the model is reasonably fit in prediction.

The R^2 (R-square) value of 0.5224 shows that the MFNAV has a very good impact on MCAP. It indicates that about 52.24 per cent of the variation in MCAP is explained by MFNAV, while the remaining unaccounted variation of 47.76 percent is captured by the white noise error term

Durbin Watson (DW) statistic was used to test for the presence of serial correlation or autocorrelation among the error terms. The model also indicates that there is no

autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.15. This shows that the estimates are unbiased and can be relied upon for policy decisions.

Hypotheses Two: H_{02} : Managed Fund Net Asset has no significant contribution to Gross Domestic Product (GDP).

Model two:

$$GDP = \beta_0 + \beta_2MFNAV + \mu \text{-----} 9$$

Table 5: Regression Result on MFNAV and GDP

Dependent Variable: GDP
Method: Least Squares
Date: 06/13/15 Time: 21:02
Sample: 1990 2014
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.22435	2.079188	7.322257	0.0000
MFNAV	2.333091	1.106479	3.128216	0.0049
R-squared	0.707866	Mean dependent var		8.823686
Adjusted R-squared	0.576405	S.D. dependent var		2.127562
S.E. of regression	1.809797	Akaike info criterion		4.103962
Sum squared resid	72.05807	Schwarz criterion		4.202133
Log likelihood	-47.24755	Hannan-Quinn criter.		4.130007
F-statistic	9.785736	Durbin-Watson stat		2.226069
Prob(F-statistic)	0.004891			

Source: Authors Computation, 2015 (Eview-7.0)

$$GDP = 15.22 + 2.33MFNAV \text{ -----} 10$$

$$SEE = 2.07 \quad 2.10$$

$$t^* = 7.32 \quad 3.12$$

$$F^* = 9.78; \text{Prob}(F\text{-statistic}) = 0.004891$$

$$R^2 = 0.7078; \text{Adj.}R^2 = 0.5764$$

$$DW = 2.22$$

Test of Hypotheses Two: H_{02}

From table 5, the calculated t-value for MFNAV is given as 2.13 and the tabulated value is given as ± 1.96 , under 95% confidence levels. Since the calculated t-value is greater than the tabulated value ($3.12 > 1.96$), we therefore, reject the null hypothesis (H_{02}). We conclude that Managed Fund Net Asset has significant contribution to Gross Domestic Product (GDP).

More so, the R^2 (R-square) value of 0.7078 also showed that the model has a good fit. It indicates that about 70.78 per cent of the variation in GDP is explained by MFNAV, while the remaining 29.22 percent is captured by the error term.

Durbin Watson (DW) statistics which is also used to test for the presence of autocorrelation indicates that there is no autocorrelation among the variables as captured by (DW) statistic of 2.22. This shows that the estimates are unbiased and can also be relied upon for policy decisions.

DISCUSSION OF FINDINGS

The parameter estimate of MFNAV in equation 8 was found to have a positive and significant relationship with market capitalization. It shows that the higher the MFNAV, the higher the market capitalization. The

investment behaviour of a firm depends crucially on its financial structure since apart from technology, managerial and demand problems the only completely exogenous constraint on the diversified firm is the stock market via its impact on company valuation and cost of capital. The functioning of the capital market affects liquidity, acquisition of information about firms, risk diversification, savings mobilization and corporate control (Anyanwu, 1998). Altering the quality of these services can alter the rate of economic growth through the functioning of the capital market. The function thus shows that, a unit change in MFNAV, on the average had increased market capitalization by 12.12 million between 2000 and 2013

Finally, it was further observed from equation 10, that MFNAV also has positive and significant relationship with economic growth in Nigeria. It showed that as MFNAV increases, Nigerian economy grows. This is in agreement with the findings of Ariyo and Adelegan (2005) who noted that the liberalization of capital market led to the growth of the Nigerian capital market and its impact at the macro-economy has been on the increase. More so, Levine and Zeros (1998) examined the impact of capital market development using total stock market capitalization and various measures of market liquidity. Their study also shows that stock market liquidity and banking development both positively predict economic growth, capital accumulation, and productivity improvement. The function thus shows that a unit change in MFNAV, on the average, Nigeria's GDP grows by 2.33 million between 2000 and 2013.

The finding from hypothesis one which revealed that managed funds has significant to contribution market

capital capitalization through investment in equity and bonds investment in the capital market is consistent the study of Khapper et al (2004) which revealed that mutual fund grew explosively in most countries around the world during the 1990's they submit that capital market development (reflecting investors confidence in market integrity, liquidity and efficiency) and Financial system orientation are found to be the main determinants of mutual development. Nanil and Yanlin (2011) study on understanding Emerging market equity mutual fund in China revealed that Chinese funds outperform the stock market bench market significantly with their shape ratio.

The study of Sarish and Ajay (2011) also agree with over study that mutual funds serves a trust that pool the saving of a number of investors who share a common financial goal. The money thus collected is them invested in capital market instrument such as Shares, Debentures, and other Securities and income carried through these investments and capital appreciation realized is shared by its units holders in proportion to the of units owned by them.

CONCLUSION AND RECOMMENDATIONS

Based on the result of our analysis and test of hypothesis, the study conclude that management fund met assets contributed positively and significantly on market capitalization and Gross Domestic Product (GDP) which are indicators for the measurement capital market growth and economic development in both developed and developing economy.

We therefore conclude that for Nigerian Capital Market and Economy to grow, institutional investors like mutual funds which makeup managed fund should be encouraged grow in Nigerian capital market.

In line with the findings, the study recommends that:

- i. The apex regulatory body of the Nigerian capital market and financial market. The Securities and Exchange Commission (SEC) should allow for more registration of mutual funds, Bond funds Venture capital financing to mobilized funds from low income earners to participate in the stock market, which will in turn facilitate the growth of Nigeria capital market and economy in general.
- ii. The study also call for Central Bank of Nigeria (CBN) as apex regulator of financial markets to established financial institutions that would mobilize community savings scheme so as to invest the funds in the financial market investment like capital market stock, and bounds.
- iii. The Nigerian Stock Exchange (NSE) which is the Self-regulatory body of the Nigerian

Capital market should make the listing quotation requirement of stocks at the floor of the Exchange flexible to enable managed fund firms to be quoted on the exchange so that investors will have access to the mutual funds securities and in turn increase Managed Fund Net Assets Value.

CONTRIBUTION TO KNOWLEDGE

This study will add to target audience form middle and low income developing nations who are yet to discover the potentials of institutional investors such as managed funds who managed funds pooled by different investors for the purpose of investment in different instruments in the financial market. Managed funds been an emerging sector in Nigeria and Africa, it will add to the knowledge of listeners and readers of this paper about its existence in Nigeria and African for the development of the economic and the capital in particular.

LIMITATION OF THE STUDY

The study is limited base on the scope and the demand by the theme of the conference also the rent of the paper. The study is also limited to the impact of managed funds on capital market development by way of investment in equities and debt and the overall economic proxy by Market capitalization (MCAP) Gross Domestic Product(GDP) respectively.

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CONFLICT MANAGEMENT IN GOVERNMENT HOSPITALS IN MAINLAND LOCAL GOVERNMENT AREA OF LAGOS STATE, NIGERIA

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ABSTRACT

The health sector in Nigeria is plagued by a myriad of problems which causes conflict and the workers often employ confrontational approach in addressing these problems. The aim of this study is to identify the causes, effects and impact of conflict in the government hospitals and medical centres in Mainland Local Government Area of Lagos State, and prescribe the best strategies and mechanisms to reduce frequent occurrence of conflict base on the Traditional Theory of Conflict. A sample size of 100 respondents was randomly selected and relevant information was elicited through the aid of self-administered questionnaire and in-depth interview. The data obtained was analyzed using simple percentage. The findings revealed that, causes of conflict includes poor working conditions; poor government remuneration; non-fulfilment of promises by management and government; delay in payment of bonuses and allowances; inadequate medical facilities and infrastructures; disagreement between management and workers' representative on management style and refusal of government to implement collective agreement. It is suggested that the negative effects of conflict can be addressed by adopting appropriate mechanisms, styles and strategies of collective agreement implementation; collaboration between management and workers representatives; prompt payment of salaries as well as joint decision making between management and employees.

KEYWORDS: Conflict, Conflict Management, Employees, Employer, health sector, Organisation.

INTRODUCTION

The traditional theory of conflict-Pluralism, Unitarianism and Marxism as proposed by Fox (1966) in Martin (2005) is the base of the study. The central idea is that organisations like family unit have different group of people with their own objectives and aspirations which are in convergent to each others: while employers seek the lowest labour cost as owners of means of production to maximise profit; employees on their part seek to maximise their earnings. The resultant effect is the breakdown of organisational state of fairs with each party seeking to rest the control of the other - conflict (Ekwoaba, Ideh and Ojukutu 2015). Martin (2005) therefore concluded that conflict is the fundamental differences between stakeholders in an organisation. Conflict must therefore be put aside to avoid breakdown of the overall group and family or organisational peace and harmony.

Conflict in the health sector has been due to various causes which include poor remuneration and working conditions for workers; inadequate health facilities; lack of medical infrastructure; and non-implementation of collective agreement, among others. Health workers often adopt confrontational approach in addressing these myriad of problems (Osabuohein, 2010). The basis of conflict between health workers and their employers (government and its health management team) is often attributed to divergent opinion between the two actors

(Jones, George & Hill 2000). Employers perceive employees as lazy and uncooperative individuals who pose a threat to the smooth operation of business while employees perceive the government as exploitative (Chukwu, 2008). Halimatu (2002) described this perceptual bias as the "brewing pot" for conflict. Fashoyin (2002) stated that conflict is an incompatibility of goals or values between two or more parties in a relationship, combined with attempts to control each other's' feeling.

Osahun (2013) prescribes cohesive and harmonious relationship as panacea to incessant conflicts between health workers and management in government hospitals and medical centres. If this does not occur, the large population of Nigerians who pay the premium for health services will be denied access to health care (Banies, Chandanl and Feeley, 2008). Conflict is an undesirable component of human life that can lead to changes regarded as desirable in terms of generally acceptable human values (Anyim, Chidi and Ogunyomi, 2012). Conflict is an inevitable element of any labour-management relationship (Armstrong 2009).

Although conflict is undesirable (Banjoko, 2002); it is a part of organizational life and may occur between individuals, between an individual and a group, and between groups (Wehrich, 1992). Conflict is a pointer to differing perspectives on issues of common interest

and the means by which divergent views between owners and managers on the one hand, and workers and their representatives on the other hand are expressed (Kornhauser, Dubin and Ross, 1954; Henry, 2009). Conflict in an organisation is the failure of all parties to reach an agreement on issues relating to their interactions. This failure to agree results in strike actions, lockouts, labour turnover, picketing, absenteeism, sabotage, overtime bans, work-to-rule, walk in and sit down, lateness to work, poor quality work, abuse of sick leave and other forms of protest (Fajana, 2000, 2006; Dauda, 2007; Otobo, 1987, 2000; Adesina, 2003). Otobo (1987) argues that these forms of protest represent conflict that is expressed. However, unexpressed form of conflict may remain latent, yet volatile with tendency to be ignited at the slightest provocation (Anyim *et al*, 2012). Workers sustain these forms of protest until the employer changes position on certain employment issues (Morris, 2007; Chan, 2009).

Industrial conflict seems to be a natural phenomenon in Nigeria with almost every sector plagued by expressions of conflict (Iwuji, 1987). This Akinwale (2011), Anyim *et al* (2012) and Martins (2014) attribute to partial success in government policies which has reduced government wealth, increase inflation and eroded social welfare, thereby fuelling conflicts. The effects of conflict on actors in industrial relations (government, labour and management) is both positive and negative (Russell and Jerome, 1976). Anyim *et al*. (2012) argues that the cost of conflict in Nigeria industries outweighs the benefits. This is exemplified in constant strike actions which shut down factories and government establishments disrupting flow of sometimes, essential services and resulting in loss of production or output. This in turn leads to scarcity of goods and services, high cost of essential items, unemployment, manpower brain drain as well as contractions. Industrial conflict in Nigeria has arisen and occurred more frequently in the current democratic dispensation in the relations between government and their workers or workers' association. Examples include: Nigerian Medical Association, Academic and Non-Academic Staff Union of Universities; Academic and Non Academic Staff Union of Nigerian Colleges of Education; Nigerian Bar Association among others since year 2000. Akume and Abudullahi (2013) corroborates this view and noted that under the past and present regime, industrial relations has been conflictual and characterized by work days lost due to government poor policy choice, coupled with dwindling revenue generation from oil and gas (the nation's main source of revenue generation), which has brought government failures to respond and respect existing agreement signed with labour unions.

Conflict resolution procedure, although provided for in the 1976 Trade Dispute Act, still leaves much to be desired as the procedures and processes appear cumbersome creating bottlenecks that hinders the flow of justice and does not foster harmony (Chidi 2010). Conflict management and resolution process in Nigeria includes: Mediation, Conciliation, Industrial Action and National Industrial Court. Anyim *et al* (2012) explained that there were a total of 6,287 industrial conflicts in Nigeria in the period 1968 to 2004; 4079 (68%) of which resulted in strikes and work stoppages. Work days lost totalled 296,189,399. This suggests that on the average in Nigeria annually, there are 170 conflicts, 110 work-stoppages and 8,005,118 work days lost. This quantum of loss is unhealthy for any nation.

Conflict is managed by handling of grievances through avoidance and self-help (Black, 1990). Conflict management is decision making that ensures workplace peace, and occurs when there is unequal power relations as well as conflicting regulations (Akinwale, 2011). It involves openness, communication, rational temperament, mutual respect and clear perspective on issues (Uji, 2005). Conflict management is the means by which fair treatment and job satisfaction is enhanced at the workplace (Peterson and Lewin, 2000). Thus, the aim of conflict management is usually to ensure organizational growth as well as peace and progress in workplace relations.

Fashoyin (1992) observed that institutions involved in industrial conflict resolution, settlement and management in Nigeria such as the Industrial Arbitration Panel (IAP) take as long as 12 months or more to take decisions and communicate same to conflicting parties thereby creating room for mistrust, erosion of confidence and frustration for the parties involved. Anyim *et al* (2012) observed that a total of 3,719 (59.15%) conflicts were resolved annually by reconciliation while a total of 601 (9.53%) were resolved by arbitration and 411 (8.33%) through the Industrial court.

Ige, Adeyeye and Aina (2011) recommended that to manage industrial conflicts effectively in Nigeria, alternative conflict management and resolution mechanism should be explored including: social dialogue, respect for reached and signed agreement by government, regular industry survey by agents of government such as supervising ministries as well as cordial government-labour relations which should facilitate amicable settlement of conflict, non-suppression of industrial conflicts symptoms and non-manipulation of arbitration process if negotiation fails. Besides, the use of coercive force or power to suppress, conflict should be avoided as these do not foster peace,

this government can do by looking beyond the sales of crude oil for other natural resources that will give it revenue when exported.

The overall goal of conflict management is to minimize conflict at all levels, attain and maintain a moderate amount of substantive conflict, and use the appropriate conflict strategy to effectively bring about the first two goals, and also to match the status and concerns of the two parties in conflict (Rahim, 2002).

There have been some studies on causes of industrial conflict and conflict management in different industries and organisations by scholars, but scarcely has any examined conflict management in government hospitals and medical centres in Mainland Local Government Area of Lagos State. Thus, this study examines the causes, effects and effectiveness of the various conflict management mechanisms, styles and strategies adopted in the reduction and management of undesirable tension and conflict in select Government hospitals and Medical Centres in Lagos Mainland Local Government Area of Lagos State, Nigeria. To this end, the study sets out to seek answers to the following questions:

- i. What are the major causes of conflict in government hospitals and medical centres in Mainland LGA, Lagos State?
- ii. How does conflict affect workers in government hospitals and medical centres in Mainland LGA, Lagos State?
- iii. What methods are used to resolve conflict in government hospitals and medical centres in Mainland LGA, Lagos State?
- iv. What are the best methods used to manage industrial conflict in government hospitals and medical centres in Mainland LGA of Lagos State?

HISTORY OF LAGOS MAINLAND LOCAL GOVERNMENT AREA OF LAGOS STATE.

Mainland Local Government Area of Lagos state, one of the twenty (20) federal governments constitutionally recognised local government area in lagos state, Nigeria, was created in 1977 as a separate local government area following 1967 national local government reform in Nigeria, with its head quarter on Herbert Marculay way, Lagos. The local government area is bounded by Shomolu Local Government Area on the north, the west by Mushin and Surulere Local Government Area, east by the famous Lagos Lagoon and south by Apapa Local Government Area. It has a total population of 629, 469 population made up of 326,433 male and 303,036 female, representing 3.6 % of Lagos State population of 17, 552, 940 (Lagos State Bureau of Statistics 2005). The mainland Local Government Area has less than ten (10) federal, state and local government hospitals and health centres to carters for the primary, secondary and tertiary health provisions of its numerous populations.

RESEARCH METHODOLOGY

The population for this study comprised of all employees of government hospitals and medical centres in Mainland Local Government Area of Lagos State. This includes Federal Medical Centre, Ebute-Metta, Yaba Psychiatric Hospital, University of Lagos Medical Centre, Harvey General Hospital, Military Hospital Yaba and Infectious Disease Hospital, Harvey Road, Yaba. The simple random technique was adopted in the selection of Doctors, nurses, pharmacist, other health practitioners and supporting employee. A total of 100 questionnaires were administered. Data were analyzed using descriptive statistics such as frequencies and percentages with the aid of statistical package for social science (SPSS) version 15.0.

PRESENTATION, ANALYSES AND INTERPRETATION OF DATA

Part 1 - Employee Categories

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Clinical Services	11	11.0	11.0	11.0
Administrative Services	47	47.0	47.0	58.0
Diagnostic Services	13	13.0	13.0	71.0
Management Services	29	29.0	29.0	100.0
Total	100	100.0	100.0	

Source: Field Survey, 2015

Table 1 shows that majority of the respondents are in administrative services indicating that there are more

administrative employee at these health institutions. The clinical services personnel make up a minute 11percent.

Part Two: Frequency Distribution of the Opinions of the Respondents.

Table 2 - Causes of Conflict

		Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
		NO	%	NO	%	NO	%	NO	%	NO	%
1.	Poor working condition contribute to conflict in your organization	93	93	7	7	0	0	0	0	0	0
2.	Poor remuneration of workers is a major cause of conflict in your organization	40	40	53	53	7	7	0	0	0	0
3.	Non increment in workers' salary can result to conflict in the health sector	47	47	46	46	7	7	0	0	0	0
4.	Non fulfilment of promises made by government is a major cause of conflict.	16	16	73	73	0	0	11	11	0	0
5.	Differences in value and goals are part of the reasons for conflict in an organisation.	30	30	58	58	0	0	12	12	0	0
6.	Inadequate health care facilities affects the effectiveness and efficiency of health practitioners.	8	8	51	51	18	18	23	23	0	0
7.	Lack of implementation of collective agreement causes conflict in industries.	42	42	51	51	7	7	0	0	0	0
8.	Delay in payment workers salaries and bonus allowances is a major cause of conflict in your organisation.	35	35	22	22	19	19	24	24	0	0
9.	Conflicts are motivated by either political or institutional factors (socio-economic and political system), or by both factors.	39	39	54	54	7	7	0	0	0	0
10.	Disagreement between management and workers representatives on management style is a reason for conflict.	28	28	42	42	30	40	0	0	0	0

Source: Fieldwork, 2015

Table 2 shows that 100 percent of the respondents agreed that poor working condition contributed to conflict in their organization. Nearly all the respondents agreed that poor remuneration of workers is a major cause of conflict in their organization (93%). It was found that maintaining workers' salary without increment (93%); delay in payment of workers' bonus and allowance (57%); refusal to honour collective agreement (89%) and implement collective agreement (93%) as well as differences in values and goals (88%) were all sources of conflict in the health sector in Mainland Local Government Area of Lagos State, Nigeria. Furthermore, the analysis indicated that inadequate health care facilities affect the effectiveness and efficiency of health practitioners (59%). Majority of

the respondents (93%) opined that conflicts are motivated by either political or institutional factors or from both factors. Disagreement between management and workers' representatives on management style in terms of interest, goals and values is also a reason for conflict as agreed by 70% of the respondents. These results aligned with Henry (2009) who noted that conflicts occur when interests, goals, values of different

individuals are incompatible. Akinwale (2011) agrees with this stating that conflict occur because of unequal power relations and conflicting management or government regulations. In the same vein, George and Hill (2000) identified competition for jobs, scarce resources, power, recognition, security among others as causes of conflict

Table 3 revealed that the cost of industrial conflict are greater than its benefits to the three social partners and the society at large (40%); conflicts have a negative effect on the ability of the organization to meet its goals (61%); Half of the respondents are agreed that conflict has more negative effects than positive effects on both workers and their employers. Conflict reduces productivity and causes loss of resources in an organization (53%) and employees are the most affected during conflict crisis. Besides, when conflict occurs, it results in strikes, lockouts, boycotts among others. Table 3 also shows that conflicts are instruments of sabotaging governments and management efforts by opposition.

Table 3 - Effects of Conflict

		Strongly agree		Agree		Neutral		Disagree		Strongly Disagree	
		NO	%	NO	%	NO	%	NO	%	NO	%
1.	The costs of industrial conflict are greater than its benefits to the three social partners and the society at large.	19	19	21	21	32	32	28	28	0	0
2.	Conflicts do have a negative effect on the ability of the organization to meet its goal.	29	29	32	32	22	22	17	17	0	0
3.	Conflict has more negative effects than positive effects on both workers and their employer	18	18	32	32	21	21	18	18	11	11
4.	Conflict reduces productivity and causes loss of resources in the organization.	11	11	42	42	21	21	18	18	8	8
5.	The employees are the most affected during conflict crisis	32	32	32	32	19	19	10	10	7	7
6.	When conflicts occur, does it result in strikes, lockouts, boycotts etc.?	39	39	32	32	19	19	10	10	0	0
7.	Conflicts are instrument of sabotaging governments and management efforts by opposition.	20	20	26	26	12	12	42	42	0	0

Source: Field Survey, 2015

These results align with Russell and Jerome (1976) and Banjoko (2002) who noted that industrial conflict has negative and unpleasant consequences for the employers, employees and the society in general and

that it destroys the relationship between groups, causes workers to lose jobs and remuneration. It also causes employers to loose revenue, equipment, machineries and costs the society decline in productivity as well as deprivation of essential service.

Table 4 - Methods of Conflict Display

		Strongly agree		Agree		Neutral		Disagree		Strongly Disagree	
		NO	%	NO	%	NO	%	NO	%	NO	%
1.	Boycott is used as weapons during conflicts in the organization	20	20	26	26	12	12	42	42	0	0
2.	Strike is the most regularly used weapon during conflict in the organization.	39	39	42	42	8	8	11	11	0	0
3.	Workers and management apply picketing and lock out during conflict?	39	39	32	32	19	19	10	10	0	0
4.	Protest is the order of the day during management/workers conflict.	32	32	32	32	19	19	10	10	7	7
5.	Unions encourage workers to go on work to rule during conflicts.	22	22	50	50	0	0	28	28	0	0

Source: Field Survey, 2015

Table 4 indicates that less than half of the respondent agreed that boycott is used as weapons during conflicts in the organization (46%). Over half of the respondents agreed that strike is the most regularly used weapon during conflict in the organization (81%). Workers and management apply picketing and lock-out (71%) and

(64%) during conflict. Besides, unions encourage workers to employ work-to-rule during conflicts. These results corroborates the view of Fajana (2000), Anyim *et al*, (2012) and Otobo (1987) who argue that conflict connotes stoppage of work and are expressed in strike actions, boycott, protest, sabotage, factory shut down, work-to-rule, etc.

Table 5 - Best Strategies of Conflict Management

		Strongly agree		Agree		Neutral		Disagree		Strongly Disagree	
		NO	%	NO	%	NO	%	NO	%	NO	%
1.	Conflict programs should be organized and introduced in the organization to help understand the importance of conflict management and how to reduce its negative effects.	47	47	46	46	0	0	7	7	0	0
2.	Proper implementation of collective agreement helps reduction of an organization / industrial conflict.	16	16	73	73	0	0	11	11	0	0
3.	Provision of better working condition can reduce conflict.	39	39	42	42	8	8	11	11	0	0
4.	Collective agreement policy can be well implemented in the health sector in order to conflict	39	39	32	32	19	19	10	10	0	0
5.	Accommodation and collaboration should be adopted as a strategy for managing conflict in an organization.	32	32	32	32	19	19	10	10	7	7
6.	Prompt payment of salaries and fringe benefits can help reduce conflict in an organization.	22	22	50	50	0	0	28	28	0	0
7.	Leadership roles are essential in smooth running of an organization.	19	19	21	21	32	32	28	28	0	0
8.	Joint decision making by both workers representatives and management dictates the tune of behaviours of employees in the organization.	11	11	42	42	21	21	18	18	8	8
9.	Litigation in Industrial Court is a way out of conflict.	32	32	32	32	19	19	10	10	7	7

Source: Field Survey, 2015

Table 5 revealed that conflict programs should be introduced in the organization to help understand the importance of conflict management and how to reduce its negative effects (93%). Majority of the respondents agreed that proper implementation of collective agreement (89%); provision of better working conditions (81%) and prompt payment of salaries and fringe benefits (72%) can help reduce in an organization industrial conflict. Collective agreement policy can be well implemented in health sector in order to avoid conflict (71%). Table 5 also shows that over half of the respondents agreed that accommodation and collaboration should be adopted as a strategy for managing conflict in an organization (64%). Moreover, the role of leadership is essential in smooth running of an organization (40%). Joint decision making by both workers representatives and management dictates the behaviour of employees in the organization (52%). Litigation in National Industrial Court is a way out of conflict (64%)

Apart from data from questionnaire, results from interviews reveals that apart from differences in the goals of employers and employees, the change and rapid process of adaptation which hospitals and medical

centres have to sometimes undergo to survive affects the workers in so many different ways and has become a continuous source of conflict. Thus, conflict may be about equity or concerned with improving conditions or positions but the outcome is largely a reflection of the relative bargaining power of both parties. This agrees with Uji (2005) who suggests that conflict management should involve openness, good communication, rationality, temperament, mutual respect, honouring agreements, and clear perspective of issues.

Table 6 suggested that Conflict well managed does not affect the organizational productivity (80%). Half of the respondents agreed that effective management of conflict brings about employee loyalty to the government; whereas, almost all the respondents are agreed that ineffective management of conflict at work place makes it difficult to achieve organizational citizenship (93%). Moreover, all the respondents agreed that effective management of conflict at work is important for smooth running and availability of human resources in an organization. These results are in agreement with Osahun (2013) who reasoned that conflict can be stopped if there is better cohesion and harmonious relationship between workers and management.

Table 6 - Outcomes of Best Strategies Used

		Strongly agree		Agree		Neutral		Disagree		Strongly Disagree	
		NO	%	NO	%	NO	%	NO	%	NO	%
1.	Conflict well managed does not affect the organizational productivity.	50	50	30	30	12	12	8	8	0	0
2.	Effective management of conflict brings about employees loyalty to government.	50	50	39	39	11	11	0	0	0	0
3.	Ineffective management of conflict at work place makes it difficult to achieve organisational citizenship.	35	55	58	58	7	7	0	0	0	0
4.	For organization to run smoothly and enjoy its human resources, there must be effective management of conflict at workplace.	65	65	35	35	0	0	0	0	0	0

Source: Field Survey, 2015

CONCLUSION

Conflict is a reality across organizational boundaries and affects individuals, groups and disciplines. Conflict can initiate productive change and vitality if well managed. The consequences of conflict will inevitably be determined by how well it is managed. If not properly managed, it may cause unquantifiable damage to the organization. Therefore, government, management and employees of hospitals and health centres must recognize the existence of conflict and dealt with it effectively.

Understanding conflict will enable these principal actors in the health sector to deal more effectively with the problems of organizational performance, stability, governance, change and effectiveness which in turn will aid in reducing the turbulence being experience in the hospitals and health centres. It is suggested that both government and management endeavour not to perceive conflict in a negative light. And that the negative effects of conflict can be addressed by adopting appropriate mechanisms, styles and strategies of collective agreement implementation. There should be also collaboration between, government, management and workers representatives in running the affairs of the hospitals and health centres; prompt payment of salaries as well as joint decision making between management and employees.

When conflict is handled using appropriate conflict management mechanism, styles and technique, it may enhance management's effort in reaching organizational goals, bring a more productive workforce, healthier atmosphere for patients, sustainable development in the health sector and avoidance of any major health disaster in the sector.

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IMPLICATIONS OF COMMERCIAL BANK LOANS ON ECONOMIC GROWTH IN NIGERIA (1986-2014)

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ABSTRACT

This study is on the implications of commercial bank loans on economic growth in Nigeria. The role of the financial sector in economic growth has gain a pride of place and prominence in modern study on economic growth. Likewise, the debate on the direction of causality between financial development and economic growth has been comprehensively growing since 1980s in theoretical and empirical literature. The main objective of this study is to examine the implications of commercial bank loans on economic growth in Nigeria between 1986 and 2014. The study made use of secondary data sourced from the Central Bank of Nigeria statistical bulletin and the National Bureau of Statistics between 1986 and 2014. The model for the study has as its dependent variable the Gross Domestic Product (GDP) and its explanatory variables were commercial bank loans to key sectors like industrial, manufacturing, agriculture and the service sectors. Using the Ordinary Least Square (OLS) multiple regression techniques; the study revealed that only the agricultural sector have being enjoying much of Bank credit and it has been making positive impact on the Gross Domestic products (GDP) while others like Mining and Quarrying, Manufacturing and the Building and Constructions sectors have not being getting much attention in terms of bank credit to spur development in that sector. The study, therefore recommended that more credits should be channelled to other sectors like the mining, manufacturing, and the service sectors to have an inclusive sectoral growth that will power sustainable growth and development.

KEYWORDS: Implication, Commercial Bank, Loans, Economic Growth

INTRODUCTION

The debate on the direction of causality between financial development and economic growth has been comprehensively growing since 1980s in theoretical and empirical literature. The existing literature provides conflicting views of this relationship. The view is that financial intermediaries are likely to push capital accumulation and economic factors' productivity growth, leading to economic growth. Subscribing to the belief that financial development is a key factor of economic growth, Levine (1997) notes that financial intermediaries improve risk management, making financial transactions, savings mobility and the exchange of goods and services easy to make. Ang (2008) finds that an efficient financial system positively contributes to economic growth. At the beginning of the 1990s, the endogenous growth literature stresses the significance of finance development for a long term economic growth. These studies seek to justify financial liberalization, reaching the same conclusion: the financial system should be liberalized to insure its good functioning, boost savings, encourage productive and profitable investments, push technology growth and sustain economic growth.

The benefits accruable from a healthy and developed financial system relate to saving mobilization and efficient financial intermediation roles (Gibson and Sakalotos, 1994). First, through the financial intermediation functions of the financial institutions, savers and borrowers are linked up and this reduces transactions and search costs. Second, they create liquidity in the economy by borrowing short-term and lending long term. Third, they reduce information costs, provide risk management services and reduce risk involved in financial transactions. Fourth, the intermediaries bring the benefit of asset diversification to the economy. Fifth, they mobilize savings from atomized individuals for investment, thereby solving the problem of individuality in financial transactions. Finally, mobilized savings are invested in most productive venture, irrespective of the source of the savings. The above benefits of financial intermediation translate into the economy-wide benefits which motivate financial reforms where the system is considered underdeveloped (Emenuga, 2006). Here and in this study, we are captivated by the fact that over the years in Nigeria, commercial banks loans have being going to various key sectors of th nation's economy, as such we want to examine if this sectoral distribution of

commercial bank loans as brought about growth in those sectors given the period of study.

Statement of the Problem

The role of the financial sector in economic growth has gained a pride of place and prominence in modern study on economic growth. Even the financial sector reform of the Structural Adjustment Programme (SAP) in 1986, which was meant to correct the structural imbalance in the economy and liberalize the financial systems, did not achieve the expected results. As Edirisuriya (2008) reported, financial sector reforms are expected to promote a more efficient allocation of resources and ensure that financial intermediation occurs as efficiently as possible. This also implies that financial sector liberalization brings competition in the financial markets, raises interest rate to encourage savings, thereby making funds available for investment, and hence lead to economic growth (Asamoah, 2008). Therefore, it is logical to assume that financial liberalization enhances funds mobilization and accessibility, which are required for firms' performance and economic growth.

The study is specifically interested in answering the following questions. Has bank loans to varying sectors brought about commensurate growth in those sectors to the extent of boosting economic growth? Is there a significant relationship between bank loans and the output of some selected Sectors in Nigeria? Answering these questions will provide insights on the empirical relationship between commercial bank loans, sectoral output and economic growth, and assist the government in formulating accommodating policies to enhance sectoral production and economic growth. As such, the main objective of this study is to examine the implications of commercial bank loans on Economic Growth in Nigeria (1986-2014). The specific objectives includes; to examine whether bank loans have brought economic growth to various sectors in Nigeria and to determine if there is significant between Bank Loans and output of some selected sectors in Nigeria between 1986 and 2013.

Significance of the Study

Given the continuous clamour for the diversification of the Nigerian economy; doing a study on the implication of commercial bank loans to economic growth should be considered apt and necessary. As this will help to evaluate performance and also ascertain sectoral needs in line with emerging trends for sustainable development and best global practice being the focus of this conference.

REVIEW OF RELATED LITERATURE

Conceptual Framework

Commercial Banks Credits

Essang and Olajide (1974) define a commercial bank as a monetary institution owned by either government or private businessmen for the purpose of profit. In pursuit of the profit, the bank undertakes a number of functions. One of these functions is the acceptance of deposits from the public, these deposits are in turn given as credit to trade industry, agriculture etc. which lead to more production and employment (see also Stephen & Osagie 1985, Ekezie 1997, Ijaiya and Abdulraheem, 2000). According to Aryeetey (1996), credit is the amount extended out with a future date of repayment. The NDIC prudential guidelines of 1990 however, provides a wider definition of credit, and this includes aggregate of all loans, advances, overdraft, commercial papers, bankers acceptance, bills discounted, leases and guarantees (NDIC, 1990).

The attempt to strengthen the private sector by the government led to the implementation of financial liberalisation policy in 1986 as part of the Structural Adjustment Programme (SAP). The Structural Adjustment Programme (SAP) was an economic reform programme aimed at restructuring the economy and averting economic collapse. The key objectives of SAP are to lay the basis for sustaining non-inflationary or minimal inflationary growth and improve the efficiency of the public and private sectors. Therefore, the financial liberalization (reform) policy entails the provision of an appropriate legal and regulatory framework for effective private participation in the economy.

The country also adopted a medium-term strategy, called the National Economic Empowerment and Development Strategy (NEEDS) in 2004, as a response to the numerous challenges facing the nation. Recently, the government approved vision 20-2020 for transforming the country into a modern economy, among the 20 leading countries in the world by 2020. The objective of the vision 20-2020 is in line with various studies and projections by Goldman Sachs that Nigeria will be the 20th and 12th largest economy of the World by 2025 and 2050 respectively ahead of Italy, Canada, Korea, among others, and Africa biggest economy by 2050 (Business Economy, 2008). The vision 2020 is to be realised through the growth of the private sector.

However, as Solanke (2007) argued, the state of the private sector, its characteristics, disposition and resilience would determine in substantial respects how far the lofty objectives of repositioning Nigeria's economy can be achieved. Accordingly, the Nigeria

government has also adopted the public private partnership (PPP) strategy. PPP schemes are designed to lead to dramatic improvement in quality, availability and cost-effectiveness of services.

These include Service Contracts; Management Contracts; Leases; Build, Operate and Transfer; and Concessions. As a compliment to the various programmes of the government to accelerate the rate of growth of the economy, it has been suggested that the level of dependence on the oil sector should be reduced, while concentration should be on the manufacturing, energy, transport and agriculture (Hale, 2002).

Following Arestis and Luintel (2004), the relationship between financial structure and economic development can be discussed based on competing theories of financial structure. These competing theories are the bank-based, the market-based and the financial services. We now examine them in brief in what follows.

Financial economists have debated the comparative importance of bank-based and market-based financial systems for over a century (Boot and Thakor, 1997; Allen and Gale, 2000; Demircuc-Kunt and Levine, 2001c). As discussed, financial intermediaries can improve the (i) acquisition of information on firms, (ii) intensity with which creditors exert corporate control, (iii) provision of risk-reducing arrangements, (iv) pooling of capital, and (v) ease of making transactions (Levine, 2002). These arguments are for well-developed banks but not reasons for favoring a bank-based financial system.

Based on the foregoing, the role of the financial system in catalysing the development process in the manufacturing sector and hence contribute to economic growth of the nation cannot be over-emphasised. Shaw (1973) opined that the financial sector of an economy does matter in economic development, and that it can assist in the break away from plodding repetition of repressed economic performance to accelerate growth. The benefits accruable from a healthy and developed financial system relate to saving mobilization and efficient financial intermediation roles (Gibson and Tsakalotos, 1994). First, through the financial intermediation functions of the financial institutions, savers and borrowers are linked up and this reduces transactions and search costs. Second, they create liquidity in the economy by borrowing short-term and lending long term. Third, they reduce information costs, provide risk management services and reduce risk involved in financial transactions. Fourth, the intermediaries bring the benefit of asset diversification to the economy. Fifth, they mobilize savings from atomized individuals for investment, thereby solving the problem of individuality in financial transactions.

Finally, mobilized savings are invested in most productive venture, irrespective of the source of the savings. The above benefits of financial intermediation translate into the economy-wide benefits which motivate financial reforms where the system is considered underdeveloped (Emenuga, 2006).

THEORETICAL LITERATURES

The **theory of bank-based financial system** stresses the positive role of banks in development and growth, and, also, emphasizes the drawbacks of market-based financial systems. The theory opines that banks can finance development more effectively than markets in developing economies, and, in the case of state-owned banks, market failures can be overcome and allocation of savings can be undertaken strategically. In a way those banks that are not impeded by regulatory restrictions, can exploit economies of scale and scope in information gathering and processing (Levine, 2002 and Beck and Levine, 2002 provide more details on these aspects of bank-based systems). In fact, bank-based financial systems are in a much better position than market-based systems to address agency problems and short-termism (Stiglitz, 1985; Singh, 1997). In particular, the free-rider problem inherent in atomistic markets in acquiring information about firms is emphasized by Stiglitz (1985). But well-developed markets quickly reveal information to investors at large and thereby dissuading individual investors from devoting resources toward researching firms. Thus, banks can make investments without revealing their decisions immediately in public markets and this creates incentives for them to research firms, managers, and market conditions with positive ramifications on resource allocation and growth. Additionally, Rajan, and Zingales (1999) stress that powerful banks with close affinity to firms may be more effective at exerting pressure on firms to re-pay their debts than atomistic markets.

The bank-based theorist also stresses the shortcomings of market-based systems by asserting that it reveals information publicly, thereby reducing incentives for investors to seek and acquire information. Information asymmetries are thus emphasised, more so in market-based rather than in bank-based financial systems (Boyd and Prescott, 1986). Thus, distortions that emanate from asymmetric information can be alleviated by banks through forming long-run relationships with firms, and, through monitoring, to contain moral hazard. As a result, bank-based arrangements can produce better improvement in resource allocation and corporate governance than market-based institutions (Stiglitz, 1985; Bhidé, 1993).

On the contrary, **the market-based theory** underscores the importance of well-functioning markets, and accentuates the problems of bank-based financial systems. Generally, big, liquid and well-functioning markets foster growth and profit incentives, enhance corporate governance and facilitate risk management (Levine, 2002, and Beck and Levine, 2002). On the contrary, bank-based systems may involve intermediaries with a huge influence over firms and this influence may manifest itself in negative ways. For instance, once banks acquire substantial, inside information about firms, banks can extract rents from firms and firms must pay for their greater access to capital. In terms of new investments or debt renegotiations, banks with power can extract more of the expected future profits from the firm than in a market-based system Hellwig, (1991). This ability to extract part of the expected payoff to potentially profitable investments may reduce the effort extended by firms to undertake innovative, profitable ventures (Rajan, 1992). Furthermore, Boot and Thakor (2000) model the potential tensions between bank-based systems characterized by close ties between banks and firms and the development of well-functioning securities markets.

The inherent inefficiencies of powerful banks are also stressed, for they “can stymie innovation by extracting informational rents and protecting firms with close bank firm ties from competition ...may collude with firm managers against other creditors and impede efficient corporate governance” (Levine, 2002). Market-based financial systems reduce the inherent inefficiencies associated with banks and are, thus, better in enhancing economic development and growth. A related argument is that developed by Boyd and Smith (1998), who demonstrate through a model that allows for financial structure changes as countries go through different stages of development, that countries become more market-based as development proceeds. An issue of concern, identified by a World Bank (2001) study in the case of market-based financial systems in developing countries, is that of asymmetric information. It is argued that “the complexity of much of modern economic and business activity has greatly increased the variety of ways in which insiders can try to conceal firm performance. Although progress in technology, accounting, and legal practice has also improved the tools of detection, on balance the asymmetry of information between users and providers of funds has not been reduced as much in developing countries as it has in advanced economies, and indeed may have deteriorated”.

Despite embracing bank-based and market-based views, the third theory, the financial services view (Merton and

Bodie, 1995; Levine, 1997), downplays their importance in the sense that the distinction between bank-based and market-based financial systems matters less than was previously thought. It is financial services themselves that are by far more important than the form of their delivery (World Bank, 2001). The issue is not the source of finance in the financial services view, but the creation of an environment where financial services are soundly and efficiently provided.

The emphasis is on the creation of better functioning banks and markets rather than on the type of financial structure. Simply put, this theory suggests that it is neither bank nor markets that matter, but both. They are different components of the financial system; they do not compete, and as such ameliorate different costs, transaction and information, in the system (Boyd and Smith, 1998; Levine, 1997; Demirguc-Kunt and Levine, 2001). Under these circumstances, financial arrangements emerge to ameliorate market imperfections and provide financial services that are well placed to facilitate savings mobilization and risk management, assess potential investment opportunities, exert corporate control, and enhance liquidity. Consequently, as Levine (2002) argues, “the financial services view places the analytical spotlight on how to create better functioning banks and markets, and relegates the bank-based versus market-based debate to the shadows”. The law and finance view, initiated by Laporta, Lopez-de-Silanes, Shleifer, and Vishny (1998, 1997), emphasizes the role of creditor and investor rights for financial intermediation. In countries where the legal system enforces these rights effectively, the financial system also becomes more efficient in providing services to the private sector.

Consequently, the quality of the legal system is a strong predictor of financial development. Empirically, this view suggests a positive relationship between economic performance and the component of financial development identified by the legal environment. Evidence from cross-country growth analysis supports this view (Levine 1999, 1998; Laporta *et al.* 1998, 1997). The implication of the law and finance view is that the establishment of an appropriate legal environment will facilitate the development of banks and stock markets, which enhances economic performance.

Empirical Literature

Most scholars have agreed that there is relationship between bank lending and economic growth. However, scholars have differed on the direction of causality between bank lending and economic growth (Oluitan, 2009). Obamuyi (2010) assesses the impact of Nigeria's financial liberalisation policy for fostering private sector

development. Relevant data relating to the influence of the policy on macro-economic performance and private sector development were obtained from primary and secondary sources. The analyses were descriptive and quantitative in perspective. The findings provided insights on the overall impact of financial liberalisation policy on the private sector. It shows that financial liberalisation has led to increased manufacturing capacity utilisation necessary for economic growth, but needs to be complimented by an increased flow of funds to the private sector for investment in the real sector of the economy. This is because, credits to private sector were not found to have a positive impact on economic growth in Nigeria. This implies that credits to private sector were used for commerce (buying and selling), or diverted to some unproductive ventures, rather than production activities, or at least too small to positively impact on economic growth. However, poor infrastructure, high level of corruption, political and economic instability, and high cost of funds were found to have constrained the contribution of the private sector to economic development. The policy implication is that the private sector in Nigeria could only be a positive force for growth, if the government would sincerely provide the needed conducive environment and the private sector efficiently utilises banks' credits for industrial development. This study will assist policy makers in fine-tuning their liberalisation policy and the private sector to adopt a value re-orientation approach to enhance the performance of the economy, especially in developing countries (Obamuyi, 2010).

Lemo (2005) posits that the primary objective of the reforms was to guarantee an efficient and sound financial sector. He said that the Nigerian financial reforms were designed to enable the banking industry develop the required resilience to support the economic development of the nation by efficiently performing its function of financial intermediation. He further stressed that a fundamental objective of the programme was to ensure the safety of "deposited" money, position banks to play active development roles in the Nigerian economy, and became major players in the sub-region, region and global financial markets.

The financial sector reforms were components of the Structural Adjustment Programme (SAP), which kicked off in 1986. The introduction of the programme was on the heels of the rejection of the IMF loan package with its conditionality, a decision that reflected the consensus of a national debate.

Financial systems have long been recognised to play an important role in economic development. This recognition dates back to Goldsmith (1955), Cameron (1967), McKinnon (1973) and Shaw (1973), which

demonstrated that the financial sector could be a catalyst of economic growth if it is developed and healthy. The benefits accruable from a healthy and developed financial system relate to savings mobilisation and efficient financial intermediation roles (Gibson and Tsakalotos 1994).

In same vein, a study by Obamuyi, Edun and Kayode (2011) investigates the effect of bank lending and economic growth on the manufacturing output in Nigeria. Times series data covering a period of 36 years (1973-2009) were employed and tested with the cointegration and vector error correction model (VECM) techniques. The findings of the study show that manufacturing capacity utilization and bank lending rates significantly affect manufacturing output in Nigeria. However, the relationship between manufacturing output and economic growth could not be established in the country. These results, therefore, call for concerted effort by the government, manufacturers and the lending institutions to reviewing the lending and growth policies and provide appropriate macroeconomic environment, in order to encourage investment-friendly lending and borrowing by the financial institutions (Obamuyi, Edun and Kayode, 2011).

Mohd and Osman (1997) broadly categorized the causality into demand-following relationship and supply following relationship. The proponents of demand-following hypothesis argued that economic growth is a causal factor for bank lending, not the reverse. Robinson (1952) maintains that economic growth propels banks to finance enterprises. Gurley & Shaw (1969) also argued that as the economy expands and grows, the increasing demand for financial services stimulates banks to provide more credit.

Similarly, Oluitan (2009) is of the opinion that policy makers should focus less on measures leading to increase in bank lending and concentrate more on legal, regulatory and policy reforms that boost the functioning of markets and banks. Muhsin & Eric (2000) in their study on Turkey concluded that economic growth lead to financial sector development. However, the proponents of supply-leading hypothesis are of the belief that bank lending is a veritable tool for attainment of economic growth and development. The hypothesis was originally credited to the works of Schumpeter (1934). Schumpeter strongly believed that efficient allocation of savings by means of identification and funding of entrepreneurs who invest such funds in innovation and production of goods and services, thus leading to economic growth. This view was supported by other scholars like McKinnon (1973), Shaw (1973), Fry (1988), and Greenwood & Jovanic (1990).

Studies conducted across countries and continents have also supported the postulations of the supply-leading hypothesis. King and Levine (1990) conducted a study involving seventy-seven countries made of developed and developing economies using cross-country growth regression. The objective of the study was essentially to find out the correlation between bank lending, capital accumulation, economic growth and efficiency. The result of the study indicated that bank lending leads to economic growth and efficiency. Similarly, Diego (2003), came out with similar result from his study of fifteen European Union economies, using panel estimation technique to assess the mechanisms through which policy changes have influence the economic growth of the countries.

Habibullah and Eng (2006) conducted causality testing analysis on 13 Asian developing countries and also found that bank lending promotes economic growth. Similarly, the IMF 2008 Global Financial Stability Report indicated a statistically significant impact of credit growth on GDP growth.

Specifically, it was revealed that “ a credit squeeze and credit spread evenly over three quarters in USA will reduce GDP growth by about 0.8% and 1.4% points year-on-year respectively assuming no other supply shocks to the system” (Oluitan, 2009). In addition studies were conducted to test the old Schumpeterian hypothesis, for example; Jao (1976) used cross-section data averaged over 1967-72 in 44 developing countries and 22 developed economies, to study the relationship between bank lending and economic growth. The study found that the money balance-GDP ratio and growth of per capita real money balances (proxy of financial intermediation variables) had a strong positive relationship with economic growth (Tang, 2003).

Fritz (1984) examined the direction of causation between economic development and financial intermediation. Using data from the Philippines, the study discovered that financial intermediation brings about economic development at the early stage of economic growth/development and the direction of causation was reversed at a later stage. This assertion is supported by the work of Rousseau and Wachtel (1998), who examined the links between the intensity of financial intermediation and the economic performance of five industrialized countries. The duo discovered that intermediation played an important role in the rapid industrial transformations of those countries (Tang, 2003).

According to Lang and Nakamura (1995) bank lending alone cannot lead to economic growth. They believe

that other monetary policies of central banks are equally important in making bank loans to make the desired impact on economic growth. This is an important contribution to the discourse on supply-leading hypothesis. A more recent research work by Swiston (2008) conducted in USA detected quantitatively, the significance of bank lending on economic growth. He posited that credit availability is an important driver of the business cycle, accounting for over 20% of the typical contribution of financial factors to growth. He further argued that a net tightening in lending standards of 20% reduces economic activity by 0.75% after one year and 1.25% after two years. The key findings of all the studies are that financial intermediaries (proxy deposit money banks (DMBs), have significant positive impact on productivity of factors of production which leads to increase in real GDP and economic growth.

Toby and Peterside (2014) in a study covering 1980 to 2010 use descriptive and inferential statistics. The descriptive results show that Nigeria's commercial and merchant banks are more active in financing manufacturing than agriculture even though the later contribute more to GDP. Investigating intermediation role of banks on economic growth in Nigeria, Ogege and Boloupremo (2014) employ ADF, johansen cointegration and ECM. The study concludes that only credit allocated to production sector is having a significant positive effect on growth even though the report in table 3 shows the variable is not significant but credits to other sector is. Akujuobi and Chimajemr (2012) examine the effect of commercial bank credit to the sub sectors of the production on growth between 1960 and 2008. The study confirms long run relationship and while credits to agriculture, forestry and fishery, manufacturing, mining and quarrying and real estate and construction are negative and insignificant, credit through the mining and quarrying sub-sector have significant positive contribution on growth. From the inferential results, it is evident that a significantly weak and strong correlation exists between commercial bank and merchant bank lending respectively and agricultural sector's contribution to GDP. Uzomba, Chukwu, Jumbo and Nwankwo (2014) investigate the impact and the determinants of Deposit Money Banks' loans and advances granted to agricultural sector in Nigeria from 1980 to 2011. Multiple OLS regression, Stationarity Test, Co-integration test, Parsimonious Error Correction Mechanism and Granger Causality Test are employed. The study concludes that there is positive impact of deposit money banks' loans and advances on the agricultural sector. Ebi and Emmanuel (2014) investigate the impact of commercial bank credit on Nigeria industrial subsectors between 1972 and 2012.

Using Econometric Error Correction Model (ECM) and conclude that, an increased bank credit to industrial sector is significant in determining industrial sector growth in Nigeria. Yushau (2011) compare accessibility to financing by small entrepreneurs before and after the bank reform using primary and secondary sources. The study concludes that informal institutions are better able to meet the financial need of entrepreneurs than formal whose conditions are stiff. Nwaeze, Michael and Nwabekee (2014) explore the extent to which financial intermediation impact on the economic growth in Nigeria during 1992 to 2011. Relying on Ordinary Least Squares (OLS) regression technique, they conclude that both total bank deposit and total bank credit exert a positive and significant impact on the economic growth in Nigeria for the period. Also, the values of GDP per capital (PCY), Financial Deepening (FSD), Interest Rate Spread (IRS) and negative influence of Real Interest Rate (RIR) and Inflation Rate (INFR) have positive influence on the size of private domestic savings while the lagged values of total private savings, private sector credit, public sector credit, interest rate spread and exchange rates relate positively with economic growth. Orji (2012) submits using Distributed Lag-Error Correction Model (DL-ECM) and Distributed Model.

Ekpenyong and Acha (2011) examine the contribution of banks to economic growth using correlation analysis, regression, diagnostic tests, Augmented Dickey-Fuller test and cointegration. While Nigerian banks are not contributing significantly to economic growth, there is Positive and significant impact of private sector credit on growth. Obademi and Elumaro (2014) re-examine the financial repression hypothesis in order to determine the impact and direction of causality between banks and economic growth during intensive regulation, deregulation and guided deregulation regime. Ordinary least square regression and Causality test conclude that banks have significant positive impact on growth in Nigeria especially during deregulation. Nevertheless, banks appear to be passive to growth in terms of causality.

Nwakanma, Nnamdi, and Omojefe (2014) evaluate the long-run relationship and the directions of prevailing causality between bank credits to the private sector and the nation's economic growth. The study conclude based on the Autoregressive Distributed Lag Bound (ARDL) and Granger Causality that bank credits have significant long-run relationship with growth but without significant causality in any direction.

Ogege and Shiro (2013) in a study covering 1974 to 2010 use co-integration and error correction model, discover a long-run relationship and conclude that commercial credits contribute positively to growth but it

is significant in the long run. Shittu (2012) examines the impact of financial intermediation on economic growth in Nigeria between 1970 and 2010 using the unit root test and cointegration test and the error correction model. The paper concludes that financial intermediation notably deposit mobilisation is significant in determining economic growth in Nigeria. Nwaru and Okorontah (2014) investigate banks credit versus output and conclude that credit to the private sector is positive but insignificant and that real output causes financial development, but not vice versa.

Mamman and Hashim (2014) examine the impact of bank lending on economic growth in Nigeria for the period 1987 to 2012. The study employs multiple regression models and concludes that bank lending is significant in determining growth. In a similar study from 1992 to 2012 using the same method, Yakubu and Affoi (2014) conclude that the commercial bank credit has significant positive impact on the economic growth in Nigerian.

Theoretical Framework

The **theory of bank-based financial system** stresses the positive role of banks in development and growth, and, also, emphasizes the drawbacks of market-based financial systems. The theory opines that banks can finance development more effectively than markets in developing economies, and, in the case of state-owned banks, market failures can be overcome and allocation of savings can be undertaken strategically. In a way those banks that are not impeded by regulatory restrictions, can exploit economies of scale and scope in information gathering and processing (Levine, 2002 and Beck and Levine, 2002 provide more details on these aspects of bank-based systems). In fact, bank-based financial systems are in a much better position than market-based systems to address agency problems and short-termism (Stiglitz, 1985; Singh, 1997). In particular, the free-rider problem inherent in atomistic markets in acquiring information about firms is emphasized by Stiglitz (1985). But well-developed markets quickly reveal information to investors at large and thereby dissuading individual investors from devoting resources toward researching firms. Thus, banks can make investments without revealing their decisions immediately in public markets and this creates incentives for them to research firms, managers, and market conditions with positive ramifications on resource allocation and growth. Additionally, Rajan, and Zingales (1999) stress that powerful banks with close affinity to firms may be more effective at exerting pressure on firms to re-pay their debts than atomistic markets.

There is no gainsaying the fact that loanable funds to finance long-term projects are usually scarce relative to the demand for them. It is also true that it is often difficult to finance projects solely with own funds usually because large-scale projects require ample funds. In this study, we see the financial intermediary role as mainly the duty of commercial banks so as to provide credit for the key sectors of the economy. It is upon this theoretical base that we build our study.

METHODOLOGY

Research Design

The study adopts a survey type of research design. There are two variables: independent and dependent. The dependent variable is economic growth in Nigeria. The independent variables are the commercial bank loans to key sectors like industrial, manufacturing, agriculture and the service sectors. In addition to the above, the study equally seeks to examine the relationship between bank loans to selected sectors and economic growth in Nigeria.

Source of Data

Based on the nature of the study, data collection will be based on secondary data. The study will source data from Statistical Bulletin of the Central Bank of Nigeria (CBN), Federal Office of Statistics (FOS) and Annual Abstract of Statistic of the National Bureau of Statistic (NBS). The source of data for the study is secondary source because it requires the time series data of the GDP and the selected sectors for the period between 1986 and 2014.

Population of the Study

The population of the study constitutes the entire sectors of the Nigerian economy. However, the impossibility of including all the members of the population makes sampling imperative. As a result, the study concentrated on the key sectors like industrial, manufacturing, agriculture and the service sectors.

Model Specification

Given the propositions stated that commercial banks could serve as a source of credit for desiring sectors of the economy. In this study, we are examining the contribution of commercial banks loans to key sectors in the economy so as spur economic development.

As such, in specifying our model, our dependent variable shall be the Gross Domestic Product (GDP), while our explanatory variables shall be the annual time series data of the commercial bank loans to key sectors like industrial, manufacturing, agriculture and the service sectors. Therefore, our multiple regressions model can be specified as thus;

$$GDP = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + U$$

Where

GDP = Gross Domestic Product

X_1 = Credit to Mining and Quarrying sector

X_2 = Credit to Manufacturing sector

X_3 = Credit to Agricultural sector

X_4 = Credit to Building and Construction sector

U = the stochastic error term

b_0, b_1, \dots, b_4 are parameters

These variables were so chosen because they are majorly the key sectors that could spur economic development. As such, their positive contribution should lead to increase in Gross Domestic Product (GDP).

Technique for Analysis

We shall use the Ordinary Least Square (OLS) technique to estimate the values of the parameters $B_0, B_1, B_2, B_3,$ and B_4 . Besides, we will use the student's t-values obtained to determine the statistical significance of the parameter estimates and the test of goodness of fit for the model using the R^2 technique. This will enable us to know the percentage of variations between the dependent variable and the explanatory variables. Then, the f-statistic test to determine the overall significance of the multiple regression models and the Durbin – Watson test for the presence or absence of auto-correlation.

DATA PRESENTATION AND ANALYSES

Data Presentation

In the analysis of our model, in which the Gross Domestic Product (GDP) served as the dependent variable while the Mining and Quarrying, Manufacturing, Agriculture and the Building and Construction serve as the independent or explanatory variables, we obtained the following results for the Ordinary Least Square (OLS) multiple regression models. Please note that the result presented below have their details in software form at the appendices.

Ordinary Least Square (OLS) Results

The OLS multiple regression result is as presented below:

$$RGDP = b_0 + b_1MNQR + b_2MNFC + b_3AGRC + b_4BNCN$$

RGDP =	-1.40	-	13853MNQR	-	4231MNFC	+	341371.7AGRC	-	43461.52BNCN
S.E	(3.83)		(1554.27)		(4111.19)		(41536.73)		(3250.52)
T	-3.65		-8.91		-1.03		8.22		-13.37
$R^2 = 0.99,$			F-stat = 575.08,		d-w = 0.57,		N = 26		

Analysis of results

Ordinary Least Square (OLS) Multiple regression results

The empirical results generated from the ordinary least square multiple regressions as presented above are quite revealing and very interesting. All the explanatory

variables except the agricultural sector were negatively related with the Gross Domestic Products. In spite of being negatively signed both the Mining and Quarrying and Building and Construction were statistically significant using the rule of thumb of 2. Furthermore, only the Agricultural sector was found to be positively related and statistically significant justifying its contributions to the GDP over the years. This explained the nature of relationship between commercial bank loans and economic development in Nigeria.

FINDINGS

Based on the multiple regression result, it suggested that only the agricultural sector have being enjoying much of Bank credit and it has making positive impact on the Gross Domestic products (GDP) while others like Mining and Quarrying, Manufacturing and the Building and Constructions sectors have not being getting much attention in terms of bank credit to spur development in that sector. This also reflected in their contributions to the GDP which on the low side given the period of study. Whereas, true economic growth cannot be attained if these sectors are not operating at their fullest capacity neither can sustainable development be guaranteed as well.

CONCLUSION

This research is on the Sectoral Distribution of Commercial Bank Loans impact on economic growth in Nigeria (1986-2014). Our main aim is to investigate whether the Commercial bank loans to some selected sectors have been able to add to Economic Growth in Nigeria. Using the loans advancement to Mining and Quarrying, Manufacturing, Agriculture and Building and Constructions sectors as a basis; our study via the results obtained shows that there has being no corresponding impact of the loans to these sectors, except that of agriculture on economic growth in Nigeria. Even though these credit provisions are available at these banks yet it has not been explored by the sectors. This is evident of the development in these sectors in terms of their contribution over the years to the Gross Domestic Products (GDP). Evidently, the achievement of sustainable economic growth can be made possible through loans and advancement of Commercial Banks in Nigeria. Despite the availability of these credits, our study showed that loans accessed by these selected sectors have not been growing at the pace of the Gross Domestic Products. This is also evident in their contributions to the GDP as well. That is, the poor performance of these sectors can be traceable to their inability to access the loanable fund at the commercial banks. However, the Agricultural sector was found to be positively related and statistically significant justifying its contributions to the GDP over the years. In as much as all these sectors of the economy

plays important role in promoting economic growth; their neglect have proved otherwise. This has accounted for the reason for the mono-economic nature of the Nigerian economy due to over reliance on the oil sector over the years.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made;

- That more credits should be channelled to other sectors like the mining, manufacturing, and the service sectors to have an inclusive sectoral growth that will power sustainable growth and development. In addition, the government must as a matter of urgency embarks on programmes and policies that will revamp these sectors so that they will be able to compete at par with the other performing sectors.
- Also, the practice of concentrating on one sector development at the expense of others as evident in the focus on the oil sector is not in the overall interest of true economic growth and sustainable development.

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INDIGENOUS TECHNOLOGY MECHANISM FOR THE ERADICATION OF ABSOLUTE POVERTY IN THE RURAL AREAS OF THE NIGER DELTA REGION OF NIGERIA

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ABSTRACT

Many countries of the world have attained giant economic strides utilizing their indigenous technologies as ignition keys and foundations from which further knowledge evolved. African countries, like Nigeria, have very robust indigenous technologies which have not been maximally exploited for economic growth both for the individuals and the nation. This is a study of Indigenous Technology (IT) mechanism operative in the Nigerian ethnic nationalities, aimed at investigating the effectiveness of these existing IT mechanisms in the eradication of absolute poverty in the Niger Delta Region of Nigeria. It was a qualitative study involving interviews with 78 knowledge workers and 81 Indigenous Knowledge (IK) practitioners. A researcher instrument – Indigenous Technology for Eradication of Poverty Questionnaire – was used to collect data. Deductive Approach was used to analyze data. Findings showed that the IT mechanisms are ineffective in the eradication of poverty in the Niger Delta Region of Nigeria. Findings also showed that sacredness and protection occasioned by tradition makes it difficult to manage IT on the Intellectual Property (IP) platform for entrepreneurial benefits. Based on these findings, it was recommended that IT must be identified by the appropriate government agencies, and a national policy put in place to protect and promote them so as to cushion the burden of loss experienced by the traditional custodians. This should include the use of the IP platform to maintain a balance between the protection and preservation of Indigenous technologies and the free exchange of knowledge.

KEYWORDS: Indigenous Technology, Poverty, Intellectual Property Rights, Niger Delta, Knowledge Workers, Indigenous Knowledge practitioners

INTRODUCTION

In Nigeria, the Niger Delta area is considered the richest in natural oil and gas production. And naturally, oil and gas translates to economic wealth. However, in the opinion of Jack-Akhigbe (2013), the Niger Delta region of Nigeria presents a typical case of the juxtaposition of enormous wealth and acute underdevelopment. The states herein have their own peculiar perennial problems and terrain, which had been highlighted before oil and gas exploration in Nigeria. According to Earth Rights Institute, freshwater swamp forests alone in the Niger Delta cover some 11,700km² or about half of the delta, lowland equatorial monsoon 7,400km², brackish water 5,400km², sand barrier lands 11,400km² all totaling 25,640km². Plants and animals in these terrains are under threat due heavily to the persistent ecological degradation occasioned by over fifty-five years of oil exploration. From the Berlin Conference in 1885, the Willink Report of 1958, and the World Conference on Environment and Development in 1978, it is clearly stated that neglect and extensive environmental damage

cause poverty. In the light of the above, Oviasuyi and Uwadiae (2010) affirm there is massive poverty in the Niger-Delta in spite of accounting for a huge part of the nation's revenues through oil and gas.

Despite oil and gas or the presence of poverty, man has really come a long way before now. Over the centuries, he has struggled to conquer the challenges of survival. Long before Maslow's Hierarchy of Needs was propounded, day to day needs and sometimes never-before-experienced situations arose and man had to find his path through, emerging with workable solutions. In such primary sectors as health, seeds and produce management, animal husbandry and security, man fared well. Explorative efforts birthed the acquisition and harvest of indigenous skills and know-hows. These skills were not necessarily first grade but were effective as far as combating man's survival challenges. Today, Indigenous Technologies (IT) has travelled through centuries, handed down from generation to generation, with most of it undergoing enormous refinement yet

maintaining the same objective of combating challenges. Every nation possesses their unique inherent IT and therefore possesses the ability to rid themselves of absolute poverty in all ramifications once such knowledge could be exploited and managed maximally.

Globally, nations have attained giant heights through the application of IT, managed on the Intellectual Property (IP) Rights platform, for solutions to social and economic challenges. Some schools of thought may have categorized the indigenous methodologies as crude and unrefined but they are basically the foundation for technological inventions and innovations. For instance, Bell pepper was once indigenous in the 1500-1600's when it was discovered by European colonizers of North America. More recently, technological intervention has given Bell pepper an explosive commercial status with China, Mexico, Indonesia and United States on the frontline as producers. Peppers in the Bell family contain capsaicin (a lipophilic chemical that can produce a strong burning sensation). An aerosol extract of capsaicin also known as pepper spray is used by law enforcement as a nonlethal means of incapacitating a person or by individuals for personal defense.

In Nigeria and some other parts of Africa, yam (a starchy tuber) is boiled, roasted or pounded (with maximum labour, using the traditional mortar and pestle), then served with accompaniments like palm oil, vegetable sauce or soup. Over time, man's innovative mind went to work and developed machines which can (a) dry, process, grind and package yam powder in bags for easy access on the shelves of superstores, (b) pound boiled yam into extremely smooth paste ready for consumption. Wood was common in the days of our forefathers basically for making fire but not anymore as the Temperate Forest Foundation claim that over 5000 items are today being processed and carved into not just furniture and furniture related items but paper towels, baby wipes, gum, tea bags, postage stamps, buttons, egg cartons, toothpicks, vacuum bags, insecticides etc. Indeed thousands of businesses are indigenous-knowledge based. Indigenous Technology is a lucrative idea invested on by nations as well as individuals. One therefore wonders how much of this is taken advantage of in Nigeria for growth and development. Besides oil and gas, can Nigeria draw from its indigenous well the IT wealth? Can the Niger Delta look beyond her challenging terrain and abused landscape and invest time and attention in her indigenous heritage in order to sustain her economy as a people?

Statement of the Problem

There are obvious lapses in the link between rich IT in the Niger Delta Region of Nigeria and the expected

entrepreneurial benefits therein. Youths in this region are constantly caught up in restlessness over the state of their land as a result of the persistent oil exploration. There are ceaseless agitations over what compensations to be made by the explorers and government and further agitations when these compensations are not adequately utilized to salvage the common plight of the indigenes. Despite whatever largesse dispersed to the people, the lands are continually damaged and the people, who are predominantly farmers and fishers, remain agitated. This situation calls for a look in a different direction – the wealth that is inherent in IT, to help curb absolute poverty and sustain a stable lifestyle.

Aim of the Study

The aim of this study was to address the following Research Question:

Is the existing IT mechanism effective in the eradication of absolute poverty in the Niger Delta Region of Nigeria?

Significance of Study

There is need for a clear cut path to development especially for countries which are perceived to be lagging behind on the global economic race. It is hoped that the outcome of this study will help emphasize the relevance and potentials of IT both in striving and flourishing economies. Economic planners, knowledge institutions, industrialists and relevant agencies in Nigeria can explore and evolve innovative systems to counter the negative façade of a robustly rich knowledge pool for the purpose of building a nation which can sustain her national economic growth. Results of this study will be significant to the youths and the unemployed in the Niger Delta Region of Nigeria who are often hung up on the occasional stipends handed down by oil and gas companies to cushion the effect of consistent drilling.

REVIEW OF LITERATURE

Though IT has roughly evolved to date, it can still be traced back to the first findings of anthropologists, but over the years academic researchers have continued to explore the possibility of using such knowledge as a basis for growth and development of economies (Ajibade, 2008). In Nigeria, researches have been carried out on the subject by scholars like L.T. Ajibade, J.S. Oguntoyinbo, A. Faniran, O. Areola, M.A.A. Osunade, Oguntunji T and others. One among many remarkable researches in Nigeria by P. O. Ogunyale, from Oyo state, was the pharmaceutical composition for the treatment of Sickle cell disease. The composition consisted of local indigenous products such as *uziza pepper* (Piper Guineenses), *camwood* (Pterocarpus Osun), *cloves* (Eugenia Caryophyllata) and *sorghum* (Sorghum Bicolor). It was found effective in the

management of Sickle cell disease. Subsequently, a patent (U.S Pat.No. 5800819) was taken out in 1998 to protect the knowledge.

The position that IK is static and somehow frozen in time has been a general representation (Adams, Potkanski and Sutton, 1994; Bebbington, 1993; Kalland, 2000 in Briggs, 2005). Briggs asserts however that such representation is not helpful because they create an image of an unchanging, conservative culture. There is hardly any culture that is unchanging in the face of various branches of surrounding influences and external markets. The weakness of any culture confronted with other cultures lies in its fear of losing itself. The African civilization therefore absorbs steadily and slowly at the risk of gaining or making a loss.

In the light of Vilakazi's (2002) submission that healthy and genuine development policies in Africa must be founded upon the principle and pattern of African civilization, Ajibade posited that African intellectuals should engage in fieldwork on their own people, and on themselves. Ajibade concludes that this should be based first and foremost, on the utilization of the resources provided by African civilization. This however, does not rule out but leaves in the picture other people's ideas/culture for adoption. In so doing, the 'static' and 'frozen' mode hitherto referred to and the imagination that development can only emerge from the application of western knowledge and that IT has little to offer is gradually eliminated (Briggs, 2005).

In line with this thought, Tarawalie (2008) reported the evaluation of factors contributing to the success or failure of The United Nations Food and Agricultural Organization (FAO)'s People's Participation Programme (PPP) in setting up sustainable networks of people-controlled rural organisations in seven African countries. It was reported that the key factor in the countries of greater 'success' was that the PPP connected with long-standing indigenous organisations and indigenous approaches to income-generating activities. These income-generating activities result in economic growth and according to Dahlquist's (2013) investigation, economic growth decreases the level of extreme poverty.

However, research carried out by Okikere (2014) on the state of the Niger Delta as an oil-producing cluster projected that economic growth of the Niger Delta states with their associated oil is below the expected status. This again points to Jack-Akhigbe's position that the Niger Delta presents a case of the juxtaposition of enormous wealth and acute underdevelopment, presenting a disturbing challenge.

METHOD

This is a descriptive research designed to determine the effectiveness of the IT mechanism in the ethnic nationalities of the Niger Delta. It was conducted in three Niger Delta states - Rivers, Bayelsa and Edo states - comprising of the Ogoni, Edo, Esan, Ikwerre, kalabari, Afemai and Igbo ethnic nationalities.

Six (6) research institutes were drawn from the three states using the purposive sampling technique. Six (6) focus groups comprising of 78 knowledge workers formed the sample from the research institutes and 81 Indigenous Knowledge (IK) practitioners were drawn from three (3) communities selected from the respective states. These gave a total of 159 participants for the interviews and interactive sessions.

Knowledge worker: a person, especially in a research institute, who synthesizes information/data to arrive at conclusions which he may or may not necessarily apply himself to achieve the objective of creating a product/service out of his conclusions.

Knowledge Practitioner: a person who applies available knowledge for the provision of goods and services irrespective of whether the applied knowledge is originally his or not.

Table 1: Composition of sample using the purposive sampling technique

STATES	INSTITUTIONS	INTERVIEWEES	
		Knowledge Workers	IK practitioners
RIVERS	ARAC, Aluu	14	
	COE, Omoku	13	
	OKWUZI		
	Community		27
EDO	RUBBER	14	
	RESEARCH, Benin	12	
	NIFOR, Benin		28
	EKIADOLOR Community		
BAYELSA	NACETEM,	13	
	Yenegoa	12	
	NABDA, Odi		
	OTUOKE Community		26
TOTAL		78	81

The Indigenous Technology for Eradication of Poverty Questionnaire (ITEP) was used to collect data within a timeframe of six months. The knowledge workers, full time officials of the government owned research institutes, were interviewed by the researcher, at their convenient time, in sessions lasting between 1hr to 1hr.30min. Interactive sessions with the indigenous knowledge practitioners such as the farmers, fishermen, bone setters, traditional midwives, tools fabricators and

various other artisans, were carried out between 1hr.30min to 2hrs. All the interviews were recorded to the knowledge of the participants. The recordings were subsequently transcribed into computer files.

DATA ANALYSIS

Deductive approach was used to analyze collected data. All of the interview transcripts were read by the researcher and coded in the style of a Grounded Theory Approach to data analysis (RWJF - Qualitative Research Guidelines Project). After identifying the framework, data was coded accordingly and four recurrent themes were generated. They are effectiveness of IT mechanism, sacredness of IT, handpicking hindrances and new found faith. There were dimensions derived from the themes, some reflective of the research aim, others contributory to the causative factors relating to the research problem. Percentage scores were used to represent responses of the respondents.

FINDINGS

According to 59% of the respondents, the IT mechanism is limited or ineffective in the eradication of absolute poverty in the Niger Delta. Forty-one percent (41%) of the respondents disagree.

All respondents (100%) agreed that traditionally, knowledge is protected. Ninety-four percent (94%) said the sacredness attached to the process makes it difficult to manage on the IP management platform while 6% argued that 'sacredness cannot be separated from IT. Every respondent (100%) agreed that the traditional handpicking method is a hindrance to the knowledge transfer mechanism.

New faith is also a factor. A good percentage of the respondents (79%) explained that a targeted individual may find new religion and refuse to carry on the tradition while 21% argued that these particular individuals should not be blamed for choosing new faith over age-long family traditions.

DISCUSSION

This study sought to find answers to the research question: Is the existing IT mechanism effective in the eradication of absolute poverty in the Niger Delta Region of Nigeria?

The effectiveness of the IT mechanism has been seen as a matter of perspective. Though a majority (59%) thinks the process is ineffective, 41% opined that IT mechanisms are seen as ineffective because knowledge workers are looking at the concept comparatively, aligning it with western knowledge which is often clearer and documented. They argued that it should be seen from the point of view of the recipient of the

knowledge and his or her ability to cope, or not, with the nature of the mechanisms. "We are postulating what ought to be. We should consider that the receiver at his own level does not consider the information or the method inadequate or ineffective. They tend to cope very well with the pace, the method and everything." This school of thought further argued that some of these presumed "ineffective" methods are scientific in nature, like plucking certain leaves in the morning, with the aim of getting the best of nutrients in the leaves before sunlight. At their experimental level, they have determined the efficacy of such leaves at different times of the day. They insist that IT is valuable and effective and will boost economies if the practitioners come abreast with global technologies and measure up to them.

Measuring up then includes bringing the ideas to the IP platform, where every detail for the promotion of idea is disclosed and then protected. However, IK practitioners do not subscribe to this process because they consider certain knowledge sacred, thus refuse to expose them. For instance, certain herbs are harvested in silence while others are plucked mouthing inaudible incantations. This associated sacredness is said to be part and parcel of a cure, healing or solution to a predicament. Certain streams cannot be visited at certain seasons because of presence of spirits while the female gender is not allowed in certain arena for same reason. These are often boundaries for non-practitioners and most of these boundaries are instituted by the indigenous people without adequate explanation for them. The sacredness is often supported by myths and predictions of repercussions from the gods. Although sacredness is believed by some to form part of the effectiveness of IT mechanism, knowledge that is not completely detailed cannot easily be exploited for entrepreneurship and growth. According to knowledge workers this position of constant conservation by the IK practitioners is so because they are unaware of the benefits of managing IT contemporarily.

The careful and deliberate selection of a specific individual to groom in and pass the knowledge to (the handpicking method) is considered a weak point in the transfer link. Respondents claim some people die with invaluable information because the right person is not available to impact the knowledge. Knowledge revolves round a family or clan and does not go across board and this limits the wealth of the society at large. In like manner, the limited effectiveness of IT mechanism is attributable to the fact that knowledge is often within a limited geographical area since the tradition is in the way of spreading it. In the past and even presently people travel long distances to seek simple indigenous solutions to their health or wealth challenges.

Religious affiliation has over time pulled the youths away from circles with huge IT presence because of its unique and unclear content. As a result, IT declines from generation to generation, losing the benefits therein for the family and the community. This is despite the fact that IT is not always 'crude' or 'dirty' "in the face of various branches of surrounding influences and external markets", as asserted by Briggs (2005). Some respondents rightly pointed out that some cuisines that have attained international recognition and franchise are purely indigenous-based. The over 4,000 year old noodles made from foxtail millet in northwest China is widely eaten today without prejudice. It becomes realistic that people with religious concerns can choose to be selective not ignorant.

RECOMMENDATIONS

In order to ensure a viable and profitable innovation system with Indigenous Technology as foundation, it is important to establish conditions that will enhance the conversion of basic indigenous skills to wealth. In view of this, the following recommendations are submitted:

Awareness: In the rural areas of the Niger Delta, awareness needs to be created about the entrepreneurial potentials of the indigenous technologies in contrast to treating ailments for very meager sums of money for survival. Custodians of indigenous technologies must understand that knowledge is globally protected and therefore IK can also be protected on the IP platform. Emphasis should thus be on rethinking their existing forms of transfer, identifying possible weak points and blending/exchanging methodologies where applicable, towards rapid increases in productivity, capitalisation and sustainability.

Improved Indigenous Approaches: Indigenous approaches to development should be improved upon by information practitioners to create a sense of ownership for the custodians of Indigenous technologies which should have a longer lasting impact on relations between the local population and the local administration, giving the former a means of monitoring the actions of the latter.

Policies: Indigenous technologies must be identified by the appropriate government agencies, and a national policy put in place to protect and promote Indigenous Technology so as to cushion the burden of loss experienced by the traditional custodians. This must include the use of the IP platform to maintain a balance between the protection and preservation of Indigenous technologies and the free exchange of knowledge.

CONCLUSION

Despite the prospects of the Indigenous Technology, its character and nature plus the position of the custodians on protection is often a hindrance to themselves, the communities in the Niger Delta and the Nigerian nation at large. This is because some of these traditional know-hows could be transformed into multinational money spinning enterprises. This can happen if and when every stakeholder plays their simple and precise roles. Only then can the people begin to come out of the poverty quagmire of their peculiar location and move forward to an economy that can sustain individuals as well as the nation.

Contribution to Knowledge in line with Conference Theme

Thousands of our indigenous ideas are yet to be explored for enterprise. These ideas/skills can feed SMEs and boost the private practice which is the economic backbone of a nation and this will in turn lead to a steady and sustainable development of the Niger Delta Region of Nigeria, the Nigerian nation and any other nation.

BIOGRAPHY OF AUTHORS

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SUSTAINABLE GREEN SUPPLY CHAIN MANAGEMENT AND IMPACT ON ORGANISATIONS

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ABSTRACT

Nowadays, sustainable development has become a subject of focus and concern for governments, organisations, companies, communities as well as individuals. As a result of this, manufacturing companies and industries are the first to receive criticism due to manufacturing activities being assumed to be a major culprit in creating environmental and ecological issues. In the current century, limitations on resources and environmental concerns are one of the main trepidations of industries. Strained by the stress of limited resources, energy and very pressing environmental issues, Green Supply Chain Management (GSCM) actually revealed that the implications of green practices can save money, reduce cost, increase efficiency, reduce delivery lead time and sustain the business longer. Green Supply Chain Management (GSCM) has appeared as an environmental innovation which integrates environmental concerns into supply chain management. The purpose of this study is to review various literatures about Green Supply Chain Management (GSCM) that help to determine the benefit and implications that organisations receive when they implement GSCM practice process. Furthermore, this study aims to investigate the initiatives in the GSCM practices and what elements of it enable the improvement of organisational performance and business sustainability. Therefore, manufacturing companies need a comprehensive evaluation system to measure the outcome of the green supply chain activities that are implemented. This study employed the mixed method of research design which combined the qualitative and quantitative methods. From the research on the study, the results showed that green supply chain management practices and its elements can improve organisational performance and help sustain the business. The proposed model may be helpful to some extent for organisations analysing the benefits of investing in Green Supply Chain Management. On a global scale, environmental sustainability is also a trending subject of focus, so further research in the topic will not only help organisations sustain their businesses, but they will be able to sustain the world for better living.

KEYWORDS: Green Supply Chain Management, Supply Chain Management, Environmental Management, Business Sustainability, Green business

INTRODUCTION

The world population (the total number of living humans on Earth) was 7.349 billion as of July 1, 2015 according to the medium fertility estimate by the United Nations Department of Economic and Social Affairs, Population Division. In order to fulfil the demand of consumers that continue increasing leading by population, more industries and organisations are rising; both domestically and globally. Hence, the economy increases the level of energy and material consumption following the growth of the industries, which contributes to the environmental issues and resource depletion problems. Currently, it's a norm for organisations to face competition, tight regulations and community pressures. The organisations not only need to produce quality products / services that fulfil customer needs and satisfaction, but also to produce

products / services with shorter lead times and limited resources in the way of environment and sustainability. The appropriate method that helps is to invest in the right green technology with the aim to minimise or eliminate wastages including hazardous, chemical, emissions; energy and solid waste along various stages the supply chain. These stages include product design, material resourcing and selection, manufacturing processes, delivery of final products and end-of life management of the products.

Industries have shown growing concern for the environment over the last decade. Recently, supply chain management has directed its attention to the role of the supply chain that impacts on the natural environment. A supply chain can be described as a network that consists of all departments such as

procurement, buyer, supplier, manufacturer, finance, distributor, forwarded wholesaler, retailer or even customer that can be classified as upstream and downstream through physical product distribution or flow of information.

According to Copra (2010), a typical supply chain includes 5 stages: component / raw material suppliers, manufactures, wholesalers / distributors, retailers and customers. These five stages are connected through flows of products, information and cash. Managing a supply chain network is complex and difficult since the network involves various systems, activities, relationships and operations. However, SCM practises include a set of approaches and activities utilised by a firm to effectively integrate supply and demand for improving the management of its supply chain. The main focus of SCM is to provide the right product to the right customer, with the right form at the right cost, with the right time and quality. In addition, the major focus of SCM is to reduce cycle time and inventory and thus increase productivity, while the long term goal is to enhance profit through improved market share in the industry and the ability to fulfill customer satisfaction.

By adding a green component into SCM practices, GSCM practices can be described as a set of green activities in procurement, manufacturing and distribution. Following the research paper by (Ai Chin, 2015), Green supply chain management is described as born to be basic need for a successful organisation. Whilst competition increased in the 1990's, the heightened awareness of green practices prompted organisations to act ethically and with social responsibility within their supply chains. From the beginning of 1995, GSCM had caught the attention of scholars following the importance on focusing on the environment. During 2010, organisations developed environmental management strategies in response to the drastic global weather change that contributed to the change of customer purchasing behaviour, forcing organisations to implement environmental requirements in their Supply Chain Management.

SCM acquired lower supply chain costs, increased efficiency of overall productivity, high turn-over of inventory in organisations (producing product following customer demand at right time at right quantity), overall on hand inventory reduction, better inventory management and forecast accuracy. Furthermore, it acquired prompt delivery performance, shorter cycle time, order fulfilment, increased customer service and responsiveness, improved supply chain communication, risk reduction, reduced cycle time process, increased flexibility, and cost saving mainly on reduction in duplication, following effectiveness of supply chain

communication. Meanwhile, green supply chain management also actually helps companies reduce waste, energy and pollution, minimise environmental risks and improve community life. Following (Copra, 2010), the collaboration within organisations actually promotes a mutual environment that receives benefit from cost saving (raw material, material, energy) and decreased environment liability.

Problem Statement

Organisations continue investing to be sustainable in the challenging industries and market. However, an organisation is likely to invest more in technology to sustain its business and stay competent in its industry. This research is conducted to elaborate on Green Supply Chain Management that an organisation can implement and the benefit the organisation can gain.

Objective

The objective of this paper is to identify and understand more detail on Green Supply Chain Management and the impact on organisations that implement Green Supply Chain Management. The study also tries to point out the benefits of implementing the concept of GSCM and ways of overcoming the obstacles identified by the companies for implementing the concept.

LITERATURE REVIEW

Green Business

The concept of green business is extremely important to be evaluated, in the sense that the green concept itself will be deeply rooted in their green strategy, which leads to green measures and implementation. Brown and Ratledge defined green business as "an establishment that produces green output" (Brown & Ratledge, 2011) while Makower and Pyke mentioned that "a green business requires a balanced commitment to profitability, sustainability and humanity" (Makower & Pyke, 2009).

Slovik (2013) proposed that the process of environmental sustainability demand that is also relevant to social responsibility. "Green business" could be defined as an organisation that used renewable resources (environmentally sustainable) and holds itself accountable for the human resource aspect of their activities "(socially responsible)" (Slovik, 2013). Based on another study, green business would be defined as an organisation committed to the principles of environmental sustainability in its operational activities, trying all ways possible to use renewable resources, and putting great efforts into minimising the negative environmental impact of its activities. The shift of a business to the green trend should be regarded as the outcome of the interaction of three main agents of the process: consumers, governments, and the business

itself, the first two contributing to the formation of “green request” to business and the latter implementing green practices. The uneven proliferation of green business practices in the world can partly be explained by the aforementioned ambiguity of the concept itself and, what is even more important, by the cultural, political and economic differences of the countries (Linás et al., 2014).

Supply Chain Management (SCM) and Green Supply Chain Management (GSCM)

Supply Chain Management takes an important role in managing the business in organisations as it actually focuses on the full operation of the organisation. An update from (Webber, 1982), described SCM as follows: “Supply chain management is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management control all movement and storage of raw materials, work-in-process inventory, and finished goods from point to point.” These actually describe SCM as a vital component of competitive and logistics strategy of major companies. In other words, SCM is the management of operations such as delivering raw materials, designing products, manufacturing products, and delivering products to end-users.

Environmental consideration in the context of SCM has taken a leading attention from multinational enterprises as public pressure grew, for better products. Pressures from consumers, regulators, and other communities led companies to re-think their strategy on environmental SCM which brought about the establishment of the new concept, green supply chain management (GSCM). Following the journal (Webber, 1982) the new GSCM concept has taken great attention, describing GSCM as “Integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end of-life management of the product after its useful life”.

GSCM has become nearly compulsory for most of the organisations to implement GSCM practices so that they can stay competitive in the industry. Organisations with GSCM enjoy benefits such as positive image, market share, and better efficiency, while, the other organisations may suffer from losses such as regulatory compliance costs and costs from implementing the environmental plan. It was found that organisations without an environmental strategy may continue to lose business and be hit by pressure from certain groups.

Following a study by (Srivastava, 2007), he divided pressure groups into two categories: external pressures;

such as regulators, community, consumer and suppliers, while internal pressures include shareholders, management, and employees. The study identified four pressure groups which positively influence organisation formulation of an environmental plan as i) regulatory pressure group: that set regulations and standards for firms to follow; ii) customer pressure groups with customer satisfaction being the main focus, and organisations needing to take full responsibility not only to fulfil customer demand but to support what customers need. As environmental elements will be the main focus from customers, the organisation will be responsible to produce a product greenly. The other two pressure groups are: iii) Shareholder pressure group, which is directly related to an organisation that influences organisation’s strategy, and iv) community, who actually will mobilise public opinion against the organisations environmental policies.

Green Supply Chain Management (GSCM) Practices

GSCM is the integration of environmental practices into supply chain management, such as product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management. Environmental thinking in supply chain management gave birth to new concept, ‘green’ supply chain management which in turn transmitted supply chain into ‘green’. New concepts of greening implemented practices of green design, green purchasing, green logistics, green packaging, etc. GSCM require an involvement of the strategic collaboration of partner firms in a supply chain to manage the operational and environmental impacts of supply chain activities by coordinating the intra- and inter-organisational processes (Wong, 2015).

Following (F.E. Bowen, 2001) studies on Green Supply Chain, it can be divided into 3 main focuses: green supply process, product-based green supply, and advanced green supply. Green supply is adaptations made to the company’s supplier management activities in order to incorporate environmental considerations, which include collecting environmental information on suppliers, assessing, ranking, and choosing according to supplier’s environmental performance.

The second type of green supply is based on the changes in the product supplied, which is managing supplied inputs such as packaging and recycling, this needs cooperation with suppliers. The third type of green supply includes more proactive measures such as introducing environmental criteria to buyers, for example, introducing products that consume clean technology programs. Following the research, all three types of green supply will be considered to examine

environmental practices that organisations may undertake to improve their own or their supplier's environmental performance.

In-bound function of the supply chain management takes an important role in waste minimisation and cost saving. A large part of inbound function is concentrated on green purchasing strategies where building long-term strategic relationships with suppliers is essential. Inbound function includes the following activities: supplier selection, material selection, outsourcing, negotiation, delivery, inventory, and supplier involvement in design. The manufacturing phase of supply chain is very important to manage environmental issues as it is integral to organisation's operations, and proper management of manufacturing will minimise waste, pollution, and noise.

As a part of that, concentrating on outbound supply chain analysis as location analysis, warehousing, transportation, packaging, and inventory management are out-bound functions of the supply chain through eco-friendly packaging, labelling, logistics, and consumer education. These can address environmental issues such as waste management, cost savings, and consumer awareness of eco-friendly production. Therefore, no less attention is paid to the study of the out-bound function of the supply chain which is external to an organisation.

GSCM also practices initiatives and focuses on environmental performance, concentrating on producing eco-friendly products, eliminating usage of hazardous materials in packaging and minimising wastage in the process of production and distribution. Following the study of (Darnell, 2008), the process of greening the supply chain involves the integration of environmental and organisational buying decisions and long-term relations with suppliers. In fact, suppliers of an organisation actually contribute to environmental modernisation through a wide range of activities which may include materials handling, manufacturing, warehousing and preserving, packing, transporting and distributing, technology acquisition and transfer to suppliers.

Modern organisations operating globally are required to maintain a sustained customer-relationship management, supplier-relations management and internal supply chain through effective Green supply chain practices. Outsourcing of both core and non-core business activities have become order of the day for many industrial establishments, irrespective of their size and magnitude of operations. This main need to maintain an effective GSCM is by maintaining the

entire component in supply chain including suppliers and customers.

Competitive Advantage

According to (J.Sarkis, 2003), 'the capacity of an industrial undertaking to generate a distinguishable unassailable position over its competitors through precarious management decisions are termed as "Competitive advantage". Following this statement, it shows that price, cost of product, delivery, quality, timeliness in introducing the product and flexibility are important components for an organisation to be able to compete.

As mentioned above, time-based competition has also been included as an important component of competitive advantage based on study by (R.Rao, 2006), who developed a research framework for testing the relationships between competitive and performance. Extensive review of available literature has shown that competency on cost/price, delivery dependability, product innovation, quality and time for product enter to market will help organisations compete in the market.

Furthermore, a study by (R.Rao, 2006) has found that South East Asian organisations have started using eco-friendly raw materials, greening their production process, emphasising on a cleaner environment through reduced pollution and wastage in their income logistics activities, implementing greening of outbound logistics through eco-friendly waste disposal and waste water treatment. However, most organisations try to reduce emissions of greenhouse gases to avoid impact of pollution, and regard this as a main concern. These activities by organisations fulfil their social responsibility by improving environmental conditions as well as ensuring their compliance with environmental regulations, which eliminates the threat of penalty or closure of the organisation.

Overall, GSCM measures organisations and improves their abilities to be more competitive. Bowen found that GSCM practices have a significant positive relationship with supply chain performance parameters, environmental and economic performance dimensions by collecting primary data of 159 executives manufacturing industry. This data was tested with structural equation modeling and results showed that adoption of GSCM will impact on the environmental and economic performance.

CONCEPTUAL FRAMEWORK

The proposed framework for this research is illustrated in Figure 1 as below. The Hypothesis model shows the relationship between GSCM practices, environmental collaboration and the implications to organisations on

competency, customer satisfaction and organisation sustainability. The GSCM practices are conceptualised to include green purchasing, green manufacturing, green distribution and green logistics. The sustainability performance is investigated from the perspectives of economic, environmental and social from the case study done before.

The model is mainly within the relationship with inter-organisational linkages. The relational view theory was first articulated by Dyer and Singh (1998) to suggest that established long-term collaborative relationships characterised by strong inter-organisational interactions could facilitate firms to pursue GSCM practices. In general, the relational view provides insight into how an organisation develops value to be competitive, satisfy customers and sustain the business.

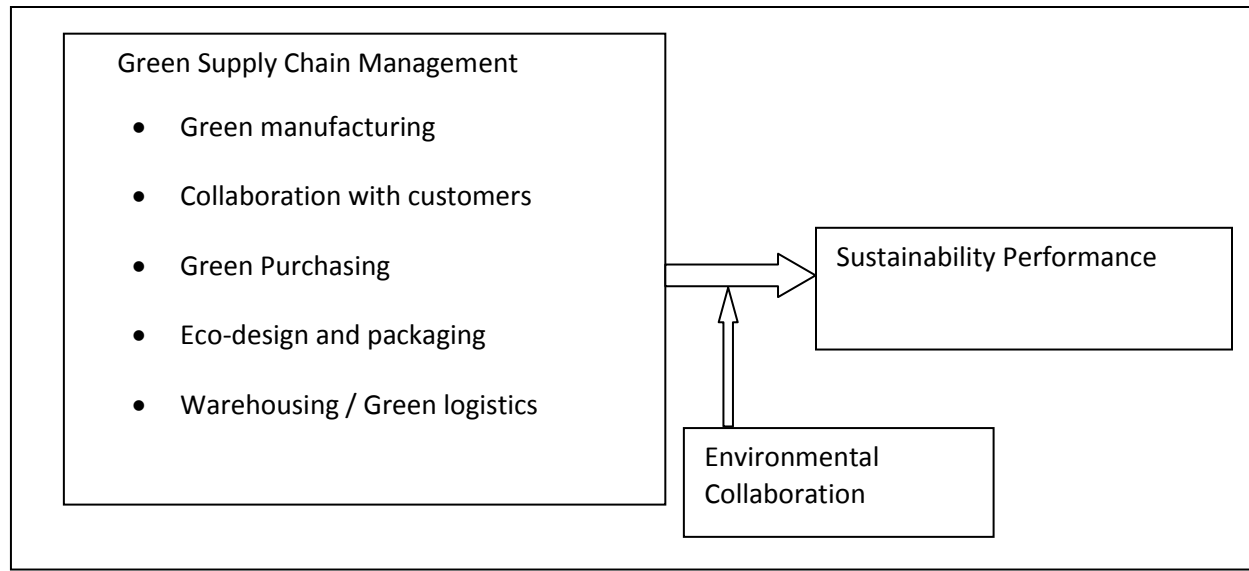


Figure 1: Proposed Conceptual Model on impact of Applying Green Supply Chain Management

RESEARCH HYPOTHESIS

Hypotheses Development GSCM practice is a multi-dimensional concept which can be measured from different perspectives. Different dimensions of GSCM practices have been highlighted in the past literature (Xhu Q, Sarkis J, Geng Y, 2005). Following Zhu, he proposed four-dimensional GSM practices, namely internal environmental management, external GSCM, eco- design and investment recovery. On the other hand, (R.Rao, 2006) suggested internal environment management practices, logistics, green supplier, green procurement and logistics policies, education and mentoring, and industrial networks as important GSCM practices.

According to (SK., 2007), green procurement, green manufacturing, green distribution and green logistics are important dimensions of GSCM practices needed by manufacturing sectors to achieve enhanced sustainability performance. (F.E. Bowen, 2001) suggested that GSCM practices should include internal environmental management, green information systems, green purchasing, cooperation with customers, eco-design and investment recovery. GSCM practices are composed of corporate and operational strategies to

improve environmental sustainability such as internal environmental management, green purchasing, cooperation with customers and eco-design.

Taking the information together, these studies are representative of the fact that organisations can afford to practice interesting dimensions of GSCM as a result of the impact that organisations received. Based on the literature review of GSCM practices, this study has portrayed GSCM practices from four important perspectives: green procurement, green manufacturing, green distribution and green logistics.

Green procurement is defined as a set of supply-side practices utilised by an organisation to effectively select suppliers based on their environmental competence, technical and eco-design capability, environmental performance, ability to develop environmentally friendly goods and ability to support local company's environmental objectives. Furthermore, the 3Rs (reduce, reuse, recycle) are also a part of the process of green procurement in terms of paper and parts containers (plastic bag/box), place purchasing orders through email (paperless), eco labelling of products, suppliers environmental compliance certification and internal

environment auditing plays a main part of the rules in the organisation.

Green manufacturing is a production process which converts inputs into output by reducing hazardous substances, increasing energy efficiency in lighting and heating, practicing the 3Rs, minimising waste, and actively designing and redesigning green processes. According to Zhu (Xhu Q, Sarkis J, Geng Y, 2005) green manufacturing requires manufacturers to design products that facilitate the reuse, recycle and recovery of parts and material components; avoid or reduce the use of hazardous products within production processes and minimise the consumption of materials as well as energy.

Green distribution consists of green packaging with the aims to downsize packaging, use "green" packaging materials, promote recycling and reuse programs, cooperate with vendors to standardise packaging, encourage and adopt returnable packaging methods, minimise wastage (use of material), use recyclable pallet systems and save energy in warehouses. As for green logistics/transportation, it is about delivering goods directly to the user using alternative fuel vehicles, grouping and supporting orders in full batches rather than smaller or small lots, investing in vehicles that are designed to reduce environmental impacts and planning vehicle routes.

As stated by (Thoo Ai Chin, 2015), green logistics is about reverse logistic, which includes collecting used products and packaging from customers for recycling, returning packaging and products to suppliers for reuse, and requesting that suppliers collect their packaging materials.

Researchers have recommended sustainability performance, organisation competency and customer satisfaction as important performance indicators. The proposed model may not show a complete set of measurement scales due to the constraint of other GSCM practices and sustainability performance in this study.

The GSCM interact with each other and can hold an organisation together for sustainability performance, where the interaction was found to lead significantly to firm performance. Following (Laosiri T, Adebajo D, Tan KC., 2013), Laosiri found that the pro-active (reverse logistics) practices do not have a significant impact on GSCM performance. Thus, this examines the differences of green logistics findings in greater detail. The above discussions develop the basis of the following hypothesis:

H1: GSCM practice is positively related to organisationsustainability

The benefits that can be derived from environmental collaboration have been recognized in the GSCM literature. Researchers have emphasised the direct relationship between GSCM practices and performance. (SK.,2007) used external GSCM to see the impact of environmental collaboration on firm performance. According to Paulraj (Paulraj, 2011), the moderating affects the relationship between sustainable supply management and sustainability performance.

In contrast to these studies, environmental collaboration is proposed as a moderator of the link between the GSCM practices and sustainability with a view that the presence of the environmental collaboration could facilitate GSCM practices and organisations which form collaborative relationships with suppliers will find it easier to implement GSCM practices. In this context, environmental collaboration, as a key relational capability could be advantageously positioned to facilitate the GSCM strategic formulation and execution. Therefore, the following hypothesis is proposed:

H2: Environmental collaboration moderates the relationship between GSCM practice and sustainability performance

METHODOLOGY

This study adopts the positivist philosophy and deductive approach. Thus it employed the mixed method of research design which combined the qualitative and quantitative methods. The items and variable development were mainly based on the existing literature and the main data will be collected from the survey questionnaires. Secondary data has been used in the form of literature, books, articles, case studies and websites to help prepare the theoretical and conceptual framework for the whole study.

RESULTS AND FINDINGS

From this research, the main objective that has been focused on is the impact of green supply chain management practices on organisational performance. The model and hypothesis were developed based on the dimensions of green supply chain management practices. From the research on the study, the results showed that green supply chain management practices and its elements are able to improve organisational performance and sustain the business.

Implications

In this research a new factor called environmental collaboration has been added as a moderator, in addition to making a new model and a new study for future research. This study will play an important role for managers and organisations, and their ability to contribute to increasing the sales and profit through understanding green supply chain management and the highest benefits of implementing it.

Significance of the Study

Since an effective green supply chain management process is detrimental to achieving good company performance and sustain the business, organisations are required to take an appropriate strategic approach to the supply chain management in order to mitigate long term risks in terms of availability of supply. Some organisations have gone the extra mile by adopting aggressive green supply chain concept along with the entire end to end supply chain in the global market to achieve cost efficiency in production in an effort to achieve sustainable competitive advantage over their competitors.

With the green supply chain management seek to incorporate environmentally conscious thinking in all processes of the supply chain initiating green supply chain management and practices such as green material management, green procurement, green manufacturing, green marketing, green distribution and green logistics. It is also consider waste reduction in all stages and involved cradle product management in the supply chain management (S. Mayam Masomik, 2014). In view with the green logistics will also include the handling and disposition of product without harmful impact to the social and environment.

Effective green procurement, while ensuring continuous supply of products and services, also have a bearing on the company's bottom line by reducing its cost and increasing its competitive advantage. Therefore, the assessment of green supply chain criteria which influence supplier selection must be given due emphasis since this measure can help determine the success of an organisation in implementing the green supply chain management. Hence, selecting the sustainable and green concept suppliers, local or overseas, may provides both direct and indirect impact on an organization's business performance.

From a theoretical perspective, this study has sought to further the understanding of these points and add new knowledge to the field of green supply chain management. It seeks to identify critical element which lead to implementation of green supply chain management and understand how the green supply

chain management affects an organisation's business performance.

RECOMMENDATIONS

The recommendation is to further continue to coordinate green supply chain management between different administrative levels in order to achieve the highest level of quality, collaboration, flexibility and environmental raw materials, with eco-friendly and safe products. Management should increase the budget for scientific research in the field of green supply chain to find out more and further improve supply chain in the context of the environment.

Future Research Directions

In conclusion, the proposed model may prove helpful to some extent for organisations looking at the benefits of investing in Green Supply Chain Management. On a global scale, the main focus is currently on environment sustainability, so further research in the topic will not only help the organisation to sustain the business, but it will help sustain the world as a better place to live in.

CONCLUSION

The literature review demonstrates that GSCM and sustainability performance are, in fact, two related SCM concepts. As noted earlier, the majority of research that has been reviewed shows that there is indeed a significant relationship between these two constructs. However, some issues have been raised which need to continue to be looked into with further research. These issues involve the collaboration with suppliers in designing green products and adopting environmental practices into processes. In this paper, environmental collaboration has been proposed as a moderator of the link between GSCM practices and sustainability performance.

In the presence of environmental collaboration, it is expected that GSCM practices will be facilitated, which would ease the implementation of GSCM practices. The proposed conceptual model mainly follows the relational view theory by Dyer and Singh (JH Dyer, H Singh, 1998). Their theory states that the establishment of long-term collaborative relationships is characterised by strong inter-organisational interactions, which would enable companies to pursue GSCM practices. This theory demonstrates that organisations can collaborate with each other to achieve maximum profit, good collaboration with suppliers and customers, customer satisfaction, and effective organisation management. In turn, all of these improvements enable organisations to develop and increase in value.

AUTHOR BIOGRAPHY

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EFFECTS OF BANKS CONSOLIDATION ON ECONOMIC GROWTH IN NIGERIA (2004-2015)

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ABSTRACT

This study examined the effect of bank consolidation on economic growth in Nigeria. The consolidation agenda introduced by CBN could be seen as an attempt to promote banking system stability and make the industry to operate more efficiently so as to enable the banks performs catalytic role of financial intermediation that will enhance the stability and growth of Nigeria economy. The main objective of this study is to examine what has changed after the consolidation exercise in relation to economic growth in Nigeria between 2004 and 2015. The study made use of secondary data sourced from the Central Bank of Nigeria statistical bulletin and the National Bureau of Statistics between 2004 and 2015. The model for the study has as its dependent variable the Gross Domestic Product (GDP) and its explanatory variables were commercial bank deposits and the commercial bank assets. Using the Ordinary Least Square (OLS) multiple regression techniques; the study revealed that both commercial bank deposits and assets have a positive and statistically significant relationships with the gross domestic product (GDP). The study, therefore recommended that policies that would sustain the viability of banks especially that which will guarantee availability of funds for investment purposes like the consolidation exercise should be greatly encouraged.

KEYWORDS: Banks Consolidation, Economic growth, Merger & Acquisitions, Regression Analysis

INTRODUCTION

The strength of the bank depends on the capital fund available to the bank. According to Soludo (2004), banks have not played expected role in the development of the economy because of their weak capital base of the banks was with the aims of strengthening the consolidation of the banking system was the first place of reforms design to ensure a diversified, strong and reliable banking sector which will ensured the safety of depositor money, play active development role in the Nigeria economy and also become competent and competitive in the financial system.

According to Somoye (2008) recent years have witness remarkable changes in the financial sector particularly banking industry, around the world, given the position of banking occupies in especially capitalist economies (Soludo, 2006).

One of the major instruments of banking industry reforms that is fast gaining ground is consolidation. Consolidation in the banking firms involve either a combination of existing bank growth among the leading banks .The capital banks is to serve as a symbol of confidence in the banking institutions. Therefore the strong capital base prescribe under the recapitalization programmed is consistent with the corporate mandate of promoting public confidence in the banking system. The increase in the minimum capitalization requirement for bank will, to a large extent, engender public confidence

in the banking system as it will enhance bank capitalization absorb operating losses and minimized resources to depositor fund protection agency. It also means a reduction in the number of banks and other deposit taking institution with a simultaneous increase in the size and concentration of the remaining entities in the (Group of ten (G10), 2001; Landerman, 2003 Basu et al, 2004).

With regard to the conference focus being Emerging Trends for National Sustainable Development and Disaster Management; it is such that a weak banking system cannot provide the required capital for sustainable development and also fund disaster management initiatives. Hence, the essence of appraising the banks consolidation policy in Nigeria to ascertain its preparedness for these global demands in terms of sustainable development and disaster management.

Statement of the Problem

Promotion of bank consolidation by government is not a recent phenomenon. According to Kurgan-van (2001) many governments, especially of European countries have promoted bank consolidation when their financial system were expose to banking crises in the 1920s and 1930s. Okazaki and Sawada (2003) added that in the same period, the government of Japan actively promoted bank consolidation in other to stabilize the

financial system when its banking industry experience repeated financial crises. In the United States from 1980 to 1994, there were a total of 6,347 mergers (Rhoda's 1996).

In Nigeria, the banking industry has experienced a boom and burst cycle in the past 20 years (Hesse, 2007) leading to remarkable change over the year, in the terms of regulation and reform, the number of institution, ownership structure, as well as depth and breadth of operation especially from 1986 (Balogun, 2007). Four phases of banking reform in Nigeria were documented in the literature with the fourth phase adopting consolidation through merger and acquisition as an instrument for enhancing banking efficiency, size and development in order to ensure that they are diversified, strong and reliable banking sector on one hand and productivity and allow more resources to be made available for the creation and development of new technologies (Soludo, 2004)

The element of the fourth reform agenda was the requirement that the minimum capitalization for banks should be N25 billion with the full compliance by the end of December 2005, 25 banks emerged from 89 mainly through merger and acquisition and later in 2008 the number reduce to 24 banks. Similar trends have occurred in the United States (Petersen, 1999) Asia and Europe (Saprenza, 1998).

Before the consolidation in Nigeria banking system, the banking sector was characterized by weak capital base, weak corporate governance, over-dependency on the public sector deposits, insolvency evidenced by the negative capital adequacy ratio; inadequate risk management practice inefficient supervision and banks failure result in loss of confidence. All these brought about loss of customers confidence as banks became weaker (Soludo, 2006).

It is in the light of the above that this study attempt to assess the effects of banks consolidation on the economic growth in Nigeria.

Research Questions

Based on the above statement of the problem the following research questions are presented.

- i. What are the effects of banks consolidation economic growth in Nigeria?
- ii. What is the nature relationship between bank consolidation and economic growth?

Objectives of the Study

The main objective of the study is to assess the significance of the bank consolidation exercise on the

Nigeria economy. However, the study specifically seeks to;

- i. Investigate the effects of bank consolidation on economic growth in Nigeria.
- ii. Examine the nature of relationship between banks consolidation and economic growth in Nigeria.

Research Hypothesis

The hypotheses that shall guide this study are as stated below:

Hypothesis 1:

(Ho): Banks consolidation has not had effects on economic growth in Nigeria.

(Ha): Banks consolidation has had effects on economic growth in Nigeria.

Hypothesis 2:

(Ho): There is no significant relationship between Banks consolidation on economic growth in Nigeria

(Ha): There is a significant relationship between Banks consolidation and economic growth in Nigeria

Significance of the Study

The importance of a study on the effects of banks consolidation on economic growth in Nigeria cannot be played down, given the fact that it serves as a form of assessment and evaluation of a policy framework that was introduced to solve the problem of weak capital base of most banks in Nigeria and its implication for economic development. So doing a study on this area will be of great benefits to both the banks and the depositors alike. Furthermore, any study that would help to bring to the fore the effects of banks consolidation on economic growth in Nigeria should be considered as apt and highly significant for policy makers with respect to future policy direction. This is the essence of this study.

REVIEW OF RELATED LITERATURE

Conceptual Framework

Bank consolidation is the reduction in the number of bank with a simultaneous increase in the sector (Landerman, 2003; Baku, Smith, et al 2004). It involve the resources of the industry becoming more tightly controlled either because the number of key firms is smaller or the rivalry between firms growth among leading firms, or industry of weaker institution (G10, 2001).

Consolidation is often used interchangeably with concentration, even though; there exist a difference between the two concepts. Concentration refers to the degree of economic activity by large firms (Sathye, 2002). According to Alenandrini, Presbitero, Zazzaro et al (2008), increase in the concentration levels could be due to considerable size enlargement of the dominant firm(s) and /or considerable size reduction of the none-

dominant firm(s). In the context of this work however, the two concept are used interchangeably.

The key characteristic of the consolidation is change of control, which take place through a transfer of ownership (Ayadi and Pujal, 2004). Though bank or corporate consolidation is active by way of capitalization and the proactive regulation (Adam, 2005). The primary methods of consolidation employed by firms are merger and acquisitions (M&A). with both these methods two formerly independent firms becomes commonly controlled.

A number of researchers have been conducted on the rhyme and reason of bank consolidation. most studies support the view that consolidate is beneficial because more efficient bank managers substitute less efficient ones, and greater bank size can yield economics of scale and scope, increase diversification opportunities and generate cost saving (Landerman, 1995; Bonaccorsi di Patti and Gobi, 2002). The import of this position is that consolidation supposed to impact positively on the industry and consequently the economy due to its triggered possible economic efficiency and self-interest of bank management.

Proponent of banking consolidation argue that economic forces that may be driving consolidation through merger and acquisition are economic of scale and scope (Vennet 1996; Lang and Wetzel, 1996; Stiroh and Pole, 2000; Altunbasetal, Ahumada and Marshal, 2002) which bring about value maximization (Berge etal 1999; Jahreskog 1999) and management personal incentive (Landerman 1995 and 2003). Soludo (2006) add that banking consolidation has the benefit of causing drastic fall of interest rate due to liquidity greater potential for banks to finance big-ticket transaction, dilution of ownership of bank to take the monster of insider and corporate governance abuse more effective supervisory and earning greater confidence of depositors.

According to Berger, Beek Levine etal (2003) and (G10 2001), the most important forces encouraging financial consolidation are improvement in information technology financial deregulation, globalization of financial and real market, and increase shareholder pressure for financial performance. It's primarily motives on the other hand, are cost saving and revenue enhancement to enable banks discharge more efficiently their intermediary and development role (soludo, 2004)

Further Imala (2005) and Adeyemi (2006) identified eight reasons for M&A in the financial services sector. Cost savings, attribution to the economics of scale and as more efficient allocation of resources; revenue

enhancement, resulting from the impact of consolidation on bank size scope and overall market power; risk reduction, due to change in organization structure.

Other reason include new development, which impose high fixed cost and the need to spread these cost across a large customer base; the advent of deregulation, which removed many important legal and regulation barring globalization, which engender a more globally integrated financial service and geographical expansion of banking operation financial stability, characterize by the smooth functioning of various component of the financial system, with each component resident to shock; and shareholder pressure on management to improve profit margins and returns on investment, made possible by new and powerful shareholder block.

According to the proponent (Beck and Jarome (2005) technological progress may have increase scale of economics in producing financial services, creating opportunities to improve efficiency and increase value through consolidation low interest rate and high stock prices which reduce prices financial constraint on M&A activities is another reason behind the rapid growth in bank consolidation. Even though they raise the price of target firm as well (G10, 2001). Transfers of better management skills from the buyer to the target are also quoted as a motivation for bank takeovers, while increases in market power are another possible motivation for M&As.

Consolidation according to Boyd and Gentler (1994) many efficient way to do away excess capacity that arises in the consolidating firms by solving the problem of inefficient product mix and financial distress, while merger (1998) content that globalization of financial market that is witnessing transfer of securities good and services in international Market and which create demand for currency deposit loan and other services by international financial institutions has contributed in no small measure to cross border M&A.

Economic growth represents the expansion of a country's GDP or output (Akpan, 2005). For instance, if the social rate of return on investment exceeds the private return, then tax policies that can help to raise growth rate and levels of utility should be pursued. Economic growth has provided insight into why State growth at different rates over time and this influences government in her choice of tax rate and expenditure level that could influence the growth rates.

Growth means increase in economic activities. Todaro and Smith (2007) citing Kuznets defined a country's economic growth as a long-term rise in capacity to supply increasing diverse economic goods increasing to

its population, this growth capacity based on advancing technology and institutional and ideological adjustment that it demands.

An assessment of the Nigeria banking industry as at end of 2004 shows that while the overall health of the system could be describe as generally satisfactory, the state of some banks was less cheering. The CBNs rating of the entire bank, classifies 62 as sound /satisfactory, 14 marginal and 11 unsound, while two of the banks did not render any return during the period.

A further review of the banking system as at that period reveals that the marginal and unsound bank accounted for 19.9% of the total asset, 17.2% of the total deposit liabilities, while industry non-performing asset was 19.5% of the total loan and advance the implication of the unsatisfactory statistics as noted by Lemon (2005) is that there existed threat of a system distress judging by the triggers point in the CBN contingency planning framework of December 2002 which stipulated a threshold Of 20% of the industry assets, 15% of deposit being held distressed banks and 35%of industry credit being classified as non-performing.

The fundamental problem of the marginal and particularly, unsound banks according to soludo (2004) had been identified to include persistent illiquidity, poor asset quality, unprofitable operation, weak corporate governance gross inside abuse insolvency, weak capital base and over dependency on public sector deposit. These negative developments necessitated the resolve to strengthen and consolidate the Nigeria banking system.

Over the years CBN has made capital adequacy of Nigeria bank as one of the top in all bank reforms particularly from the 1970, reviewing the literature, Ningi and Dutse (2008) identified four cogent reasons why the CBN has being expressing concern for capital adequacy of bank in Nigeria.

Firstly, the industry has witness unprecedented competition in 19970s and 1980s leading to engage in sharp and unscrupulous not minding the risky nature of their business, which made the supervisory authority in particular to express concern over capital adequacy. The concern of CBN has been reflected in the continual increase in the capital requirement for bank entering the industry secondly, significantly, as a result of inflation, the volume of banking business reflected in the total assets liabilities of banks has increased phenomenally in recent years. As the asset all diminish in relation to liabilities if no addition is mad to it, the CBN consider it imperative to gear up the minimum capital base of bank over the years.

Thirdly the international business environment and sector have become increasingly intertwined as a result of globalization. Consequently too, the bankers has expose to risk not directly inherent in the business of the economies which they operate. The question as to whether existing levels of capital are considered adequate for increasing level of risk has risen consequently in debate between supervisory authorities. Accordingly, for banks in Nigeria to play safe, adequately capitalization has always been given attention.

Finally, bank failures have become an important phenomenon in economies of Europe, American and indeed the world over since the early 1980-90s. Significant systematic banking crises have been experienced in East, Asia, (the US and Europe (Wilmarth, 2002). Borrowing from the experience of South Africa and Malaysia where the influence of bank failure phenomenon was tackle head-on through recapitalization and consequently consolidation of the banking industry b, the CBN fashion its banking reform along that line.

As a result of concerns of the CBN over capital adequacy of banks, legal and regulatory action are being instituted or reinforced to ensure the bank within their jurisdiction operate continuously with adequate capital (Ningi and Dutse, 2008). Beck etal (2005) noted that since 1952, when the fist banking legislation was enacted all the banking laws in Nigeria have specified minimum paid up capital with differentiation between indigenou and foreign banks.

According to Somoye (2008), the minimum paid up capital for indigenou and foreign banks between 1952 and 1978 was N1, 500,000 respectively between 1979 and 19847, different initial capital base requirement stipulated for commercial and merchant bank was N600, 000 and N200, 000 respectively. Lewis and stein (1997) noted that while the statutory minimum capital requirements largely stabilize during the pre-SAP period. Four upward review were put in place after SAP to adjust for inflationary impact of the SAP induce policies more so, the increase in the number of operators between 1987 and 1990 actually led to the ballooning of loans and advance of bank industry wide and a consequent deterioration in the quality of banks risk assets (Ningi and Dutse, 2008).

Consequently, in February 1988, minimum capital base for commercial and merchant banks was put at N5 million and N3 million and in October the same year to N10 million and N6 million and further to N20 million and N12 million respectively between 19879 and 1990 the CBN introduce the new famous prudential quid line,

which made it mandatory for bank to recognize early and provide for not performing assets. The effort of those stringent but necessary measure was the erosion of the capital of quite a sizeable number of operators as their accumulated reserves were not sufficient to absorb the huge loses (Somoye,2008), leading to another upward review to N50 million and N40 million respectively between 1991 and 1996.

According to Lewis and Stein (1997) the new globally embraced capital adequacy measurement place considerable emphases on the risk element in the asset of banks. This is to ensure that each banks carries fund that are not only commensurate with its total asset but also cater adequately for the risk ness of it's, nationally and internationally.

With the advent of the universal banking in 2001, capital base different between commercial and merchant banks was eliminated. This between 2003 and 2004 minimum capitalization for all banks in Nigeria was raise to N2 billion to enable bank absorb shocks from the dwindling economic performance of the sector. In 2004, the CBN embark on yet another banking system reform to solidify the banking system and restore public confidence in the sector by announcing a minimum capitalization of N25 billion for all banks in Nigeria.

The announcement of new capital base was greeted by intellectual debate, with some notable economist faulting the CBNs decision on the minimum capital base. For example, Teriba (2004) contends that the Soludo's proposal emanated from misconception on cash, deposit mobilization/intermediation depths and capital adequacy of bank in Nigeria. However, since bank consolidation has come to stay in Nigeria, the challenge for stake holders is to appraise the new reform with a view to knowing whether or not its promised dividends have been realized.

Empirical Literatures

There are several scholarly empirical studies on the banks consolidation exercise and its effects on the Nigerian economy. Some of these literatures are reviewed below; a study by Barros and Caporale (2012) examines the Nigerian banking consolidation process using a dynamic panel for the period 2000-2010. The Arellano and Bond (1991) dynamic GMM approach is adopted to estimate a cost function taking into account the possible endogeneity of the covariates. The main finding is that the Nigerian banking sector has benefited from the consolidation process, and specifically that foreign ownership, mergers and acquisitions and bank size decrease costs.

Babajide, Olokoyo and Taiwo (2014) in their study on the impact of the banks consolidation on small scale industry put forward that prior to the 2004 reform in the Nigerian banking sector, banks neglected the small and medium class saver and concentrated more on big corporate savers. Many banks abandoned their essential intermediation role of mobilizing savings and inculcating banking habit at the household and micro enterprise levels. This paper presents empirical findings on the effects of the 2005 bank consolidation on small business finance in Nigeria. The main objective of this paper is to assess the response of flow of credit from the banking sector to small and medium enterprises in Nigeria. Data for the study were sourced from the list of the 25 post consolidation banks in Nigeria. Panel data covering a period from 2004 to 2011 were analysed using the Levin, Lin and Chu panel unit root test analysis to ascertain the authenticity and accuracy of the data series as well as its reliability on policy issues. The study adopts panel regression approach comprising of fixed and random effect models and used Hausman Taylor (1981) option in selection of a more efficient estimator for the model equation. The study shows a percentage increase in post consolidation asset base by over 9 percent for the banks and profit maximization increases by 72 percent which could translate to increased bank propensity and readiness to lend. There is also a significant increase in SME credit supply accessible by firms resulting to increase investment and consolidated effort to encourage the development of more SME driving enterprise. The study therefore recommends that credit policy effect should ensure that banks reorganize their asset portfolios so as to create more provision for lending to small firms rather than implementing policies that allow for more stringent conditions and requirements that discourage future development of SME investments in the economy.

Similarly, Olayinka and Farouk (2014) in their study, evaluates the impact of consolidation on the performance of banks in Nigeria. The study used a period of 12 years from 2000 to 2011 comprising six years pre and post consolidation era. The population of the study is (22) banks in which four (4) banks are drawn using stratified sampling technique. The study utilizes secondary data obtained through annual reports and CBN banking supervision. T-test was employed to test the hypothesis formulated. The findings of the study show that consolidation has significant positive impact on the performance of banks in Nigeria. The study therefore recommends that the management of banks should work hard to ensure that adequate measure is being put in place to determine increasing rate of return on asset, return on equity and net profit margin of their banks reform of this nature such as consolidation of

banks is one of the ways to improve the banking sector financial stability.

Ajao and Emmanuel (2013) posits that in any economy, the banking industry is a highly regulated industry owing to the fact that the industry is considered as the engine of economic growth and development. The objective of their research is to analyze financial performances of pre and post consolidation program in order to determine whether there is significant difference between the two periods. The study employed the use of secondary data gathered from the audited financial reports of selected banks. Descriptive analysis was employed through the use of tables and charts; then the regression is used to determine the relationships while t-test statistics is used to find out whether there is statistical difference between the means of consolidation variables and financial performance variables. It was discovered that it is not all the time that consolidation transforms into good financial performance of banks and it is not only capital that makes for good performance of banks. The study, therefore, recommends that the CBN should increase its oversight role so as to ensure that none of the banks has weak corporate governance.

A study by Bernard and Obialor (2014) investigated the impact of bank recapitalisation on bank performance. The Ordinary Least Square (OLS) regression analysis was used for the analysis. The results showed that bank capitalization has no significant effect on bank profitability and asset quality, whereas liquidity and financial deepening were significantly influenced by the recapitalization. The study posits that profits maximization drives of Nigerian banks have had counterproductive effect on bank capitalization. Also, efforts of banks to maintain quality assets and remain in business normally erode their capital. Strategies to increasing bank capitalization can be used to boost loans and advances to the productive sector of the economy. Berger and Udell (1995) used 1980-1988 as its study scope and the Thick Frontier Approach (TFA) method. The study found out that deregulation of deposit rates caused an increase in average cost in US banks especially the smaller ones, hence it led to reduced efficiency while during post-deregulation periods, and their average coast fell owing to the structural change. Sobodu and Akiode (1995) employed data envelopment analysis (DEA) to study the efficiencies of banking institutions in Nigeria under the privatisation policy, the study showed that the efficiency of the Nigerian banking system declined significantly during period of financial deregulation compared to its levels before consolidation, they also discovered that privately owned banks operated more efficiently than government owned banks.

Favero and Papi (1995) used a sample consisting of 174 Italian banks, which represented 80 percent of total deposits, cross-sectional data from 1991 to 1995 and used the Data Envelopment Analysis (DEA) as its methodology. The major findings showed that efficiency of banks was mainly determined by productivity and specialisation by bank size and lesser by their locations.

Erel (2006) studied the effect of bank mergers on loans price. He found out that on average mergers reduced loan spreads, and that the results were stronger for acquirers with large declines in operating cost post merger. According to him, merger and acquisitions did not decrease the spread of the loans, because, by the time one or more banks were merged together at least they would be stronger more than before and that would allow them to spread credits to borrowers more than before.

Lamberte and Manlagnit (2004) examined the recent consolidation trends among depository institutions (commercial banks and thrifts) in Philippine for the period between 1989 and 1994. The study found out that market concentration increased significantly, midsize commercial banks were gaining market share at the expense of large banks in most markets. In addition, Roger and Ferguson (2009) studied the financial consolidation. Their study concluded with an extensive evaluation of the potential effects of financial consolidation on the efficiency of financial institutions, competition among such firms, and credit flows to households and small businesses.

According to Willson, Wilson and Goddard (2008) consolidation in the US had empirical evidence that there was often little improvement in efficiency or performance of merged entity. The study also suggested that the hubris and agency motives for merger may be relevant, or that synergy derived more from enhanced market power than from cost savings.

De young (1993) studied 348 merged banks, of which 43 percent were intercompany ones. The study estimated pre- and post-merger cost efficiency by applying a thick frontier approach. Prior to merger, the acquiring banks were more cost efficient than the target; however, in the three years period after the merger, cost efficiency improved in about 64 percent of the cases.

Dogarawa (2011) posited that the trend of collapse and continual closure of business by Small and Medium Enterprises (SMEs) in Nigeria due largely to financial constraint has raised the important question of whether or not bank consolidation really impacts on the sector. Using an aggregated data for all the Deposit Money

Banks (DMBs) in Nigeria as at the end of 2008, this paper assesses the impact of bank consolidation on credit availability to SMEs in Nigeria. The results of the ordinary least squares (OLS) regression model show that so far, bank consolidation in Nigeria has no positive impact on the size of credit available to SMEs. Based on that, the paper recommends that the Federal Government should come up Credit Guarantee Scheme to enhance accessibility of SMEs to banks' financing, taking into consideration the peculiarities of the sector and the reasons responsible for the failure of previous financing schemes. The Central Bank of Nigeria (CBN) on her part should review the minimum capital base of N25 billion for banks and classify banks into international, national and regional to enable the emergence of small and medium-sized banks that will concentrate on SMEs financing.

Odeleye (2014) holds that the Central Bank of Nigeria's (CBN) recent reform to consolidate the banking sector through drastic increase to #25billion as minimum capital base of any bank led to a remarkable reduction in the number of banks from 89 to 24 in 2005; changed their mode of operations and their contributions to the nation's economic development. Drawing on original research on consolidation of banking sector, this study examined the impact of consolidation on performance of Nigerian banks for the period 1999 to 2011. It employed Chow test; a parameter stability test which showed that there was parameter instability after the consolidation. System GMM (generalized methods of moments) estimation was further used to ascertain the directional and magnitudinal (size) impact of consolidation on the banks' efficiency. With emphasis on earnings per share as a proxy for consolidation, it is inferred that Nigerian banking consolidation exercise did impact their efficiency positively.

Oluitan, Ashamu and Ogunkenu (2015) in their study evaluates the effect of mergers and acquisitions on bank recapitalization in Nigeria with emphasis on the impact of the strategy on economy development. The study makes use of data from the foremost eight banks in Nigeria that account for over 60% of the banking transaction in the country. The research work was evaluated through regression analysis of secondary years (2002-2011) from the sampled banks. The research entails a study of the pre-recapitalization and post-recapitalization periods hence the sample period was divided into two. This approach assists to capture the actual effect of the latest recapitalization policy of the government during the period. The result suggests that the effect of the latest recapitalization policy was positive on the operational capability of the Nigeria banking system. There are lots of economies of scale derived from the exercise. Harnessing of resources

through mergers and acquisition gave the banks the much required funds to intermediate more effectively within the financial system.

Berger and Allen (1998) examined mergers which occurred in the 1980s that involved banking organizations with at least \$1 billion in assets and got to a conclusion as a result of the data aggregated to the holding company level, using frontier methodology and the relative industry rankings of banks participating in mergers. Frontier methodology involves econometrically estimating an efficient cost frontier for a cross-section of banks. For a given institution, the deviation between its actual costs and the minimum cost point on the frontier corresponding to an institution similar to the bank in question measures X-efficiency. They found out that, on average, mergers led to no significant gains in X-efficiency.

Molyneux, Altunbas and Gardener (1997) underscored the importance of efficiency in banking and pointed out that higher efficiency could be expected to 'lead to improve financial products and services, a higher volume of funds intermediated, greater and more appropriate innovations, a generally more responsive financial system, and improved risk-taking capabilities if efficiency profit gains were channeled into improved capital adequacy positions. They opined that bank efficiency was of critical importance to the evaluation of bank's performance.

Onaolapo (2008) employed CAMEL rating system to examine the effectiveness of recapitalization. He found that recapitalization had improved the financial health of banks. This finding was collaborated by Sani (2004). Using a regression model, Sani discovered a positive and significant relationship between recapitalization policy and economic growth in Nigeria.

To the contrary, Adegbaaju (2008) examined the effectiveness of recapitalization on the performances of 20 Nigerian banks. He discovered that while few banks recorded appreciable improvements in their performances, majority of the banks remained the same or even worse off.

Okafor (2009) research on consolidation exercise in Nigeria employed capital adequacy asset quality liquidity and management. 2004 -2005 was regarded as the pre consolidation period while 2006-2009 was regarded as the post consolidation period, she concluded that consolidation improved the overall performance of banks in terms of assets size, deposit base, capital base and capital adequacy, however it did not contribute to the profit efficiency of those commercial banks.

Using the dynamic panel GMM method on a cross sectional data from 2000 -2010, Barnos and Caporale (2008) came to a conclusion that consolidation specifically reduced foreign ownership of commercial banks and also through merger and acquisition banks were more cost efficient.

The investigation carried out by Elumilade (2010) on the effects of mergers and acquisitions on the efficiency of financial intermediation in the Nigerian banking industry had evidence that the consolidation programme induced mergers and acquisitions in the banking industry and improved competitiveness and efficiency of the borrowing and lending operations of the Nigerian banking industry.

Olaosebikan (2009) investigated the efficiency of the Nigerian banking system between 1999 and 2005. Bank efficiency was evaluated using Data Envelopment Analysis (DEA). The results indicated that efficiency fluctuated during the first part of the period and improved during the recent years, a period associated with the increase in minimum capital requirement, differences in banks' efficiency was explained by problematic loans and their size.

Donwa and Odia (2011) investigated the impact of the consolidation on banking industry in the Nigerian Capital Market between 2004 and 2008 using primary (questionnaires) and secondary data from the Nigerian Stock Exchange. When the data was analyzed with the chi-square test and ANOVA, it was found that bank consolidation affected the industry significantly as most of the banks had to go to the capital market to raise the required amount by issuing securities. They submitted that banks' consolidation had increased public awareness and operations of the Nigerian capital market just as the capital market had continued to be an easy and cheap source of funds for banks in the postconsolidation era. Based on their findings, it was recommended that the banks and capital market regulatory authorities should continue to monitor and institute reforms program that would better reposition the banking industry as a major player in the Nigerian Capital Market and the economy.

Adegboyega (2012) evaluated the impact of mergers and acquisitions on performance of Banks in Nigeria. Pre-merger and post-merger financial statements of two consolidated banks were obtained, adjusted, carefully analyzed and compared. The result revealed that all the two groups produced in addition to operational and relational synergy, financial gains far more than the 2+2=5 synergistic effects. Ratio technique and inferential statistical tools were used to highlight synergistic effects on the merging banks.

METHODOLOGY

Research Design

The study adopts a survey type of research design. There are two variables: independent and dependent. The dependent variable is economic growth proxy by the gross domestic product (GDP) in Nigeria. The independent variables are Commercial bank deposits (CBD) and Commercial bank assets (CBA) as evidence of the consolidation exercise. In addition to the above, the study equally seeks to examine the relationship between economic growth and commercial bank deposits and commercial bank assets in Nigeria.

Source of Data

Based on the nature of the study, data collection will be based on secondary data. The study will source data from Statistical Bulletin of the Central Bank of Nigeria (CBN), Federal Office of Statistics (FOS) and Annual Abstract of Statistic of the National Bureau of Statistic (NBS). The source of data for the study is secondary source because it requires the time series data of the GDP and commercial bank deposits and commercial bank assets for the period between 2000 and 2015.

Population of the Study

The population of the study constitutes the entire sectors of the Nigerian banking industry. However, the impossibility of including all the members of the population makes sampling imperative. As a result, the study concentrated on the commercial bank deposits and commercial bank assets.

Model Specification

Given the propositions stated that consolidation exercise should play a significant role in determining commercial banks deposits and assets, so as to give the bank a solid financial base and source of credit for desiring sectors of the economy. As such, in specifying our model, our dependent variable shall be the gross domestic product (GDP) while our explanatory variables shall be the annual time series data of Commercial bank deposits, and Commercial bank assets. Therefore, our multiple regressions model can be specified as thus;

$$GDP = b_0 + b_1X_1 + b_2X_2 + U \quad i$$

Where

GDP = Gross Domestic Product (GDP)

X₁ = Commercial Bank Deposits (CBD)

X₂ = Commercial Bank Assets (CBA)

U = the stochastic error term

b₀, b₁ and b₂ are parameters

Technique for Analysis

We shall use the Ordinary Least Square (OLS) technique to estimate the values of the parameters B₀, B₁ and B₂. Besides, we will use the student's t-values

obtained to determine the statistical significance of the parameter estimates and the test of goodness of fit for the model using the R^2 technique. This will enable us to know the percentage of variations between the dependent variable and the explanatory variables. Then, the f-statistic test to determine the overall significance of the multiple regression models and the Durbin –Watson test for the presence or absence of auto-correlation.

Data Presentation

In the analysis of our model, in which the Gross Domestic Product (GDP) served as the dependent variable while the Commercial Bank Deposits (CDP) and the Commercial Bank Assets (CDA) serve as the independent or explanatory variables, we obtained the following results for the Ordinary Least Square (OLS) multiple regression models. Please note that the result presented below have their details in software form at the appendices.

Ordinary Least Square (OLS) results

The OLS multiple regression result is as presented below:

$$\begin{array}{l} \text{GDP} = b_0 + b_1\text{CBD} + b_2\text{CBA} \\ \text{GDP} = 40202733 + 159.34\text{CBD} + 0.51\text{CBA} \\ \text{S.E} \quad (13634147) \quad (71.93) \quad (0.18) \\ \text{t-stat.} \quad 2.95 \quad 2.22 \end{array}$$

$$R^2 = 0.89, \quad F\text{-stat} = 35.24, \quad d\text{-w} = 1.78, \quad N = 16$$

Interpretation of Results

The study results generated from the ordinary least square multiple regressions as presented above shows that both commercial bank deposit and commercial bank assets had positive relationship with the GDP has a positive relationship with commercial bank deposits. In spite of being positively signed they were also statistically significant using the rule of thumb of 2. Furthermore, both commercial bank deposit and commercial bank asset were also found to have impacted on the gross domestic product (GDP) since its t-value was also statistically significant. This implies that the nature of relationship between the gross domestic product (GDP) and commercial bank deposit and commercial bank assets in Nigeria can be said to be positive and significant.

FINDINGS

Based on the multiple regression result, it suggested that banks consolidation exercise as reflected in increased bank deposits and assets have affected economic growth in Nigeria positively and significantly as well. This means that since the consolidation exercise, the GDP has been rising. This rise has been made possible by the availability of deposits in the vaults of commercial banks for its availability as loans to investors. The

growth in the GDP over the time has proven that banks consolidation has yielded positively for the Nigerian economy. Hence, the banking industry in Nigeria can guarantee sustainable development and disaster management in the area of playing its obligatory role of making financial resources available for funding of projects and initiatives that would bring sustainable development and effective disaster management in Nigeria.

Intuitively therefore, it can be said that there has been a significant relationship between banks consolidation and economic growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The fundamental objective of reforms is to reposition an existing status to attain an efficient state consistent with best practices. Consequently, Nigeria banking industry reforms intended to achieve the objective of consolidation, competition and convergence, the nucleus remain that of firming up capitalization for economic growth in Nigeria. Consolidation was identified as the key means of achieving capital adequacy in line with regulatory stipulation as well as raising the competitive advantage and strategic positioning.

Ordinarily, an efficient financial system is important and instrumental to the growth and the development of any economy. A well developed and healthy financial system has long been recognized to play the role of efficient financial intermediation functions. Financial institution like the banking industry link up saver and borrower thereby reducing both transaction and search cost. They also create liquidity in the economy by the encouraging short-term and long-term borrowing and lending, reduce information cost, provide risk management service and reduce risk involve in financial transitions.

These benefits further translates into the economy through the process of motivating financial reforms where the system is considered undeveloped in order to increase the size of the domestic savings channeled through the formal financial sector, improve the efficiency of the financial intermediation and enhance the effectiveness of the monetary policy.

Using the gross domestic product as the independent variable and commercial banks deposits and assets as explanatory variables; our study via the results obtained shows that there has being corresponding impact of banks consolidation as reflected in the volumes of commercial bank deposits and assets on economic growth in Nigeria. This suggests that the banks consolidation exercise has spurred banks deposit for

investments purpose and at the same enhances the stability of banks over the period of study. Suffice to say it then that the significance of huge bank deposits cannot be played down in the face of the financial intermediation role of financial institutions especially for economic growth. Obviously, money deposited in commercial bank make funds available for would be borrowers particularly for economic purposes.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made;

- i. That all efforts be put in place to sustain the banks consolidation policy as it makes sufficient funds available for the overall well-being of the economy.
- ii. Also, policies that would sustain the viability of banks especially that which will guarantee availability of funds for investment purposes like the consolidation exercise should be greatly encouraged. In addition, bank consolidation exercise should be employed at different interval to reflect prevailing economic realities of bank operations in Nigeria.
- iii. With regards to the conference theme, the paper has brought to the fore the significance of the banks consolidation exercise to the Nigerian economy. Therefore, it can be said that banks in Nigeria are well positioned for sustainable national development and disaster management in the area financial provision given the positive impact of the consolidation exercise.

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THE INFLUENCE OF DEREGULATION AND PRIVATISATION OF THE UPSTREAM AND DOWNSTREAM OIL AND GAS INDUSTRY PROMOTE NATIONAL SUSTAINABLE DEVELOPMENT IN NIGERIA

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ABSTRACT

The purpose of this study is to examine the perception of Nigerians on the influence of deregulation and privatisation moves of the government in the oil and gas industry in Nigeria. The oil and gas industry is strategic to national development and growth in Nigeria. Oil and gas constitute about 90% of Nigeria's foreign exchange earnings and 83% of its GDP. This study adopted the survey research design. It was found that the deregulation and privatisation of the oil and gas industry will usher in sustainable national development and will be a blessing rather than a curse for the citizenry. 77.8% of the respondents believe that the deregulation and privatisation of the oil and gas industry will be a blessing to Nigerians and 80.6% of the respondents do not believe that the deregulation and privatisation of the oil and gas industry will be a curse to Nigerians. The authors recommend that strategic sectors such as oil and gas as well as the power sector should be deregulated and privatised for sustainable national development.

KEYWORDS: Deregulation, Privatisation, Upstream, Downstream, Oil and Gas Sector, National, Deveipment and Sustainable

INTRODUCTION

The oil and gas industry is strategic to national development and growth in Nigeria. Oil and gas constitute about 90% of Nigeria's foreign exchange earnings and 83% of its GDP (Ogbeifun, 2008). According to Adewumi and Adenugba (2010), Nigeria is one of the world's largest producers of crude oil, the 10th largest producer and the 6th largest exporter among Organisation of Petroleum Exporting Countries (OPEC) members. Nigeria, Africa's largest crude exporter has continued to import refined petroleum products after over fifty years of crude oil extraction (Nwanze, 2007). Many hold the view that for the oil and gas sector in Nigeria to satisfy the yearnings and aspirations of the citizenry the sector should be deregulated and privatised. Deregulation and privatisation are now global phenomena. They are the offshoot of economic globalisation. Many developed and developing countries have experienced one form of economic reforms or the other as a result of the global economic system. The attitude of some Nigerians towards deregulation and privatisation of the oil and gas industry has been indifferent as many hold the notion that such government policies will lead to job losses as well as high cost of living. This negative attitude or posture; poses the greatest problem to the Nigerian economy.

Many have argued that the non- deregulation and non-privatisation of the sector will lead tonegative consequences such as wanton diversion of petroleum products to neighbouring countries, smuggling,

hoarding and other criminal activities perpetrated in the system. The country has four oil refineries and these refineries have been bedevilled by fire, sabotage, poor management, lack of turn-around maintenance as well as corruption. These challenges have made it difficult for the refineries to operate beyond 40 percent of their capacities (Adewumi & Adenugba, 2010).

The consequence of the catalogue of problems listed above is usually shortages of refined products and massive importation to meet domestic consumption. It is believed in some quarters that the deregulation and privatisation of this strategic sector will bring succour to Nigerians and make the products readily available and cheap since it would breed competition as we have witnessed in the telecommunications sector. The deregulation of the telecommunications sector in Nigeria gave way for more competition and eventually lower charges or tariffs. However, the average Nigerians' belief is that the deregulation and privatisation of the oil and gas industry will result in hikes in the prices of petroleum products. The objective of deregulation and privatisation of the oil and gas industry is to enable private investors to invest in the sector in other to eliminate constant shortages of fuel and gas in the country. From experience it appears that government can not manage this strategic sector for sustainable development in Nigeria. Efforts being made to deregulate down streams oil and gas sector are welcome relief to the sector and Nigerians generally. There has been crisis in this strategic sector. The crisis

has resulted in production shutdowns, high cost of obtaining fuel from the black market and scarcity or unavailability of petroleum products. This has had negative impacts on the economy with industrial capacity utilisation nose-diving drastically. Many companies operating in Nigeria have relocated their businesses to other neighbouring countries as a result of the high cost of petroleum products as many rely on generating sets to power their operations. The deregulation and privatisation of this industry will reduce constant shortages and reduce time wasting in queues for fuel at filling stations. We are all living witnesses to the dramatic changes that have taken place in the telecommunications sector and the quantum leap that has been achieved in this sector. The oil and gas free-zone in Onne, Rivers state; is a welcome development. However, since the oil and gas sector is capital intensive in nature and requires foreign technologies, the government should give adequate incentives for private sector participation. The purpose of this study is to examine the perception of Nigerians on the influence of deregulation and privatisation moves of the government in the oil and gas industry in Nigeria in promoting national sustainable development in the country.

LITERATURE REVIEW

To deregulate as defined by the Oxford Advanced Learner's Dictionary (2005) means to free a trade, a business activity from rules and controls; that is to decontrol whilst to privatise means to sell a business or an industry so that it is no longer owned by the government; that is to denationalise. Deregulation as defined by investorwords.com means the removal of government controls from an industry or sector to allow for a free and efficient marketplace. Deregulation occurs when the government seeks to allow more competition in an industry that allows near-monopolies. Deregulation enhances competitive service delivery that will enable consumers to have wide range of choices as regards their quest for satisfaction. A glaring example can be seen in the telecommunication sector (Omodia, 2007). As noted by the World Bank (1988), experience has shown that competitive markets- mainly involving private sectors are the most efficient ways to supply goods and services. Government role usually can be limited to policy making, while leaving actual investment, operation and maintenance to non-governmental entities (Omodia, 2007). According to Onipede (2003) the continuous abysmal performances by most of the government parastatals are the undisputable evidences of inappropriateness of government involvement in business. Onipede further asserts that those who continuously argue against NEPA's now PHCN's privatisation cited loss of jobs and national security as reasons. Rational minds would

definitely disagree with this reasoning. Thus, deregulation and privatisation are believed to be capable of enhancing efficiency and effectiveness in service delivery.

According to Olayiwola (2009), oil and gas operations commenced in Nigeria effectively in 1956. A brief historical excursion indicates that oil exploration started in 1908 in Lagos and Okitipupa coastal areas both in Western Nigeria by the Nigerian Bitumen Company established by a German Consortium. Between 1908 and 1956, various exploration and exploitation continued in various parts of Nigeria. In 1956, oil was discovered in commercial quantity at Oloibiri, present day Bayelsa state (Ihua, Ajayi & Eloji, 2009); in the Niger Delta region of Nigeria by Shell D'Arcy. This development heralded Nigeria's membership of Organisation of Petroleum Exporting Countries (OPEC) in 1971. The exploration of oil and gas is predominantly concentrated in the Niger Delta where multinational companies and a few of the indigenous ones are engaged in production and exploration of oil and gas. The oil and gas industry comprises the upstream, the downstream and service sectors. The upstream sector focuses on mining, exploration, production and exportation and is dominated by multinational companies (Ogbeifun, 2009). Chevron, Shell, Agip, Elf, Texaco, Esso-Mobil inter alia belong to the upstream sector.

According to Adewumi and Adenugba (2010), these multinational companies wield so much power within the Nigerian state and the communities. They have been able to exploit, explore and produce oil within the Niger region axis without corresponding development. A few indigenous upstream oil and gas companies exist in line with the provision of local content policy of the government. The downstream sector is involved in refining of crude oil into usable products through distillation, conversion and other special treatments to arrive at petroleum products and gas. It is also involved in distribution of products. The downstream sector has been constrained by unenviable state of the refineries, which have been producing at minimal capacities despite huge expenses incurred on turnaround maintenance of the crisis-ridden refineries (Aigbedion & Iyayi, 2007). Petrochemical plants and fuel stations belong to this sector. The service sector provides technical and consultancy services to aid the upstream sector in drilling, exploration and production activities. The Nigerian government is a major investor in the production activities of the upstream sector and its activities are coordinated mainly by the Nigerian National Petroleum Corporation (NNPC). The Department of Petroleum Resources (DPR) acts as the regulatory agency for the oil and gas sector. Aside from

the NNPC and the DPR, the Ministry of Energy, the Federal Ministry of Environment, the Federal Inland Revenue Service and the Niger Delta Development Commission are the principal government agencies responsible for oil and gas matters in Nigeria (Chidi, Badejo & Ogunyomi, 2011).

Significance of the study

This study is aimed at exploring the perception of Nigerians on the influence of deregulation and privatisation moves of the government in the oil and gas industry in Nigeria. The oil and gas industry is strategic to national development and growth in Nigeria. This study found that the deregulation and privatization of the oil and gas industry is relevant to not only to usher in sustainable national Development to Nigeria economy but open more opportunities to teaming Nigerians, researchers and private investors

METHODOLOGY

This study adopted the survey research design. With a view to eliciting information from respondents, a self-developed questionnaire was designed using the dichotomous scale (Yes/No). The instrument has two sections: Section A has 13 items which sought the views of respondents on the deregulation and privatisation of the upstream and downstream oil and gas industry in Nigeria. Section B elicited the demographic profile of respondents. A total of 215 questionnaires were distributed to the target population using the simple random sampling technique. The questionnaires were self-administered to respondents with the help of three research assistants. However, 180 were returned upon which the data analysis was based. This represents 83.7% response rate. Data analysis was carried out with the aid of SPSS (Statistical Package for Social Sciences) version 17.

RESULTS

With respect to respondents' category, respondents to this survey consist of government agencies which represent 22.2% of the respondents. Market women make up 16.7%; students 12.2%; workers account for 19.4%; upstream oil sector comprises 16.1%; whilst the downstream oil sector consists of 13.3%. With respect to sex distribution, 68% of the respondents are male whilst 32% are female. 78% of respondents are not in support of the monopoly enjoyed by the NNPC. This implies that they are in support for the deregulation of the oil and gas industry which will break the monopoly of NNPC. 67% of the respondents believe that deregulation and privatisation of the oil and gas industry will force down the prices of petroleum products. 82% of the respondents believe that deregulation and privatisation will result in the elimination of smuggling of petroleum products across the borders to

neighbouring countries. 78% of the respondents believe that the deregulation and privatisation have nothing to do with political factor except if the government is not sincere with its policy implementation. 88% of respondents agree that deregulation and privatisation policies will improve the Nigerian economy. 86% of respondents do not agree that the political implications outweigh the economic implications for deregulation and privatisation. This corroborates the views of respondents to the preceding question. 94% of the respondents agree that the government should go ahead with deregulation and privatisation of the oil and gas industry. 50% of the respondents agree that the removal of fuel subsidy is necessary whilst 50% disagree. 72.2% agree that government should subsidise the prices of petroleum products. 100% of the respondents believe that the deregulation and privatisation of the oil and gas industry will create job opportunities for Nigerians. 67% of the respondents think that the government should deregulate and privatise the oil and gas industry gradually. 77.8% of the respondents believe that the deregulation and privatisation of the oil and gas industry will be a blessing to Nigerians. 80.6% of the respondents do not believe that the deregulation and privatisation of the oil and gas industry will be a curse to Nigerians. This corroborates the views of respondents to the preceding questions.

DISCUSSION OF FINDINGS

From the foregoing, it is evident that the deregulation and privatisation of the oil and gas industry will usher in sustainable national development and will be a blessing rather than a curse for the citizenry. These findings are consistent with the views of Omodia (2007). According to Omodia (2007) government role usually can be limited to policy making, while leaving actual investment, operation and maintenance to non-governmental entities. Omodia (2007) views deregulation and privatisation in positive light as it is believed that deregulation and privatisation are capable of enhancing efficiency and effectiveness in service delivery.

CONCLUSION AND RECOMMENDATIONS

Deregulation and privatization are now global phenomena. They are the offshoot of economic globalization. For an economy to be competitive it needs to embrace global standards. We cannot escape globalization and so we must be part of it. The attitude of some Nigerians towards deregulation and privatization of the oil and gas industry has been indifferent as many hold the notion that such government policies will lead to job losses as well as high cost of living.

This negative attitudinal posture; poses the greatest problem to the Nigerian economy. It was found that the deregulation and privatisation of the oil and gas industry will usher in sustainable national development and will be a blessing rather than a curse for the citizenry. The following recommendations are made:

- The authors recommend that strategic sectors such as oil and gas as well as the power sector should be deregulated and privatized for sustainable national development.
- It is recommended that the regulatory framework and environment should be such that encourage maximum competition. Accordingly, government must repeal all laws that inhibit competition and should pass laws that protect investors.
- Government should prepare to address the labour problems, which may arise as a result of deregulation and privatization. A proactive programme of education of labour unions should be pursued. More so, safeguards against job losses should be embarked upon.
- It is recommended that government should leave the management of company in the hands of the strategic partner.
- Government sales option (of 40% to strategic partner, 20% Nigerian public and 40% government) should be implemented accordingly even at the reduced equity holding by government. However it is recommended that government divests gradually its remaining shares at a minimum of 5% per year to the Nigeria public.
- It is recommended that workers should be allowed to have a stake in the refineries in the form of equity participation. This will reduce the risk of shortage usually associated with workers' union activities and ensure greater commitment to the survival of the refineries.
- It is recommended that the government should in effect provide the broad guidelines for the operation of the refineries and allow private initiative in the running of refineries.

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APPENDIX

Table 1. Frequency Distribution of Primary Data N=180

S/N	QUESTIONS	YES	%	NO	%
1	Should the monopoly enjoyed by the NNPC be sustained	40	22	140	78
2	Will the deregulation and privatization of the oil and gas industry force down the prices of Petroleum products?	120	67	60	33
3	Will the deregulation and privatization result in the elimination of smuggling the product across the border?	148	82	32	18
4	Do you agree that political implications for deregulation and privatization policies?	40	22	140	78
5	Do you agree that deregulation and privatization policies will improve the Nigerian economy?	158	88	22	12
6	Do you agree that the political implications outweigh the economic implications for deregulation and privatization	25	14	155	86
7	Do you agree that the government should go ahead with deregulation and privatization of the oil and gas industry	170	94	10	6
8	Do you agree that the removal of fuel subsidy is necessary?	90	50	90	50
9	Do you agree that the government should subsidize the prices of petroleum product?	130	72.2	50	27.8
10	Do you believe that deregulation and privatization of the oil and gas industry will create job opportunities for Nigerians?	180	100	-	-
11	Do you think that the government should deregulate and privatize the oil and gas industry gradually?	120	67	60	33
12	Do you believe that the deregulation and privatization of the oil and gas industry will sustain national development	140	77.8	40	22.2
13	Do you believe that the deregulation and privatization of the oil and gas industry will not promote national development in Nigeria?	35	19.4	145	80.6

Source: Field Survey, 2015

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DEMAND RESPONSIVE APPROACH AND ITS SIGNIFICANCE FOR SUSTAINABLE MANAGEMENT OF WATER FACILITIES IN THE SHAI OSUDOKU DISTRICT

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ABSTRACT

Demand Responsive Approach (DRA) was adopted in Ghana as a national policy for rural water delivery as an attempt, within a decentralized programme to improve the efficiency of service supply and also to make users take key decisions about the service they want and are willing and able to pay for. The idea behind DRA is that, it ensures transparency and accountability and in the long term achieves sustainability since beneficiaries feel a sense of ownership towards the project. Data was collected for the study with the use of a purposive sampling method from two hundred (200) households in four (4) communities in the district. An additional two (2) focus group discussions and 12 key informant interviews were added in the data collection to beef up the analysis in the Shai-Osudoku District of Ghana. The study identified that financial management which is crucial for the continuous functioning of the water facilities is a major setback. DRA does not address equity concerns thereby marginalizing the poor within the community. The study recommends periodic financial management training to beneficiary communities for assured sustainability and also makes provision for the economically deprived.

KEYWORDS: DRA, Rural Water, Sustainable management

INTRODUCTION

Ghana and other developing countries have undergone policy reform largely associated with Structural Adjustment Programmes (SAPs) in the 1980s (Isimi, 2004). The Structural Adjustment programmes was advocated and sponsored by the World Bank (WB) and the International Monetary Fund (IMF). This led to a change in governments' role from welfare provider to facilitator and also from needs-based approach changing to demand-based approach (Ezati, 2001). Due to these policy changes, public investments in water declined with the expectation that the private sector would step in to fill the gap. In Ghana, demand has now become a popular condition attached to externally funded rural water and sanitation projects based upon the assumption that people better manage facilities that they pay for. Achieving lasting benefits from water supply interventions involves the community in all aspects of service delivery, the use of appropriate technologies, and the role of governments as service promoters rather than providers. This indicates the limitation of top-down and supply-driven approaches to delivering services. (Devereux *et al.*, 2000). Ahlers and Zwarteveen (2009) observed two principles in water management that is water commodification and community management, which is promoted and practiced in Ghana as a national

policy in the provision of water and sanitation systems in rural communities and small towns.

The new Community Management (CM) concept is said to be demand oriented, demand driven or demand responsive (Fuest, 2006). The Demand Responsive Approach (DRA) was developed after the failure of many different approaches, such as the supply-led approaches to increase sustainable water and sanitation coverage (Wright, 1997). The age old supply driven approach was traditionally centralized and top-down in the provision of water and sanitation systems. According to Breslin (2002) the supply driven approach result in millions of dollars wasted and fall in disrepair as communities watch schemes do not see themselves as having a stake in the decision making process but implemented on their behalf. The shift from supply driven to DRA according to Bennett(1995) represents a movement away from the concept of "services", delivered to all in need as of right, instead to a concept of demand as expressed through preferences revealed through meaningful judgments stimulated by realization of the costs involved.

In Ghana, data supplied by the Community Water and Sanitation Agency (CWSA) on rural and small town

water indicates coverage as at 2010 at almost 62% which is an encouraging increase from about 59% in 2009. This, however, leaves about 38% of rural and small town population without access to safe drinking water. Meanwhile only 8.2% of rural Ghana has access to improved toilet facilities (GSS, 2008). Nonetheless since the DRA for water and sanitation was operationalized in Ghana in 1994 there is no clear evidence on the functionality of the approach to sustainability, suitability and socio-cultural context that influence the approach. It is on the basis of the above stated problem that, this study investigated into the potential of the DRA to alleviate the weaknesses and shortfalls of the supply based approach in ensuring sustainable management of water facilities in one selected community (Shai-Osudoku District) in Ghana. Specifically the study seeks to assess the conditions under which DRA leads to improved functionality in a sustainable manner, determine the suitability of DRA for providing equitable and affordable water service and the change in the pattern of water usage with the introduction of DRA.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The theoretical framework informing this study draws on neoliberalism. It started off as a neo-monetarist solution to the problem of hyperinflation in many developing countries in the 1970s and gradually grew into a new development agenda. Harvey (2005) opines that at the heart of neoliberalism lies the theoretical proposition that it is the liberation of individual entrepreneurial freedoms and skills, within an institutional framework containing strong private property rights, free markets and free trade. Neoliberalism, which is based on a public choice perspective, has established itself as the dominant paradigm in development theory for the past two decades. The central element of neoliberalism is the opening up of spaces for capital that were previously restricted, coupled with the increased integration of the state with business around an agenda of increased competitiveness within these newly opened spaces (Kilmister, 2004).

Neo-liberal concept is based on three main principles which includes the role of the state, advocacy for the removal of capital and exchange controls, and the opening up of financial markets to foreign investment, and the state's regulatory role restricted to competition and anti-trust policy. The first principle is based on the role of the state which stated that, Governments should not be involved in the economy with the exception of four main functions such as defence, law and order, the provision of the necessary public works that private enterprise does not find profitable to provide and the

protection from members of the community who cannot be regarded as responsible individuals. The believe is that, Government interfering in the market place will distort the balance of supply and demand. This principle holds that the production, distribution and trade of goods and services are best left to private (profit making) rather than public organisations. So privatization is central to Neo-liberalism (Kilmister, 2004). Second, Neo-liberalism strongly advocates the removal of capital and exchange controls and the opening up of financial markets to foreign investment. Controls on imports of goods and services, especially tariffs and quotas, on intellectual property rights, on the awarding of government contracts, and on productive investment are all to be removed and handed to international institutions, notably the World Trade Organization (WTO). Third, the regulatory role of the state is restricted to competition and anti-trust policy, in support of those competitors who might lose out if a monopoly becomes too strong, rather than providing a counterweight to the power of capital (ibid).

Supporters of neoliberalism have argued that markets are a better way of organizing economic activity because they are associated with competition, economic efficiency and choice (Larner, 2000, p. 5). It is believed that the state should be blamed for the failures of previous development projects and it is argued that the state should play as small a role as possible, with the laws of supply and demand now being the deciding factors for economic policy as well as development policy. "Majority of developing countries such as Ghana and Nigeria after achieving independence, were experiencing a spiralling downward decline in economic growth" (Tar, 2008, p. 56). These countries out of desperation turned to the Bretton Wood institutions (WB and IMF) for solutions. These institutions presented neoliberalism as a solution in the form of Structural Adjustment Programmes (SAP).

The centrality of water to life places water at the heart of the controversy surrounding the merits of neoliberalism. The neoliberals argue that the regulation of water would be better orchestrated through the development of markets and the injection of private sector discipline. It is believed that private sector management of water supply would reduce costs, opportunistic management, and regulatory capture while increasing investment, transparency, and efficiency (Lee and Jouravlev, 1997). Ghana, based on neoliberal policies of the International Financial Institutions IFIs, has moved to decentralize and pass control and ownership of water delivery to private hands and local governments. Petit (2009), stated that, the private monopolies of the multinationals have led to non-fulfilment of promised investments, non-improvement

of the water quality and a disproportionate increase in the price of water. The common people are those who most suffer the increase, among other reasons, due to the fact that they are the ones who encounter more problems of access to public sources, and receive the poorest quality supply.

The World Bank and other IFIs have acknowledged Ghana as one of the success stories of sub-Saharan Africa in terms of water provision. However, critics' analyses of interventions of the World Bank/IMF in nearly two decades of structural adjustment in Ghana have concluded that Ghana's development programmes have not been based on institutional development grounded in the indigenous understanding of government and authority, which define roles for the state and public administration. Ghana has been found to be another case of the devastating impact of neo-liberal prescriptions on poor countries worldwide (Petit, 2009).

According to Pearce (2000), globalization, driven by the values of neo-liberalism, has seriously harmed the anti-poverty and anti-exploitation struggle in contemporary world. The benefits to the few have not compensated for the increased poverty, inequality, and uncertainty which many have experienced. For municipalities (or District Assemblies), reduced transfers from national government, coupled with expanded responsibilities made cost-recovery and cost-cutting measures an almost inevitable choice and in most instances, the most direct and easiest methods were the harshest: cut-offs either through direct administrative intervention or via installation of prepaid technology (McDonald and Pape, 2002). The long term effect of neoliberal policies on water include very high charges for water services and eliminating water service deliveries in areas which are not considered profitable or commercially viable. DRA is considered better than supply driven systems because the allocation process is demand driven by consumers.

Neoliberal policies have been criticized as negatively impacting the already marginalized and susceptible members of society. According to Crotty (2000), unfortunately, global income growth has slowed; productivity growth has deteriorated; real wage growth has declined; and inequality has risen in most countries. To Wilkinson (2007), neoliberalism can best be described as an apology of capitalism and a utopian vision of self-regulating markets transforming the inherent selfishness of individuals into general good. Its propagated benefits are unrealistic and not achievable.

In reviewing literature it can be stated that, Neoliberal programmes and initiatives such as SAP and HIPC led to the wholesale initiation of the Private-Public-

Partnership debate (PPP) and Community Management (CM) of water and sanitation services in developing countries like Ghana. The 1980s, often referred to as the lost decade for Africa, was a time of crisis due to rise in oil prices and a fall in primary products, such as cocoa for Ghana. The situation had a devastating toll on African economies as a result of their overdependence on a limited number of primary products (Castree, 2003). In response, the Bretton Woods Institutions came up with loan packages and some recommended reform called Structural Adjustment Program (SAP). Structural Adjustment is a process whereby a national economy is opened by means of the depreciation of the real exchange rate through a combination of demand and supply side policies (World Bank, 1988 p. 2). Ibhawoh (1999) adds that adjustment, in the view of the Bank, aims at setting the economy of a country back on a path of sustainable growth when it is faced with a macro-economic crisis characterized by unsustainable internal and external balances. Greenberg (1997) is of the opinion that, the neoliberal policies pursued under SAP were aimed at a wise and judicious financial management of borrowing countries to curtail the ill effect of subsidies and financial support on the economy of these countries. According to Weissman (1990), Ghana realized a fall in exports to about 52% and Gross Domestic Product (GDP) was at its lowest in the early 1980s. In addition to the decline in Ghana's economy were the major drought during 1983 to 1985 and the repatriation of millions of Ghanaians from Nigeria (Weissman, 1990).

The key points of Neoliberalism which serve as WB and IMF conditionalities are the rule of the market, cutting public expenditure for social services, deregulation, eliminating the concept of the public good and privatization. Amenga-Etego (2003) is of the view that, in Ghana, one obvious impact of these programmes and initiatives can be seen in the cuts in social spending on essential services like water facilities where the state institution was rolled back in water provision and the private sector is to manage the service.

These reforms sought to reduce the role of the State in production as well as service delivery and encourage the deregulation of public enterprises. Agyeman (2007) and Bakker (2007) have argued that the aim is to reduce public sector involvement in the delivery and management of essential public services like water. Eguavoen (2007) indicates that even though water was treated as a commodity before the implementation of SAP, it applied to the urban areas where incomes were stable compared to rural areas. In the rural areas, huge subsidies were placed on water while some people did not pay for it at all because they viewed water as nature's gift. Even for urban dwellers, the price paid for

water was so low that people do not regard it. The question often raised is why the WB deems it appropriate that rural areas should apply the DRA approach. In fact DRA was seen as a developmental tool because it was widely acknowledged in the 1980s among sector professionals that many rural water supply programs in developing countries were performing poorly (Therkildsen 1988; Briscoe and DeFerranti 1988; Churchill et al., 1987). Communities did not have a sense of ownership towards their water projects, and households were not satisfied with the projects that donors and national governments installed (Whittington et al., 2008).

Demand responsiveness stands alongside community involvement as one of the pillars of rural water programs over the last decade and it marks a fundamental paradigm shift in development thought and practice especially in the rural water sector. Literature (World Bank Water Demand Research Team, 1993; Black, 1998) has indicated that the performance of low-cost rural water systems depended on healthy consumer demand. Weak consumer demand indicated that beneficiaries would not contribute toward the operation and maintenance of the facility, would not use the facility on a regular basis, and/or would not be satisfied with the facility once it was built (Thorsten II, 2007). According to Serageldin (1994) and Tamayo et al. (1999), neglecting demand has often placed new systems in a low-level equilibrium trap. The most compelling argument in support of the demand-responsive approach is that an expression of demand is an expression of value. This is because when a person is willing to give up valued resources in exchange for a service, it indicates that the person values that service.

Gbedemah (2010) argues that DRA is a means of removing government and donor responsibility for water provision and management because the managers of the community water devise their own strategy of collecting fees from water users (a form of water commodification) for daily operation and management of the system, which potentially drives the poor away from enjoying the facility. The system requires that beneficiary communities pay 5% of the initial capital cost of the facilities and bear all other operational, maintenance and repair costs of the facilities (Karikari, 1996; Schouten and Moriarty, 2003). This 5% payment of cost of the water and sanitation project, to fund water supply, may deter many rural communities who struggle to make ends meet. According to Eguavoen and Youkhana (2005), should a community decide to levy its people for the use of the service to generate income for maintenance and repair, the poor often revert to contaminated water sources like rivers and streams. The problem therefore is that, the poor are not willing

(cannot afford) to pay for water but the official policy is for communities to pay initial cost of water facilities and manage them after they have been constructed. Owusu (2005) is of the view that, even though SAP has restored some level of sanity at the macroeconomic level, it has come at a high social cost due to the fact that most vulnerable groups have been adversely affected both directly and indirectly by measures such as the withdrawal of subsidies on social services, retrenchment of labour, and the general increases in prices of goods or services.

Further, decentralization was advocated. Decentralization of government has been a major policy direction of the World Bank and IMF as an adjunct to the Structural Adjustment Programme (Kyei, 2000). Decentralization was recommended on the basis that, it would enhance decision making processes and increase participation by the beneficiary communities at the local level. Subsequent to the implementation of Ghana's Decentralization Act in 1988 the structure and strategy of its rural water supply sector and its responsibilities has been transferred to the District Assembly and communities (Engel et al., 2005). The responsibility to plan, implement and coordinate the delivery of water and sanitation services lies with the district assemblies as required by the decentralization policy. However, these responsibilities are not accompanied by the necessary support, guidance and resources for the district assemblies to work properly. The limited human capacity management at the DA level and the low technical knowledge of water and sanitation issues present great challenges to decentralization (WaterAid, 2006).

METHOD

The study employed mixed methods approach due to the nature of the data needed for the work, thus qualitative and quantitative research methods were used and many reasons informed this approach. Using more than one method in a single investigation can have substantial advantage even though it almost inevitably adds to the time invested, (Robson, 1993). More so, the use of mixed methods helped to crosscheck data gathered through different methods enhancing the validity and reliability of the results. This can be supported by Bryman's (2004) assertion that combining two methods enhances the researcher's validity for his or her conclusion if they can be shown to provide mutual confirmation. Bryman further argued that quantitative research is associated with the researcher's perspective but qualitatively the object of study is seen through the eyes of the people being studied. The quantitative data was obtained through the use of structured questionnaires which were conducted through household surveys while the qualitative data were

obtained through the use of focus group discussions and in-depth interviews with key informants.

Data was collected at three levels, namely household level, community level and agency level. At the household level, data on household characteristics and water usage including household participation in DRA, functionality of water facilities delivery was gathered using structured survey instrument (quantitative data). At the community level, a functionality mapping of water points was conducted which fed into an inventory for water in the district. The mapping was done using transient walk and key informant interviews. Furthermore, at the community level, another set of data was generated using focus group discussion (FGD) and key informant interviews (KII). The study was conducted in the Shai-Osudoku District (SOD) with its capital in Dodowa, Ghana. This study purposely selected communities from the Shai-Osudoku District that had acquired their water facility through the DRA and were managing the facilities through the Water and Sanitation (WATSAN) Committees. The researcher also inquired from the District Water and Sanitation Team (DWST) and Community Water and Sanitation Agency (CWSA) on areas that were suitable for collecting data that will meet the study objectives. Besides for the purpose of the study, care was taken to also select communities which are rural to analyse the significance of DRA for rural communities. The four communities selected from the list provided were Lanor, Gbese, Akunarhkope and Atrobinya. The first two communities had a pipe system in place and the last two communities had boreholes.

In all, a total of 10 key informant interviews were conducted, Focus Group Discussion (FDG) was used to solicit information from traditional leaders, Assembly members, District Assembly staff and WATSAN members were interviewed using in-depth interview approach. At the Agency level, officials of CWSA were involved in providing technical information on the DRA concept, practice, acceptability and sustainability. Individual interviews were administered, using a structured questionnaire to 200 household members in the four (4) selected communities.

From these four communities, 50 households were randomly sampled in each to make a total of 200 households. The choice of these four communities helped determine whether the socio economic dimensions of a community play an important role in the sustainable management of DRA based water facilities.

METHOD OF DATA ANALYSIS AND DISCUSSIONS

This section presents data analysis, findings and discussions. The discussion has been fused with the data analysis. Sara and Katz's (1998) approach was used in analysing demand-responsiveness and sustainability of rural water supply. They defined sustainability as maintenance of an acceptable level of services throughout the design life of the water supply system. Indicators of demand-responsiveness as developed by Sara and Katz (1998) were (1) Project Initiation, (2) Informed Choice and (3) Contributions towards the implementation of the water facility. The measurement of sustainability were (1) Physical condition of the system, (2) Consumer Satisfaction, (3) Operation and Maintenance Practices, (4) Financial management and (5). Willingness to sustain. These indicators were used to ascertain demand-responsiveness and sustainability of the community water system.

Socioeconomic Characteristics of Respondents

Table 1: Summary of Socio-Economic Characteristics

Household Characteristics (N=200)	Percent (%)
Gender (Household head)	
Male	63
Female	37
Highest level of Education	
None	43
Primary	14.5
Middle/JSS	19
O and A level	18
training college	5.5
Main Occupation	
Farming	48
Artisan	17
Agric labour	12
Others	23
Household Size	
1 - 3 people	24
4 - 6 people	50
Above 6 people	26
Type of Dwelling	
compound house	46.5
Huts building	23.5
Semi-detached	30
Tenure/ownership of Dwelling	
Owned by resp.	59
Relative not HH member	22
Others	18
Estimated Monthly Expenditure	
Below GH¢ 200	3.5
GH¢ 201-GH¢ 600	37
Above GH¢ 600	59.5
Alternate Water source	
Borehole	48
Pipe Borne water	50
Others	2

Source: *Field Survey, 2014*

Looking basically at the demographic characteristics of Shai-Osudoku District, it is clear it was an area worth using the DRA approach with respect to the rural water supply. As illustrated in Table 2, the facilities provided in all the four (4) communities selected were functioning though the iron removal plant attached to the borehole of the Atrobinya community had broken down for about three (3) months prior to the collection of data for the study. The community is still able to pump water and manually pour into the iron removal plant for domestic use. The communities and their respective population, and number of facilities are shown in Table 2.

Table 2: Functionality & Service Coverage in the 4 Selected Communities

Community	No. and Type of Facilities	No. of Non-functional facilities	Population Served
Akunarkope	1 borehole	0	500
Atrobinya	1 borehole	0	389
Gbese	2 pipes	0	4884
Lanor	1 pipe	0	5004

Source: Field Survey, 2014 and Census Report (2010)

Indicators of Demand-Responsiveness

Indicators of Demand responsiveness was considered from both the perspective of household members and water committees in analyzing the data and discussing the findings. Indicators to ascertain demand responsiveness were project initiation, informed choice and community contribution.

Project Initiation and Informed Choice

The rationale for involving households in the choice of technology was to ensure that engineering designs were responsive to local needs and realities (Whittington et al., 2008) even though some government and donor representatives also argue that communities should not be given a wide range of technical choices because they are unable to make an informed choice (Breslin, 2003). 23.5% of the respondents of the household survey said they did not participate in deciding on the choice of technology while 56% said they did participate in the choice of the system. 20.5% of the respondents said they do not remember they participated or not. Table 3 depicts the results in the participation in the type of technology for the water facility (whether pipe or borehole).

Table 3: Type of technology

Response	Frequency	Percent (%)
Did not participate	47	23.5
Participated	112	56
Don't remember	41	20.5
Total	200	100.0

Source: Field Survey, 2014

Interestingly, from the focus group discussions (FGD), the borehole communities stated they wanted either a mechanized borehole or a pipe system but were given non mechanized boreholes rather. They complained that the use of one's energy in pumping water did not allow them to fetch as much water as they will need. KII with the district planner (a member and head of the DWST) revealed that, as part of the funding package, DANIDA had specific technologies for communities based on their population size and income level. Also, each technology had its own cost implication of which pipe was the highest. A KII at the regional office of CWSA indicated it was a direct response to today's interest in getting hooked to a pipe system since some neighbouring communities had the boreholes replaced with pipe facilities. But then she added that numbers also matter. As much as community demand must be met, communities with lower populations cannot be given pipe facilities because of the cost involved. She concludes by saying "*Either they truly had a change of choice when they saw it (pipes) somewhere else or at the time their choice truly was pipe but technically it was not possible because you do not have a high yielding spring or the population was not enough to enjoy that technology*".

Also, at the time of installation the borehole communities did not have electricity which is essential to mechanise the facility. Perhaps also, this could be an instance of what Mosse (2001) describes as beneficiaries taking a low-risk strategy to ask for something they are likely to get. Meaning that communities are able to identify what the donor want to offer and so they ask for that in order not to miss the opportunity of being served. Cooke and Kothari (2001) point out that admittedly these facilities are provided with best intentions; however, the so-called participatory' approaches do not always empower but may unwittingly serve to legitimise and support the status quo. However, the WATSAN committees of Gbese and Lanor (pipe communities) indicated that they were given the options of community management, private management and a partnership, and they preferred community management.

Community Contribution

This factor best differentiates a demand-responsive project from a project in which people simply participate as a requirement for community contribution. This includes cash, labour, and in-kind contributions. The policy at the time of providing the water facilities was that communities contribute 5% of the total cost of implementation. As seen in Figure 1, nineteen percent (19%) of respondents reported that in deciding on the 5% household contribution, they did not take part while 69.5% participated in the decision and

11.5% did not remember taking part. In the pipe communities, every individual above 18 years was levied GHS 2 to arrive at their 5%. The chairmen of the pipe communities indicated in their interview that their 5% amounted to GHS 16,000 which they could not raise. They were able to raise less than GHS 3000 and therefore solicited for financial support from benevolent individuals, and also corporate bodies like the Volta River Authority (VRA) supported them with the remaining balance. It is worth noting that DANIDA (external donor) was not comfortable with this arrangement as they claim it could affect the ownership aspect of the facility. On the other hand, FGD with the borehole communities revealed community members organised communal labour by working on farms to mobilise funds to contribute their 5% quota. Some families also donated land freely for the project. There was, however, no record of what percentage of households that contributed in all the four communities.

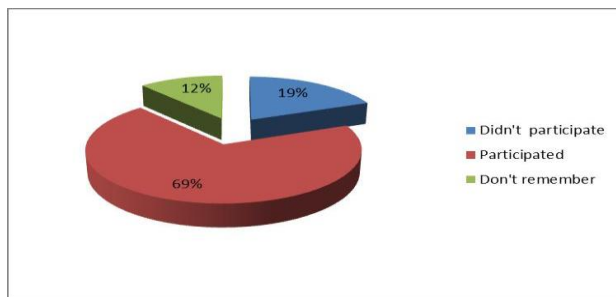


Figure 1: Household contributions (Cash or Kind)
Source: Field Survey, 2014

The 5% quota is a constrain to most rural communities in Ghana. This assertion is made by Eguavoen (2007), and Fielmua (2011), instead of restricting the difficulty in raising the amount to only northern Ghana. Water Aid (2005), also, has indicated that the 5% community quota compromise the principle of equity since households who cannot afford will not be allowed to use the facility. The WaterAid study specified that while this requirement stems from the need to adopt a demand-responsive approach, its effect would worsen the plight of the poor and leave them dependent on unsafe water sources with all the health implications (Fielmua, 2011). Karikari (1996) maintained that most settlements have very small populations, and many of these, particularly in the savannah zones, cannot afford the 5% capital contribution towards safe water supply. The views expressed above could have served as the reasons why the Government of Ghana has suspended the 5% community contribution since 2011.

Sustainability Indicators

Sustainability is one of the main criteria by which development is defined and evaluated and therefore requires a precise and unambiguous definition (Lynam

and Herdt, 1992). The small-town pipe scheme being used in the selected communities consists of a high yielding borehole that is then mechanized with an electric pump to transport the water to a large overhead tank. From the tank, gravity is used to distribute the stored water to various accessible points (community standpipes), from which community members can fetch their water. These pipes according to the Ghana WASH project (2013) have a lifespan of 30 years or longer, depending on maintenance while that of boreholes have been estimated to be between 30 to 40 years. However, according to the Rural Water Supply Network report (2010), boreholes are drilled to function for a lifespan of 20 to 50 years. Sara and Katz (1998) defined sustainability as the maintenance of an acceptable level of services throughout the design life of water supply system. They identified sustainability as comprising three categories: technical, social and institutional. These categories were divided into five sub-indicators of sustainability: physical condition, operation and maintenance (O&M), consumer satisfaction, financial management, and willingness-to-sustain the system.

Physical Condition

Serious failings in the quality of implementation may act as killer factors from which recovery is impossible without significant additional investment. Poor quality construction can undermine all efforts to keep systems working, while high quality construction may lead to a very considerable service life, despite weaknesses in other aspects of the Operation and Maintenance (O&M) system (Water Aid, 2011). Howe & Dixon (1993) and Singh et al. (1993) have also indicated that shoddy construction of drinking water facilities is a major cause of failed system maintenance. This research therefore probed into the physical condition of the facilities. This measures the overall physical condition of the water system. It is based on factors such as construction quality which is determined by leaks or defects in the system and effectiveness of masonry or pipe works. Under this criterion, themes considered included the overall rating of the construction quality, the functionality of the facility now and in the next five years.

Figure 2 shows the rating of the construction quality of the facility. It was observed that 24.5% rated it as excellent while 60.5% of the respondents rated the construction quality as good. About 2.5% of respondents each rated it as very poor and poor while 1% rated it as fair. This implies generally the construction quality is good on the whole. However, an interview with WATSAN members in the pipe communities revealed that they were not happy with the quality of construction. According to them, old pipe lines left behind by the defunct Asutuare Sugar Factory,

were used instead of new ones and therefore can affect the life-span of the pipe system negatively.

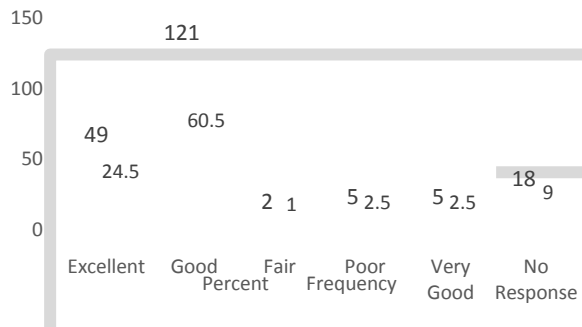


Figure 2: Rating of the Construction Quality

Of equal importance to this study is the functionality of the facilities. Accordingly, a look was taken at the functionality of the facilities. Functionality according to Carter et al. (2010) is not the same as sustainability and that, functionality data are often the best indication we have of inadequacies in sustainable service provision. Discussions held revealed that in the event that a breakdown occurred, it took less than two weeks for it to be repaired. Also, as part of the implementation plan, the donors (DANIDA) trained an area mechanic responsible for the repairs of all faulty boreholes catchment area. He is responsible for routine maintenance or repair work on the water facilities at the request of the communities. He (area mechanic) is paid by the communities from revenue collected from households or money obtained through special contributions for the spare parts and their services. A chi-square analysis was undertaken to find out whether the general functionality and sustainability with respect to the two facilities (borehole and pipe system) were different as indicated in Table 4. It was concluded that the two facilities were not different. In addition, it was concluded that both systems were also functional. Interestingly, all the water facilities in the four (4) communities were functioning. Even though the facilities do break down sometimes the WATSAN managed to mobilize the resources needed to make minor repairs within a short period.

Table 4: General Functionality and Sustainability of the Facility

Type	Borehole		Total (%)
	Frequency	Pipe (%)	
Excellent	27	12	39
Very good	34	47	81
Good	28	37	65
Fair	4	4	8
Bad	7	0	7
Total	100	100	200
Chi-squared Stat			16.1
P-value			0.003
Chi-squared Critical			9.5

Source: Field Survey, 2014

Consumer Satisfaction

Consumer satisfaction with respect to the water system is based on factors such as the ability of the facility to adequately meet the water needs of community members, the frequency of the water flows, availability of water, the general impression of the facility, changes in water usage and whether users are confident to drink water without treating it. Table 5 shows that 83% of the total respondents agreed that community managed DRA facilities are able to meet the water needs of the communities all year round and 14% of the total respondents believed otherwise.

Table 5: Ability of Water Facilities to Adequately Meet Water Needs (Pipe and Borehole)

Response	Frequency	Percent (%)
Yes	166	83
No	28	14
Don't know	6	3
Total	200	100

Source: Field Survey, 2014

The question was asked about the general impression of the functioning of the facilities. It was discovered that, 40.5% of the respondents rated the facilities as very good, 32.5% of the respondents said it is good, and 19% of the total respondents agreed the facilities are functioning excellently. In all, the general impressions on the facilities are positive; 4% of the respondent rated it fair and 2.5% had a bad impression about the facilities. It was observed also that 1.5% of the respondents did not have an opinion of its functioning. See table 6 below

Table 6: General Impression of the Functioning of the Facility

Response	Frequency	Percent (%)
Excellent	38	19
Very good	81	40.5
Good	65	32.5
Fair	8	4
Bad	5	2.5
Don't know	3	1.5
Total	200	100

Source: Field Survey, 2014

Operation and Maintenance (O&M)

Water supply facilities should be considered as assets and managed in such a way that they last their projected service life (Buamann, 2006). The basic principle behind DRA is that communities that benefit from an improved water facility should have overall responsibility for its O&M and this is fulfilled through

the formation of a community water committee that is responsible for operating the facility, setting and collecting water tariffs, and managing maintenance and repair activities (Harvey and Reed, 2006). Kleemeier (2000) indicates that there is no such thing as a maintenance free technology and even technologies such as gravity water supply schemes which are expected to provide sustainable service have failed to live up to that. According to Schouten (2006), the most important element identified of a community managed water facility is a water committee (WATSAN) to manage the water point, as well as contribute funds to pay for its maintenance and repair. However, Carter (2009) identifies that communities are not always motivated to manage water points effectively. Discussions at the DA and CWSA revealed that O&M is paramount to sustainability. When a community adheres to regular O&M, issues of saving into the accounts for breakdown and quick response to breakdowns are assured for smooth running of the facilities. Once the water facilities are built, district assemblies hold the water systems in trust for the communities, and communities are encouraged to establish WATSAN committees to manage the systems (Komives et al., 2008).

The committees are mandated to operate and manage the facility, set and collect tariffs, carry out repairs and account regularly to the community. With the exception of the Gbese WATSAN committee, the other WATSAN committees of the three other communities have been in office since the facilities were provided. It would have been essential to train the new committee and organize refresher programme for those still in office. Yet, funds for such training is supposed to come from the community water funds which is already inadequate to effectively run O&M, not to mention other auxiliary activities like training. For effective water facility O&M for sustainability, it is important to identify the role played by caretakers in the case of boreholes, and vendors for pipe communities. Caretakers/vendors are assigned to regularly inspect the water supply and identify areas that need repairs. Similar to sentiments raised by Nyarko (2007), as was also observed in the four communities understudy, record keeping on operations and maintenance is poor even though CWSA has developed forms for communities to use. However, the DA which is supposed to monitor their activities also complains of logistical constraints. It is worth noting that, only the borehole communities have maintained their caretakers since the implementation of the water facilities; on the contrary, the pipe communities have changed their vendors/caretakers who have not received any training for the job.

Financial Management

Generally, basic financial management and accountability of water systems including tariff collection and savings was low in all four communities. In Akunarhkope, each household paid GHS 0.50 monthly even though the caretaker admitted payments were not forthcoming. The Atrobinya community only paid when there was a problem to be fixed, otherwise they enjoyed the services of the facility for free. This financial situation confirms the findings of Whittington et al. (2008). In their study conducted in Peru, Ghana and Bolivia, they identified that a substantial minority of rural communities were not collecting sufficient revenues to pay operation and maintenance costs and a significant minority were not collecting revenues at all.

However, beneficiaries according to Kleemeier (2000) are usually reluctant to pay when everything appears to be working and that happens to be the case. At the CWSA, it showed that convincing borehole communities to use a sustainable form of payment (pay-as-you-fetch) has been a challenge. This is because other forms of payment do not work. Laryea (1994) also explains that the long history of rural communities of always being at the receiving end of their own development makes responsibility of the facility difficult. In essence, they are used to being spectators of their own development. However, the sustainability of water supply is dependent on appropriate prices, and the necessary resources which should come from the project consumers must be in place (Whittington, 1998; World Bank Water Demand Research Team, 1993). According to the WATSANs, they had stopped calling for meetings with the community members because they never attended when they were called upon. This excuse could mean that the community members have lost confidence in them and so could not be bothered since they (WATSANs) are not transparent. None of the WATSANs had any financial records of their activities to show. None of the WATSANs knew the exact amount they had in their bank accounts even though the boreholes committees said they had over a GHS100 each.

According to the attendants of the pipe facilities, they make average monthly revenue of not less than GHS450 of which they (attendants) are paid a 20% commission. They could sometimes make GHS650 when there is a major funeral in the community. These amounts when collected are paid into a central account called the board account. Lopez-Gunn & Cortina (2006) are of the view that water-user committees play a vital role in the sustainability of rural water schemes and that the enhancement of facilitation skills, the clarification of responsibilities, the improvement of transparency in decision making, and the augmentation of credibility are

essential for making a committee trustworthy. Even though this study focused on only community managed by DRA a look at privately managed community water facilities within the same district revealed that the latter fared better than the former. WATSANs of privately managed water facilities made yearly revenue of between GHS 24,000 and GHS 43,000. Profits realized were used to undertake developmental projects like schools and even WATSAN members could afford to pay themselves some allowances while community managed facilities could barely sustain themselves. Due to this, calls to the DA to permit an increase in water fee by the WATSAN have been refused. The reason for refusal is captured better by quoting the district planner, “they are not managing the facilities well. In this present age who sells water and makes a loss”. The views expressed by the district planner is confirmed by the chairman for Gbese WATSAN who said “the DA say there are loopholes we should close before we can call for a tariff review. So when we are able to solve these things we will make our demand again”. Training of caretakers/vendors is also a problem: the CWSA expect people to render their labour for the management of the water facilities for free but does not want to incur the cost of training them. Given the difficulties innate in managing revenues as expressed earlier at the community level, it is predictable that many communities will soon give up collecting regular user fees and address breakdowns in a more ad hoc manner as problems arise with the water facilities. Perhaps, the fact that services rendered by the WATSANs do not attract any remuneration could explain why things do not go so well with their financial management for effective O&M. As the secretary of the Lanor WATSAN puts it during a group discussion, “this is total voluntary work; they do not pay for even our transport. I use a motorbike and they do not pay for my fuel”.

Willingness to Sustain Water Facility

This last category measures community support for sustaining the water system. It assesses whether the community members feel responsible for the maintenance of their water facility and their willingness to sustain them. It was discovered that there was a significant difference with respect to the borehole and pipe facility when external support phases out. From Table 7, it was realized that 63% of the respondents using the borehole facility maintained it could be sustained while 32% of the respondents using the pipe borne facility argued it could not be sustained after external support is phased out. Majority of the respondents using the borehole believe the facility can be maintained after external support is phased out while majority of the respondents using the pipe borne facility think otherwise. This could be true because the cost of

repairing even major faults is relatively cheaper for boreholes than pipes. KII at the District Assembly revealed that the DA has had to pay an accumulated electricity bill of about GHS 10,000 for the pipe communities to prevent a threat of disconnection by the Electricity Company of Ghana (ECG) since water is pumped to their respective communities using electricity. The communities clearly cannot foot some of the expenses by themselves. This supports the RWSN (2009) view that many communities experience a gradual decline of the service prior to a major breakdown, which is resolved only through an external rehabilitation programme. Gine and Perez-Foguet (2008) noted communities should choose technologies and set tariffs that are affordable and commensurate with their economic status. Therefore, lower cost alternatives should be introduced because as Wood (1994) puts it, in some rural communities, even hand-pumps may represent an unaffordable technology. Some have argued that it is unrealistic to expect that rural communities can be left to their own devices after a water project is completed, and that for rural water supply systems to be successful, communities need some post-construction technical assistance (Lockwood, 2003).

Table 7: Facility Functioning after External Support Phases Out

	Borehole		
Type	(%)	Pipe (%)	Total (%)
Can be maintained	63	32	47.5
Would collapse	31	56	43.5
Don't know	6	12	9
Total	100	100	100
Chi-squared Stat			19.3
Df			2
P – value			0.00
Chi – squared Critical			5.99

Source: Field Survey, 2014

CONCLUSION

Though not all the indicators of demand responsiveness were adhered to, demand was established by the communities before the facility was provided for them. Sustainable rural water supply requires the recovery of efficient operating costs, capital maintenance costs and any capital costs through charges and levies. With regards to sustainability, financial management which is crucial for O&M and the continuous functioning of the facilities was a major setback. Though communities are obliged to raise funds to operate and maintain their water supply facilities, communities in reality do not follow the regulation judiciously. Community members, especially the pipe communities, would not be able to manage the facilities in the event that a major

breakdown occurred. Communities are supposed to be fully involved in the implementation and management of their water facilities, but this should not strip the DA, CWSA and NGOs of their responsibility for an on-going support of the programme. As Carter et al. (1999) put it, "*as communities change, and the needs of their water and sanitation systems change, the appropriate type of support - education, training, financial subsidy, technical assistance, maintenance, even rehabilitation - should evolve*" (p. 12). This will positively reflect on the communities willingness to sustain the water facility to ensure sustainability. Finally, even though DRA has gained widespread recognition and has been widely promoted and adopted by the international donor and financial community, governments, and NGOs as the panacea to sustainable water service delivery, community-based management alone without external support is not a guarantee to achieving sustainability. As Buamann (2006) puts it, "*the theory that communities can do everything by themselves needs to be reconsidered: O&M is a shared responsibility between communities, local authorities and central government*" (p. 11).

RECOMMENDATION

Concerning recommendations, literature reviewed throughout this study adduce to the fact that it was the unsustainable nature of projects provided under the supply-driven concept that informed the decision to introduce the demand-responsive concept in 1998 when the National Community Water and Sanitation Programme (NCWSP) was introduced. However, if some modifications are made the sustainability objective will be achieved. Consequently this study has identified some of these concerns which includes institutional coordination and collaboration, Education and training, equity consideration and external support. First the lack of attention on the part of the DA has also been identified as a contributory factor to the ineffectiveness in managing the facilities. There is the need, therefore, to make the O&M of these facilities a shared task between government and the communities. The District Assemblies should be resourced to play not just monitoring roles as they do now, but also actively contribute financially toward the sustainability of the water facilities. Lack of such coordination is a major factor in the unsustainability of rural water facilities (Sharma, 1998; Bhandari et al., 2005).

Second, there should be a clear policy for policy makers (CWSA, Government, Donors) to put in place measures that will address the intermittent and continuous training programmes for office holders (WATSAN committee, vendors, attendants, mechanics and caretakers) and the community on up-to-date methods of sustainable water management and also to revive interest in O&M of the

facilities. Community members should also be educated on the efficient use of the facilities. The cost of training should not be borne by the communities since they (communities) can barely raise enough funds for O&M. It is asserted that DRA for community management of water facilities was introduced due to the inability of governments to build and effectively maintain water supply infrastructure. However, this study shows that this responsibility seems to be an arduous task for only rural communities to bear.

Third, with respect to equity considerations the issue of who the marginalised are and who should be exempted from paying for the water facility should not be left for the communities to decide but should be spelt out by CWSA to embrace equity concerns. DRA will, by its very definition, exclude those who cannot easily articulate this demand or who are unable to contribute towards an improved service, or who simply do not want the service. The exclusion of these groups under DRA has significant implications for achieving the maximum coverage targets; especially, because in most instances it is the poorer and less able communities that will be excluded. Lastly, the results from the study indicate that the implication of DRA for sustainable management in rural communities would be better enhanced if a clear external support structure is put in place to address the inefficiencies of community management of water facilities. The fact that communities make a demand for a facility and therefore own it, does not necessarily translate into sustainable management. The policy of 100% responsibility for O&M should be relooked at. Communities should be made to finance only minor repairs while major ones should be borne by external sources.

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ANALYSIS OF CONSTRAINTS TO REAL PROPERTY INVESTMENT IN NIGERIA

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ABSTRACT

This paper was designed to investigate and examine the critical constraints to real property investment in Nigeria. The study covers individual investors and practicing firms of the Nigerian Institutes of Estate Surveyors and Valuers in the country using convenient sampling method to obtain information from the respondents. Well-structured questionnaire was designed to elicit information on critical constraints to the way investors invest now in property in the country. Mean item score and regression analysis were the statistical tools used to isolate the critical factors. At the end of the regression analysis five out of fifteen factors isolated to be important at the mean item stage were found to be critical to property investment decisions by the investors. These are high cost of building materials, ownership issues- Omoonile factor, scarcity of development funds, liquidity and ease of getting the property registered with the government. The study recommends that legal system should be institutionalized to checkmate the activities of the Omoonile and also the investment climate and market environment be made conducive. Government should ease up the process and procedures involved in properties registration in the country.

KEYWORDS: property investment, real property, constraints, investors, Nigeria

INTRODUCTION

Property investment is a property that is not occupied by the owner, usually purchased, built or developed specifically to generate profit through rental income and/or capital gains. There are many different types of investment property including residential rental property, commercial property and property purchased/or developed with the goal of reselling it for a profit. Investing in property can be through many modes which are property development, property acquisition, acquisition of shares in property companies with interest dividends or royalties and mortgage investment (Thontteh and Omirin, 2014). Increase in property investment especially through property development is one of the major ways of curbing housing scarcity in a nation like Nigeria that is currently experiencing rapid urbanization.

An estimated Nigeria annual national population growth rate is over 2% and an annual urban population growth rate is about 4%, the population is becoming more and more focused on urban areas, towns and cities with just under 50% of the population living in urban areas and this number will continue to grow due to socio-economic factors in the urban areas (<http://sapientuendors.com.ng>). This is one of the factors responsible for the viability of the real property industry in the country as the demand for new houses has continued to increase. According to the federal office of statistics, the total number of households is

estimated at 28.56million while there are only 12.8million numbers of housing units. This mismatch between the numbers of housing units and households underscores the housing problem in Nigeria. Despite these encouraging figures and trends, Nigeria real property industry is still burdened by several issues that are hindering its growth. For property investors, property is typically expected to perform two functions in a port-folio providing diversification benefits and long-term sustainable income according to PRI report. For this reason and some other reasons like provision of accommodation, prestige, tax relief and capital preservation, investor should be aware of the factors that are increasingly affecting the property investment, with potentially big impacts in the years to come. This put them in better place to find opportunities for cost savings and enhanced returns. Consideration of these factors can also help investors to mitigate number of regulatory, market and physical risks relates to global trends. For an investment to be tagged as good, it should satisfy the conditions of return on investment and capital appreciation over a period of time amongst others (Woychuck, 2012).

This paper looks at some of the constraints to property investment in Nigeria. This is aimed to better reflect the way property investors think and behave. The study will also be of great benefit to investors and lending

institutions as they shall be able to understand the property investment decision making environment.

Significance of the Study

The study contributes to existing knowledge on factors inhibiting investments in real estate in Nigeria and provides antidotes to some of these problems. Having addressed these salient and age long challenges to real estate investment and development in Nigeria, the table is now set and a road map developed that will open unlimited opportunity for investors without jeopardizing or risking their investment unnecessarily. These will lead to increase in provision of residential building to care for the growing need of a developing economy and equally provide decent offices accommodation as engine of economic growth. Furthermore a critical observance of the solution provided in these paper will ameliorate the incessant civil disorders usually occasioned by the Omooniles which often lead to massive destruction of properties and loss of lives.

Constraints to Property Investment

Many researchers have done a lot on this issue in time past, but due to the dynamic nature of real property investment, there is need for current investigation into the issue to uncover the actual factors militating against property investment in developing countries, as there are still many new areas that need to be further investigated. In addition, factors are not necessarily the same at all time in every country. Hossain and Nasrin (2012), are of the opinion that all possible factors influencing investors' investment decision making are not constant over time and that they may vary widely from investor to investor for distinct demographic features. Chandra, (2010) identified factors affecting property investment as illiquidity of the market, maintenance efforts, political factors, social factors and development factors. Kaleem et al (2009) in an study of factors affecting financial advisors' perception in portfolio management in Pakistan, found that age, income, language and orientation of education have a significant role in determining the investments style of an investor. Lewellen (1977), cited in shanmugsundaram and Balakrishnan (2011), found that age, gender, income and education affect investors preference and attitudes towards investment decisions.

Cooray (2003) identified the factors affecting investment in property as risk factor, return on investment, liquidity of investment, tax consequences of an investment, inflation and the term of an investment. Rashid and Nishat (2009) found that in Bangladesh, the most influencing factors on investors' decisions are efficiency of the company, inflation rate, easy and quick transactions, transaction cost, access to the company and industry information, quality of information and

prior knowledge of securities. Leiser and Groh (2011) cited in Thontteh and Omirin (2014), also identified factors that affect commercial property investment performance as property rights, security of property rights, ease of access to loans, credit information index, soundness of banks, interest rate, access to private capital, private equity investments, REITs market volume, crime, corruption, size and liquidity of stock market, stock market capitalization, quality of infrastructure, density of road network, taxation, burden getting a construction permit, cost of building materials, ease of registering properties, human development, political instability, population, direct foreign investment and degree of urbanization.

The consensus from the review if literature above is that property investment decisions are not rational, they are influenced by certain identified factors.

METHODOLOGY

The aim of the study is to determine the most influencing factors affecting property investment in Nigeria by property investors and compare how the factors relate to one another. The population of the study consists of an individual investor in the Nigerian real property investment market and also the estate agents. The respondents, mainly civil servants, academics, business man, the clergy and other professionals, were selected based on their informed knowledge in property investment in the country.

The structured questionnaire developed by the researcher to suit Nigerian environment in line with the objectives was employed for this study. The questionnaire consists of two parts. The first contains five questions relating to socio-economic characteristics of the respondents. The second part covers the thirty-two (32) identified factors believing to have influence on property investment in Nigeria, using a 5 point likert scale ranking from 1 (never), 2 (rarely), 3 (sometimes), 4 (often), 5 (always). The questionnaire were distributed in Lagos because, the level of economic activities, infrastructural development, income level and population in the Lagos City ensure excellent representation of investors in Nigeria. Data was analyzed using both descriptive and parametric inferential statistics which include frequency, percentage, mean, and regression analysis. Parametric statistical tests are powerful tests, because they are probabilistic tests of significance.

ANALYSIS, RESULTS AND DISCUSSIONS

Table 1: Socio-economic characteristics of the respondents.

Variable	Respondents Grouping (n=35)	Frequency	Percentage (%)
Gender	Male	22	62.9
	Female	13	37.1
Years of experience in real estate	1-5years	4	11.4
	6-10years	3	8.6
	11-15years	2	5.7
	16-20years	21	60
	Above 20 years	5	14.3
Academic Qualification	NCE/OND		
	HND	3	8.6
	B.Sc	7	20.0
	M.Sc	25	71.4
	Ph.D		
	Others		

Table 1 report the category of respondents. 22, representing 62.9% of the respondents were male while

Table 2: Factors affecting property investment

S/N	FACTORS	MEAN (M)
1	Economy downturn	4.55
2	Ownership issues- omo onile, government acquisition	4.51
3	Cost of building materials (Shortage and light cost)	4.05
4	Ease of registering properties (PPTs, registration expensive)	3.98
5	Liquidity	3.86
6	Ease of access to loans	3.75
7	Taxation	3.61
8	Political instability	3.61
9	Capital intensive	3.51
10	Scarcity of development funds	3.22
11	Credit information index	3.21
12	Interest rate	3.20
13	Underestimation of risk	3.15
14	Corruption	3.12
15	Management costs/headaches/manpower and management problems	3.10
16	Maintenance efforts	2.62
17	Non-payments of rent by tenants	2.61
18	Quality infrastructure	2.61
19	Inflation	2.56
20	Tenant destruction of property	2.56
21	Crime (Fraudulent sale/fake document)	2.53
22	Density of road network	2.51
23	Rental value & rental growth	2.31
24	Population	2.15
25	Scarcity of property rights/title	1.99
26	Collapse of buildings	1.98
27	Lack of local knowledge of property values	1.98
28	Market value	1.97
29	Burden getting a construction permit	1.88
30	Implication of land use act	1.82
31	Characteristics of real property investment	1.71
32	Neutral hazards e.g. Hurricane, landslide, flood	1.11

Source: Field Survey, 2016

REGRESSION ANALYSIS

Table 3, Shows the results of regression analysis using the most 15 influencing factors found to have above 3.0 mean score. The regression analysis have further isolated five factors as “critical factors” exerting a

13(37.1%) were female. The distribution of the respondents based on their years of experience in real estate shows 60% as having between 16-20years experience.

Prioritization of Factors Influencing Property Investment

Table 2 reports the mean of the 32 identified factors affecting property investment in Nigeria. From the table, the following ten factors top the list; Economic down turn (Mean = 4.55), Ownership issues (M=4.51), Cost of building material (M=4.05), ease of registering properties (M =3.98), Liquidity (M=3.86), ease of access to loans (M=3.75), Taxation (M=3.61), political instability (M=3.61), capital intensive (M=3.51), scarcity of development funds (M=3.22). The finding is about 65% consistent with the work of Walter Emiedafe (2015).

highly significant (at $P < 0.05$) influence on the way people invest in property in Nigeria. The five critical factors are; cost of building materials (shortage and high cost), ownership issues-omo onile/government acquisitions, scarcity of development funds, liquidity and ease of registering properties. Many investors will

be more interested in property investment if more attention is given to these critical factors to reduce their negative impact.

Table 3: Result Of Regression Analysis

CRITERION VARIABLE	PREDICTOR VARIABLES	REGRESSION ANALYSIS	ADJUSTED R ²
Property investment by investors	Economy downturn	0.305	0.323
	Ownership issues-omo oniles, government acquisitions	0.651	
	Cost of building materials (high cost)	0.655	
	Ease of registering properties	0.445	
	Liquidity	0.453	
	Ease of access to loans	0.315	
	Taxation	0.289	
	Political instability	0.215	
	Capital intensive	0.302	
	Scarcity of development funds	0.552	
	Credit information index	0.288	
	Interest rate	0.301	

Source: Field survey, 2016

The adjusted R² value for the equation shows the extent to which the independent variables in the equation explain the variation in the dependent variable. The relationship between high costs of building materials and the way investors invest now in property is to be expected, because about 75% of dwellings in Nigeria's urban area are built of concrete. Cement prices in Nigeria are about 30-40% higher than in neighbouring countries and world market prices. The lack of public infrastructure adds as much as 30% to the total cost of the development. The existence of omo onile especially in the western part of the country especially Lagos State is another major issue affecting investors thinking about property. Their activities lead to an increase in labour cost, cost of building materials and finally in the cost of completing a building project. They demand levy for the foundation of a building, fencing of land, erection of gate, lintel stage, roofing stage, plastering stage, they levy the builders and artisans, levies are charged for every building material transported to site. All these are enough reasons to frustrate anybody who want to invest in real estate.

Scarcity of development funds could be attributed to underdevelopment in our mortgage industry as it generated less than 100,000 transactions between 1960 and 2009. According to World Bank Report (2008) the contribution of mortgage finances to Nigeria's gross domestic product (GDP) is close to negligible with real estate contributing less than 5% and mortgage loans and advances at 0.5% of GDP.

Liquidity means ease of converting investments to cash whenever the need arises. In Nigeria, it takes months or years to convert a real property investment to cash. Another critical factor is the ease of land registering the property because of the bureaucratic process of land registration in Nigeria. The process can last as long as 6

months to 2 years taking an average of 12 procedures and costing about 20.8% the value of the property.

CONCLUSION AND RECOMMENDATIONS

This article introduced some of the higher level factors that play a significant role in the way investors invest in property. Although some of these aforementioned factors suggest a clear out relationship between the factor and the investor's decision in practice, the results can be very different. However, identifying the most and the least influencing factors can provides reasonable evaluation of a potential investment.

This study has showed a particular factor that is relevant to the study location, the Omoonile issue. Based on the findings, the study recommends legal framework inform of laws that will curb the menace of these miscreants in the country.

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COMBATING EROSION IN IMO STATE USING COMMUNITY PARTICIPATION APPROACH

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ABSTRACT

Erosion is a critical global problem. It is one of the devastating forms of environmental degradation that has bedevilled many communities in Owerri, Imo State Nigeria. Imo State experiences sheet, rill and gully types of erosion with gully erosion being the most devastating in the study area because of its destructive nature. Gully erosion is and has been for almost a decade an inherent problem in the study area Owerri. There have been a lot of efforts at the government level to remedy this major form of environmental degradation but the problem persists. This study therefore focussed on involving the community members in combating erosion with the aim of assessing the impact of community directed effort on the erosion menace in the selected communities. Some communities in Owerri were selected for the study . Data were collected by field measurement and observation as well as through the distribution of pre-tested questionnaire in the affected communities. Findings from this study showed that community involvement in the erosion control projects had reasonable impact more than the government driven projects and thus achieve sustainable solutions. In the control communities erosion continued unabated. The ineffectiveness of government driven projects was as a result of non-involvement of the community members to solve this problem. Whatever measures taken by the government was usually met with minimal success as the people concerned were not carried along in the exercise. This study therefore recommends effective community participation with strong government partnership in order to achieve absolute success both in the planning and execution of erosion control measures to stop further degradation.

KEYWORDS: Soil, Erosion, Environmental Degradation, Community Participation, Combating

INTRODUCTION

The role of soil for the survival of man cannot be overemphasized. Almost all of the agricultural activities in the developing countries are dependent on land resources. This is why Cunningham et al (2003)described the soil as one of the most important components of the physical environment. Soil erosion is one of the ways the quality of soil can be degraded. Studies conducted in Nigeria implicated man as having directly or indirectly altered or disturbed the natural ecosystem, thus reducing the environmental quality and contributing to the deteriorating food security situation in Nigeria. (Ofomata,1981a;Olayide et al,1980; Famoriyo,1979; Kwarteng et al 1994; Agboola,1979 and Kuponiyi,2001).

Soil erosion simply put is the gradual wearing, washing away and carrying of the soil by agents of denudation like running water, wind and glacier (Ijeoma 1988).It includes the mounding and wearing of the earth surface Ofomata (1965). A definition by Igbozurike says it is the removal of soil in an area either by water or wind. He equally observed that in the areas of heavy rainfall in

Nigeria, erosion by rainfall and its runoff is very common while in areas that have little rainfall, wind erosion is very common. This problem of erosion is a very serious threat to different parts of Imo state and climate change has amplified this challenge. The seriousness of this problem has prompted the Nigerian government to seek urgent support from the world Bank to tackle the challenge in seven states and Imo State is one of states selected. The different types of soil erosion which are all noticeable in the study area. Sheet erosion is the list noticed but over a considerable period of time you observe that the soil has been completely washed off by falling rain and runoff. Sheet erosion can be very extensive and harmful to the environment because it leads to declining soil fertility and consequently poor harvest as it washes off the topsoil that has soil nutrient Rill erosion on the other hand is the detachment and transport of soil by concentrated flow of water by carving small gutters or rills. It equally leads to land degradation and impoverishment of soil. Rill erosion accelerates and precedes gully erosion development which is worst type of soil erosion.

Gully erosion is the severest case of soil erosion because of the impact on the environment. There are evidences of gully erosion in the 12 local government areas of Imo state including *Isu, Ideato South, Ideato North, Nkwerre, Nwangele, Oguta, Oru West Oru East, Orlu, Orsu, Ohaji/Egbema and Njaba*. Erosion by the action of water has produced some of the most spectacular landscapes we know. Natural erosion occurs primarily on a geologic time scale, but when man's activities alter the landscape, the erosion process can be greatly accelerated. The type of erosion that instils fear in the lives of people in the south-eastern part of Nigeria is gully erosion. This problem has been so publicised on the radio, television and the print media etc but no concrete solution has emerged. Land is a fixed asset. For the developing countries whose economy is largely dependent on land recourses, any activity that impacts negatively on this God given recourse will definitely give rise to a chain reaction. This is because the physical environment operates as a system where a change in one part ultimately affects the other parts. Soil erosion therefore is a very serious instrument/factor of land degradation. The three types of erosion mentioned cause crops to grow poorly and lead to poor harvests. They equally lead to loss of property, siltation of water bodies, loss of valuable plants and animals etc which has financial implications. Because of the effects of erosion on man and the environment, soil erosion is therefore everybody's business according to Igbozurike (1993).(see plate 1)



PLATE 1: Works layout road threatened by gully (source: authors field work 2016) Gully Erosion Development Process

Statement of the Problem

Soil erosion has been an inherent issue in many communities in Imo state for over a decade. Various forms of soil erosion has been identified in the state but the problems caused by gully erosion on both natural and man-made features are glaring. Paths, roads, houses, agricultural and other land uses have been

damaged and swallowed up by erosion (see plate 2)Economic trees are uprooted, lives and properties endangered and infrastructures damaged thereby making transportation and communication almost impossible (NEWMAP 2015). There are serious cases of gully erosion going on in Okigwe road area, Ikenegbu farm lands, Amakohia layout, Nekede and works layout. Plate 2 & 3 shows severe gully erosion in Nekede where roads are being almost cut off and farmland destroyed by gully erosion. This is currently the situation of this road that leads to the famous federal polytechnic Nekede. According to the Nation newspaper of August 28 2015 captioned "The rage of erosion in Imo" Okodili writes and I quote "It sometimes looks like a horror movie in slow motion right before their eyes, roads and farmlands are being washed away. Some communities are being cut off, houses buried in red earth, coincidentally this road leads to two federal institutions, federal university of technology Owerri and federal polytechnic Nekede."

The writer described the road as a disaster waiting to happen. Staff and students leave their vehicles at home and engage the services of motorists at exorbitant fares to go to school. These motorists try to meander through the badly damaged paths created by the erosion to get their passengers to their destinations.



PLATE 2: Gully along Nekede Road (source: Nairaland forum, 2016)



PLATE 3: Gully Erosion Site at Nekede (Authors fieldwork, 2016)

The problem of soil erosion has persisted despite the efforts of the government through arms like ministry of Environment and other related bodies. The communities and their inhabitants are directly affected by this problem. Majority of the people in this neighbourhood are engaged in agriculture (especially farming) or agric-related activities. This work is therefore designed to examine the effectiveness of community participation in combating the problem of erosion in the study area. Government collaborating with the communities may yield better results than the sole government efforts of several years past.

Aim and Objectives

The aim of this study is to examine the effectiveness of community participation approach in combating soil erosion. The aim will be achieved by pursuing the following objectives:

1. to identify the severity of soil erosion in the study area,
2. to investigate the efforts of the Government towards combating soil erosion,
3. to examine the level of community participation in soil erosion control, and
4. to identify the benefits of community participation on the effectiveness of soil erosion control projects in the study area.

Area of Study

Owerri area comprises of the present Owerri North and West Local Government Areas as well as Owerri Municipal Council Area. It is located between $0^{\circ}58'E - 1^{\circ} 4'E$ latitude and longitude $5^{\circ}23'N - 5^{\circ} 31'N$. It is bounded by Mbaitoli on the North, Ohaji-Egbema on the West, Mbaise on the East and Ngor Okpala on the South. The study area has an estimated population of about 750,000 as of 2006 and is approximately 100 square kilometres (40 sq miles) in area.

Owerri falls within the South Eastern part of the Niger Delta, Nigeria. The Niger Delta Basin of Nigeria is situated on the continental margin of the Gulf of Guinea in equatorial West Africa between latitude $4^{\circ}00'$ to $7^{\circ} 00'N$ and longitude $5^{\circ}00'E$ to $8^{\circ} 00'E$ covering an area of about 108,900 km². The Niger Delta is a pro-grading depositional complex within the Cenozoic Formation of Southern Nigeria. It extends from the Calabar Flank and the Abakaliki Trough in Eastern Nigeria to the Benin Flank in the West and it opens to the Atlantic Ocean in the South (Ofoegbu, 1998). The rainy season begins in March and lasts until October with annual rainfall varying from 1,500mm to 2,200mm (60 to 80 inches). An average temperature used to be 27 °C but is now 29°C due to climate change. This creates an annual relative humidity of 75 percent with humidity reaching 90 percent in the rainy season. The dry season

experiences two months of Harmattan from mid December to mid February. The hottest months are between March and April. (Imo State fact, 2010).

METHODOLOGY

Data for this study was mainly primary data which were obtained through field measurements, observations, oral interview and questionnaire administration in the affected communities. Information was also got from the relevant secondary sources.

The population of the study area includes the inhabitants of the some of the affected areas in Owerri which include Amakohia, Ikenegbu, Nekede and Works Layout. This involved about 140,000 people who live in this selected areas. The sample population is 140 (ten percent of 140,000).

A total of 140 copies of questionnaire were randomly administered at 35 copies for each area. Only 138 copies were retrieved.

Mean ratings was used to analyse the data. The means were calculated by assigning normal values to response categories. Any item that received a mean of 2.50 and above is regarded as agreed while any item that received a mean of less than 2.50 is regarded as disagreed. The means were calculated by assigning normal values to response categories.

Strongly Agreed	- (SA) = 4
Agreed	- (A) = 3
Disagreed	- (D) = 2
Strongly Disagreed	- (SD) = 1
The mean is	$\frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$

FINDINGS

Analysis of data collected indicated that the cluster items in the severity of soil erosion in the study area had their means ranging from 3.70 -3.92 and a cluster mean of 3.80. The implication is that the level of soil erosion is very severe in the study area. This was confirmed in the field during field work. It was also observed in the field that the only road leading to Ndegwu (an agrarian community) has been totally destroyed. With climate change and increase in the intensity of rainfall gully erosion is fast expanding in these areas.

On the efforts of the governments towards combating soil erosion in the area, the items had means ranging from 2.16 to 3.63 with a cluster mean of 2.89. This is also greater than 2.50. This equally shows that the government has made efforts towards combating erosion in the area.

On the level of community participation in soil erosion control projects in the area, the items had mean ranging from 3.31 to 3.81 with a cluster mean of 3.56. The implication is that the government has sidelined the community members in erosion control projects. This indicates that the level of community participation is very low. Because the communities were not carried along in the projects, they did not own these projects and as a result the projects were not sustained. The planning of such control measures were done in the offices and therefore poorly implemented. Findings also showed that the huge sums of money set aside for these projects were not really spent on the projects.

On the benefits of community participation on erosion control projects, the respondents observed that lack of continuity on the part of government is a huge problem. They noted that succeeding governments do not continue the projects of previous governments as a result, the projects were not sustained and they did not last. They noted that only the Projects done in collaboration with the communities last with the following reasons.

1. That the communities are well structured (with the traditional rulers, village heads, age grades, town unions etc) to enforce and implement development projects.
2. That the communities have carried out projects in the past that are sustainable like schools, civic centre, markets, roads, bridges, drains, bore holes etc and these project are still working even after several decades.
3. That even when there had been changes in governments, the communities own these projects, they finish them and continue to maintain them.

With this track records and observations in the field, community driven erosion control projects will be more successful than government sole erosion projects which have yielded little or no results for several years.

SUMMARY

Imo state suffer from the havocs of gully erosion. The causes of gully erosion in Imo state include both natural and anthropogenic sources and that climate change has amplified it. It is evident that soil erosion particularly gully soil erosion is expanding in the study area. Findings from this work revealed that the problem of erosion has been and is still of great concern to the communities and the government. Houses, roads, land and other properties are being destroyed. It is equally evident that the level of community participation in tackling the problem of erosion control is very low in the study area. Government has not effectively carried the communities along in combating soil erosion problem in the study area. The control areas are worst hit because of complete negligence on the erosion activities in the area.

CONCLUSION

Sheet, rill and gully erosion are being experienced in many communities in Imo State and efforts have been made in the past to check or combat them. Such efforts include construction of concrete drains, sand bagging, hillside drains, tree planting, catch-pit etc. These have not stopped the erosion from encroaching into other areas. Some have become so wide that roads are being cut off, farmlands are lost and houses being threatened. In some cases concrete structures have been damaged by widening of the gully.

This calls for a reassessment of the methods used in addressing this problem that has defiled almost all government efforts. The world bank through Nigeria Erosion and watershed Management Project (NEWMAP) has come in to rescue the situation. This laudable venture should not be thwarted by any group of persons or even government representatives. Involving the host communities both in the planning and implementation of these erosion control projects will definitely lead to achieving maximum results.

RECOMMENDATION

This work therefore, strongly recommend active community participation in erosion control measures in all the affected communities with strong partnership with the government both in the planning and execution of these measures to stop further degradation. This is because the local people are more concerned than anybody in their problem and should form part of any soil erosion control / conservation programmes in their various localities.

The communities should be encouraged to take remedial actions to stabilize the existing gullies and prevent further expansion.

There should be continuity in government driven projects to achieve sustainability of already existing projects.

Proper land use management should be stressed in the area, this can be achieved using the organised rural structure that is already in place.

Bad agricultural practices should be discouraged. This can be achieved using agricultural extension officers that attend to the rural farmers.

All politically motivated bottlenecks in accessing ecological funds should be removed so that there will not be delays in addressing the problems as they arise instead of waiting several years before funds are released.

If these are done, there is no doubt that erosion will be checked and already affected areas will be remedied

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THE SHIFTING IDEAS OF INTEREST IN SUSTAINABLE DISASTER MITIGATION IN THE CLIMATE CHANGE ERA

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ABSTRACT

Sustainable disaster management must take climate change into account. Ever since the Earth Summit in 1992, climate change has become an increasingly popular topic. New ideas in this young profession are changing constantly. It is because of its interdisciplinary nature that makes it so capable of drawing attention to itself. The evolution of new ideas affects future disaster management. While sustainable mitigation of disasters relies heavily upon the planning of land use and resource management, this study discusses the trends of land/resource management that was influenced by climate change in the past 15 years. This study intends to answer questions such as, is there any idea that was deemed important before but is absent now-a-days, or which ideas are gaining popularity? This study examines all literatures in the defined field in a holistic way. The Web of Science (WOS) reference database is used as the total population. All social science literatures dated between 2000 and 2014 that use "climate change" as a keyword are taken as target population. The literature search selected 10,328 journal articles from the WOS database. This study logged all the keywords from these articles. These keywords were grouped and sorted for further examination. Five general fields in urban planning that could mitigate long-term disaster losses were examined. They are "Regional Planning", "Ecological Planning", "Environmental Management", "Resource Management", and "Environmental Planning". This study reveals that social scientists are more fond of the idea of adapting to climate change. "Adaptation" is the most popular keyword in social science regarding climate change issues. The keywords associated to "adaptation" include "vulnerability", "sustainability", and "resilience". As to "vulnerability" and "resilience", "vulnerability" is used more often than "resilience". In some fields, such as environment and resources management, the occurrences of "resilience" have exceeded "vulnerability". The keyword "mitigation" is not used extensively. The administrative aspects of mitigation, like policy and governance, have received more attention than mitigation itself. In the land planning and management profession, little efforts were made before 2008. However, it's rising in two planning-related fields, regional planning and ecological planning.

KEYWORDS: Climate Change, Web of Science, Land Management, Social Science, Adaptation.

INTRODUCTION

The communities' incapability to cope with changes is the main cause of casualties in the face of disaster, rather than the impacts of the disaster itself. (Tierney, Lindell, & Perry, 2001). Disaster management in the 1950s was mostly event-specific or site-specific. Emergency managers adopted the comprehensive emergency management (CEM) to cope with disasters (Lindell, Prater, & Perry, 2006). In the late 90s, an assessment revealed that after practicing CEM for 30 years, losses were still on the rise (Mileti, 1999). It suggested that future disaster management has to take sustainability into account. However, sustainability is more of a visionary statement, rather than an applicable strategy.

In the early 21st century, a great number of weather-related catastrophes were seemingly induced by global climate change. Unlikely events, such as typhoon Morakot in 2009 poured more water than the annual average precipitation onto fragile mountain villages in Taiwan (Shieh, Wang, Lai, Tsang, & Lee, 2009);

cyclone Nargis in 2008 took an unprecedented path that tolled Myanmar with more than 130,000 casualties (Casey, 2008). While the onset of climate change is slow, long-term land/resource management is critical in reducing future losses. Since the Kyoto protocol in 1997, the climate change studies have begun devoting substantial interdisciplinary efforts. Disaster management professionals could reveal future directions from climate change research.

This study discusses the trends of land/resource management that were significantly influenced by climate change in the past 15 years. Since the Earth Summit in 1992, climate change has become increasingly popular. However, the contents of climate change issues vary over time. In 1992, the United Nations Framework Convention on Climate Change offered a fuzzy objective to stabilize the emission of greenhouse gases (GHG) before negative influences affect the human habitat (Intergovernmental Panel on Climate Change, 1992). In addition to the

reduction of GHG emissions, the Kyoto Protocol in 1997 introduced the concept of shared responsibility among developed countries. It revealed that the reduction of GHG cannot be achieved without a binding obligation. In its short history of managing climate change, people are changing their focuses rapidly.

The importance of this study is through exploring the shifting ideas in this area, to figure out the changing path over time. This study intends to answer questions such as, is there any idea that was deemed important before but is absent now-a-days, or which ideas are gaining popularity? Researchers can take advantage of such understandings to track down recent topics. It also helps the administrators evaluate if any of the previous topics were left unsettled, and why they were.

Why are Ideas of Interest Always Changing?

The new ideas in a young interdisciplinary profession like climate change are constantly changing, and are changing rapidly. There are quite a few reasons. First, the concern for climate change is systematically communicated through the media and governmental propaganda. In the early 90's, most studies were conducted by natural scientists like meteorologist and oceanographers. IPCC led the research at a global level and generated solid findings that enlightened people about the causes and effects of climate change. Many environmentalists, like the ex-vice president of the United States Al Gore, joined to develop rich educational materials to influence the general public. The study of climate change is interdisciplinary in nature. While academics from other fields (e.g., urban planning, disaster management) and the public are aware of climate change, the scope of ideas was broadened. Second, people are speculating over certain events, questioning whether there really is a correlation between these events and global climate change. Cases such as, extreme weather conditions like unusual typhoon and hurricane routes/magnitudes, extreme high/low temperatures, and even earthquakes, make people "feel" the influences of climate change. After people become aware of the nature of global climate change and perceive threats from real events, they will consequently respond to such threats. Many countries offer substantial research grants to climate change studies, and to make more educational materials for their younger generations. All these efforts lead to wide spread societal concern for global climate changes.

Study Design and its Limitations

The method of this study does not follow stringent research design per-se; instead, it is an examination of all literatures in a holistic way. Adopting the concept of "modal instance sampling", it is to collect the most popular ideas in climate change studies. This

study uses the "Web of Science" (WOS) reference database as the total population. The WOS is a citation indexing service, produced and maintained by Thomson Reuters. It is one of the most widely used online databases that offer easy online search and cross referencing. In the search process, all social science literatures that use "climate change" as a keyword are included. The time span of these published literatures is between 2000 and 2014.

There are quite a few limitations to this approach. First, there are other reference databases available besides WOS. Doubt may arise on why it is the only database this study used. WOS covers many interdisciplinary journal publications; as of 2014, more than 11,600 journals are included (Thomson Reuters, 2016). Besides, it is used extensively; especially its citation index has been used for academic rankings in various circumstances. Second, the list of keywords in each article is subject to each author's judgement. It could be either fuzzy or extremely specific. The WOS offers the "keyword plus" function that provides a set of general keywords that could resolve this issue. Third, this method treats each article equally, regardless of the reputation or role of its author(s). After all, the "popularity" of an idea is the core of this study.

According to the method as described, in literature search I selected 10,328 articles out of the WOS database as the target population. This study then recorded all the keywords from these articles, including the author's keywords and keywords from the "keyword plus". These keywords were then grouped and sorted, for further examination.

The study intends to further discover the connection between climate change and land management and planning measures for sustainable hazard mitigation. Five general fields in urban planning were selected. They are "Regional Planning", "Ecological Planning", "Environmental Management", "Resource Management", and "Environmental Planning". Likewise, all these keywords were logged and sorted for further examination.

The Findings from Literature Search

In the database that contains all articles, 3 subgroups of keywords are redefined, "impact", "mitigation", and "adaptation". Basically, it adopts the causal reasoning sequence that man-made climate change induces various impacts to human habitats; in turn, mitigation and adaptation efforts were made to reduce those effects. Any keyword may have different meanings that cover more than one subgroup. It is a difficult task to assign keywords to a specific subgroup. The rationale for regrouping these keywords is: global warming causes

the uncertain events and risks to human habitat as well as to the natural environment. Environmental changes may damage agricultural production and disturb the economy. Thus, keywords described in this manner are categorized in the “impact” subgroup. In response to those impacts, the communication of concerns among interest groups is required. Mitigation measures include the Kyoto protocol at the global level, to governance regarding GHG emission and conservation issues at the national level. Keywords listed here are in the

“mitigation” subgroup. From the social and community aspects, land use planning has been used to achieve sustainability in response to climate change. Communities have their social-economical vulnerability to environment changes; therefore they could use their social capital to build up resilience and adaptive capacity (Adger, 2003). These efforts to reduce losses are mostly behavioral changes. These words were labelled as “adaptation”.

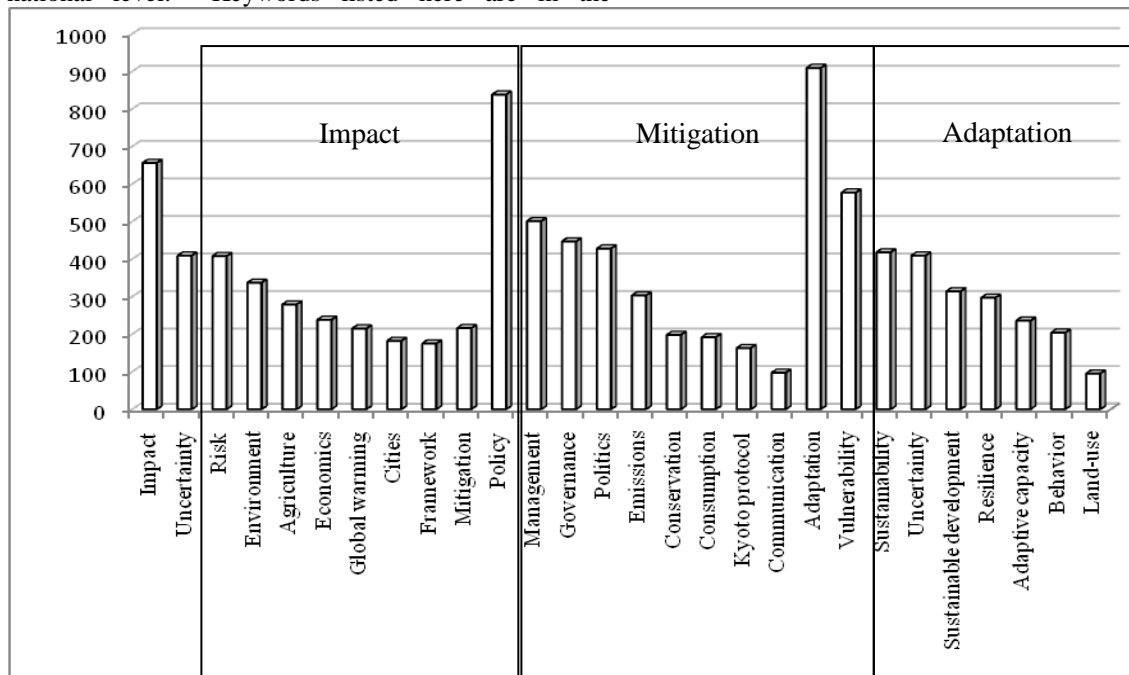


Figure 1. “Impact”, “Mitigation”, and “Adaptation” keywords occurring frequency

Please see Figure 1, it’s the occurring frequency of keywords in each subgroup. Interestingly, there are more articles that discuss adaptation than mitigation and impact. It’s noteworthy that while the impact is unavoidable and all mitigation measures will show little effect in the near future, social scientists devote more effort to adaptation by reducing vulnerability and enhancing sustainability and resilience. In the 15-year time span, only 229 articles used “mitigation” as a keyword. However, in the mitigation subgroup, keywords like management, governance, and politics were used more often. Mitigation is not just about GHG reduction, but rather means the collaboration from local to global to take action over GHG reduction. In the subgroup “impact”, research focuses more towards the uncertain nature of physical influences.

The next step is to analyze the changing frequency of keywords in each subgroup by year. Please see Figure

2, it is the occurring frequency of popular keywords in the “impact” subgroup. In the 15-year time span of this study, it is clear that more academic publications in this field were made in recent years. There were less than 10 articles in the category published before 2005. Nevertheless, there were 2 major events in 2005 and 2006. Hurricane Katrina hit New Orleans in 2005 which drew plenty of global attention. The next year, the documentary “An Inconvenient Truth” that educated the general public might have had a significant effect in promoting research. After 2005, the most popular climate change keywords in the “impact” subgroup to social scientists are “risk” and “uncertainty”. By their meaning, these two concepts are virtually identical but of different terms. Discussions about the impact to agriculture and to cities are more popular than to the economy. Clearly, these impacts are direct (or primary) impacts, while the impact to the economy is relatively indirect (secondary impacts).

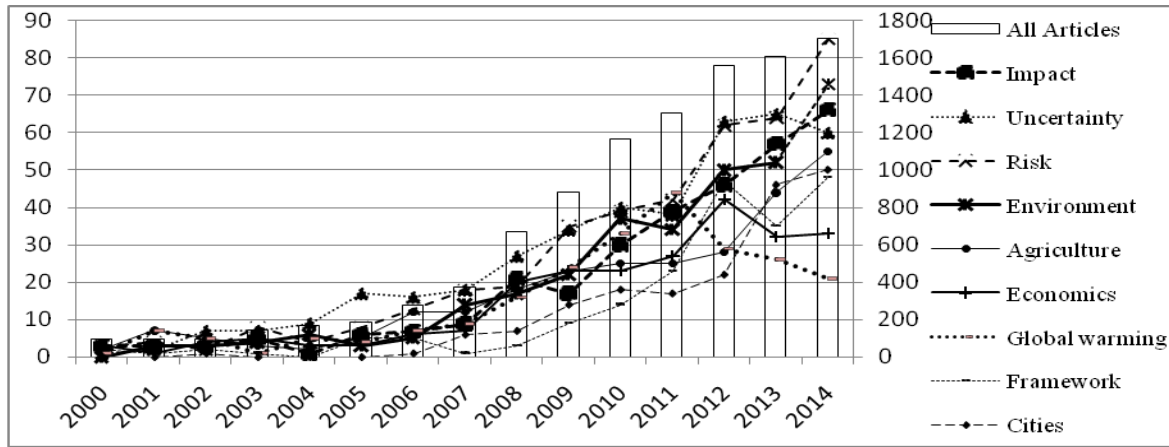


Figure 2. Keywords Occurring Frequency: Subgroup “Impact”

Figure 3 is the occurring frequency of popular keywords in the “mitigation” subgroup. The keyword “mitigation” has been outnumbered by other keywords. Policy, management, governance, and politics are on the top of this list. Clearly, it is difficult to mitigate the quantity of carbon dioxide without intergovernmental collaboration. The “Kyoto Protocol” was a popular keyword until 2008. Then it dropped to the bottom of the list. As of 2014, less than 10 articles on social science used it as keyword. In 1997, the Kyoto protocol was adopted to reduce GHG emissions. It was officially enforced in 2005. Some developed countries did not sign the protocol, some countries never approved of it, and some withdrew. Due to the lack of consensus to this topic, this topic dropped out after 2008.

Figure 4 is the frequency of keywords in the “adaptation” subgroup. The words “adaptation” and “adaptive capacity” have always been popular. In 2014 alone, around 1/10 of all social science articles that discuss climate change have used “adaptation” as

keywords. Other popular keywords include “vulnerability”, “sustainability” and “sustainable development”, and “resilience”. The idea of sustainability emphasizes the cross-generation equity of the use of natural resources. It is a long term vision rather than a strategy. It is difficult to measure the efficacy of current policy and to what extent sustainability could be achieved. However, there is always a place for “sustainability”. The keywords “vulnerability” and “resilience” are concepts that are derived from various origins. Vulnerability discusses the ease of getting disturbed by incidents; this concept was originated from disaster studies. Resilience measures the stableness of a system under threats, originated from social-ecological studies. Some say they are different aspects of the same idea, and some say vulnerability describes physical integrity while resilience highlights the social capital and social learning. The finding shows that more articles discuss vulnerability than resilience.

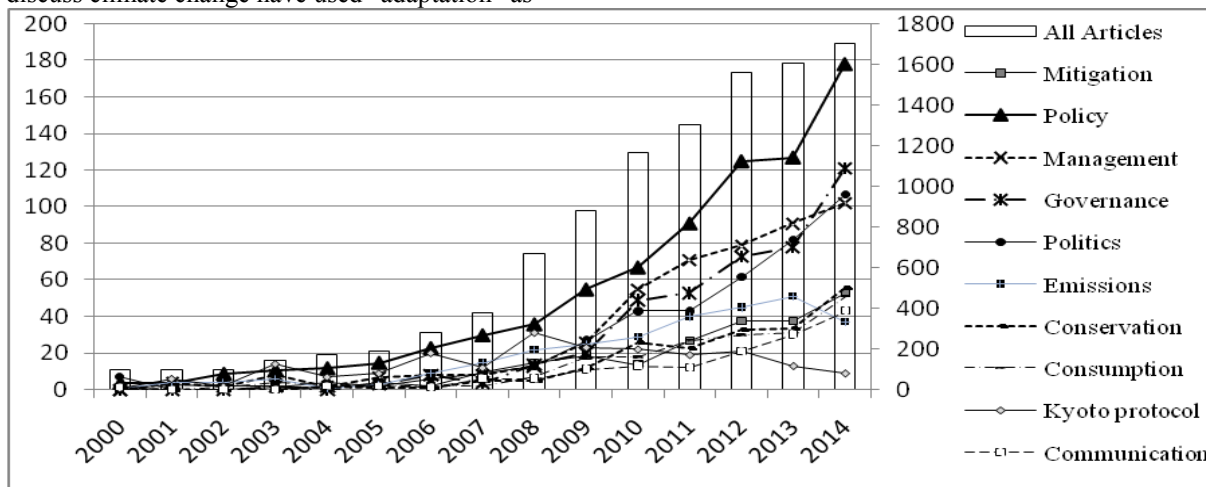


Figure 3. Keywords occurring frequency: subgroup “Mitigation”

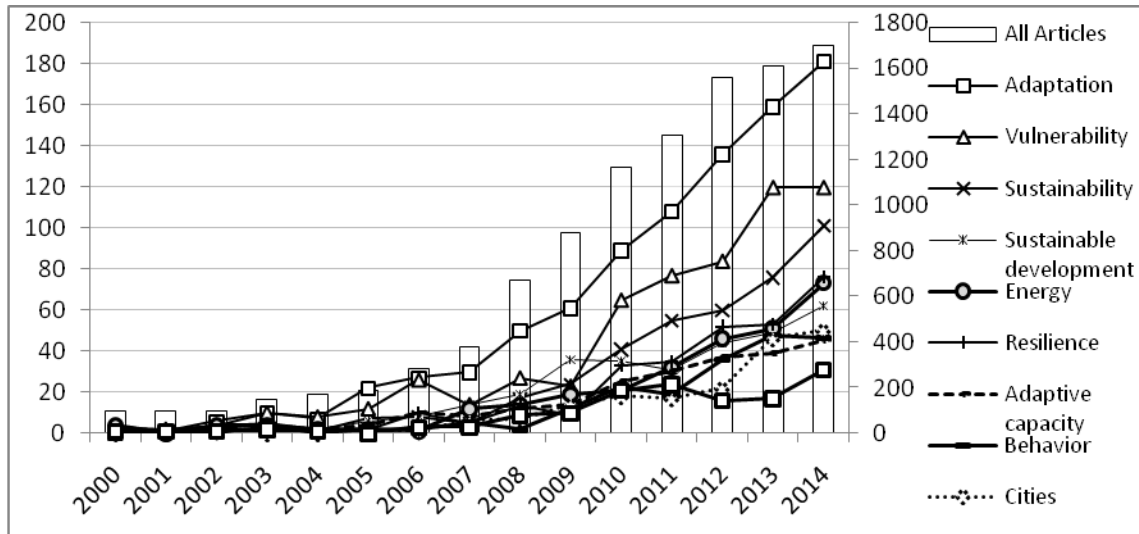


Figure 4. Keywords occurring frequency: subgroup “Adaptation”

In dealing with global climate change, professionals in land/resourcemanagement have their toolsets to minimize potential threats. In this study, five fields were selected for further study. They are “*Regional Planning*”, “*Ecological Planning*”, “*Environmental Management*”, “*Resource Management*”, and “*Environmental Planning*”. Please see Figure 5. None of these 5 traditional management/planning toolsetsis

new. However, like other keywords, the number of articles increases significantly after 2006. Overall, there are 1,127 articles that have used “regional planning” as its keyword, 914 articles have used “ecological planning”, 726 articles have used “environment management”, 588 articles have used “resources management”, and 384 articles have used “environmental planning”.



Figure 5. The Trend of Five Planning Traditions in Climate Change

Please refer to Figure 6, it is the trend of using the keyword “regional planning”. The original idea of regional planning is to promote the balance between land uses and resource. Economic efficiency was its major concerning factor. Its focus was further extended when it included natural resource issues. The most used

keywords can be categorized into 2 types. The first type includes generic works often associated with climate change, like adaptation, vulnerability uncertainty, and mitigation. The other type of keywords is related to water/resource and land uses, like biodiversity and drought.

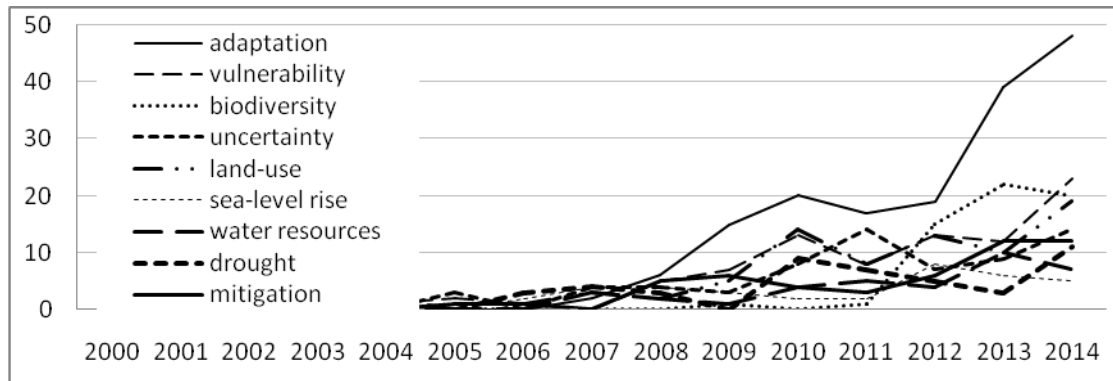


Figure 6. The trend of “Regional Planning”keywords in climate change

The trend of popular keywords in “ecological planning” is shown in Figure 7. Ecological planning further applies ecological principles in the field of land use planning. In addition to those generic keywords popular in climate change research, biodiversity, social-ecological systems, and ecosystem services are also

used commonly. A systematic change was revealed in the trend. Most keywords in this group dropped significantly in 2014. The validity of the data has been verified. However, there are no specific reasons to explain such a change.

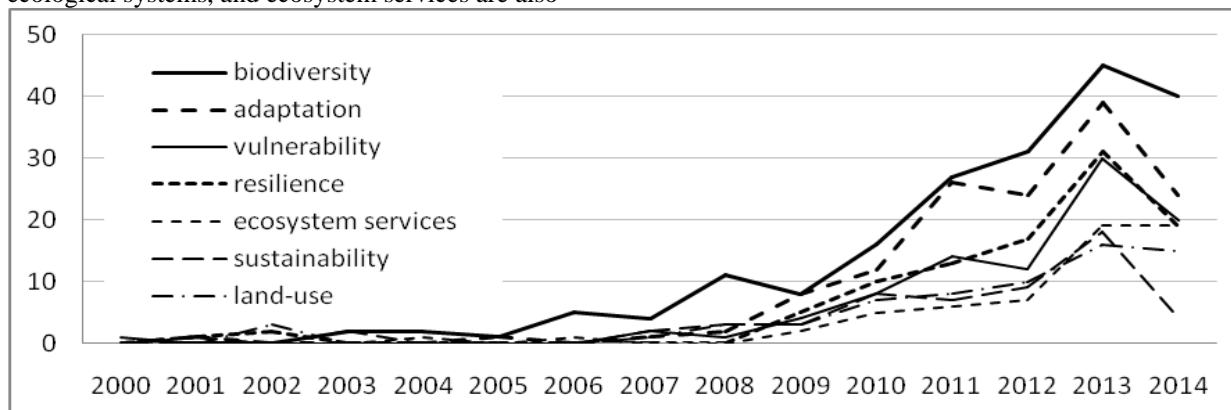


Figure 7. The Trend of Ecological Planning Keywords in Climate Change

Environmental management is an extremely broad concept, please see Figure 8. It covers almost everything about the anthropocentric use of environmental resources and its management. The most potential climate change disturbances between human use of resources and environmental conditions are biodiversity and impacts to the water cycle. There two

keywords are shown on the list. Besides, many keywords generic to climate change are also on the list, such as adaptation, vulnerability, resilience, and others. Before 2008, few articles have discussed such a topic. After 2009, most research interests are focused on adaptation and risk issues.

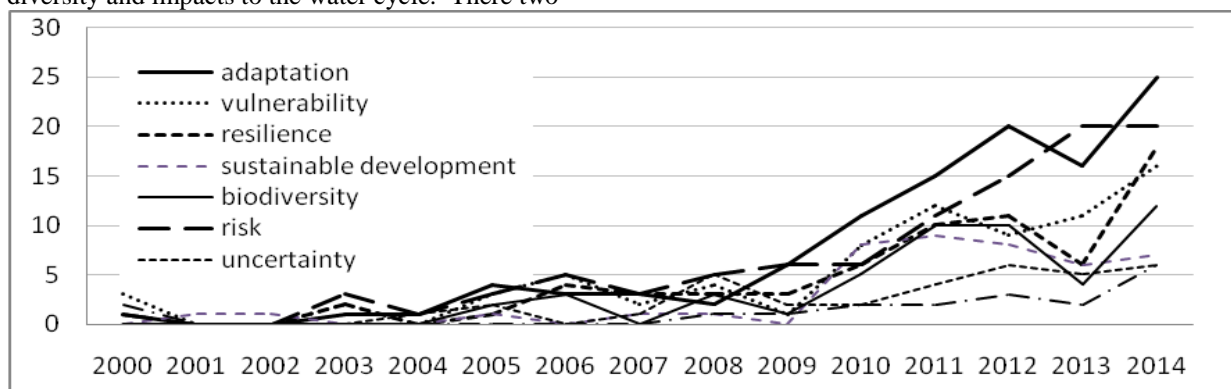


Figure 8. The trend of “Environment Management”keywords in climate change

The trend of popular keywords in resource management is tabulated in Figure 9. Very much like other topics, the most popular keywords are “adaptation”, “vulnerability”, “resilience”, “sustainability”, “risk”, “uncertainty”, “biodiversity”, and “land-use”. After 2008, “adaptation” was critical. However, it is worthy to note that the “resilience” has been used just as often in 2014.

confounding; professionals in urban planning tend to use ecological planning to avoid misunderstanding. It has much less articles compared to other land management/planning fields. The discussion of environmental planning goes up after 2010. Still, the number is small. Keywords like “adaptation”, “vulnerability”, “planned behavior”, “sustainable development”, “cities”, “resilience”, and “ecosystem services” tops this list.

Figure 10 discusses the trend of keywords in environmental planning. This term is somewhat

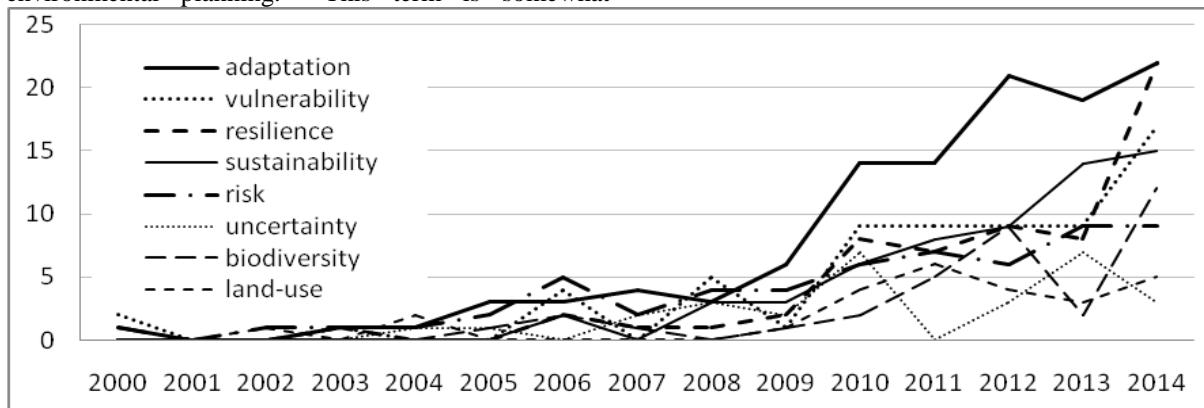


Figure9. The Trend of “Resource Management” Keywords in Climate Change

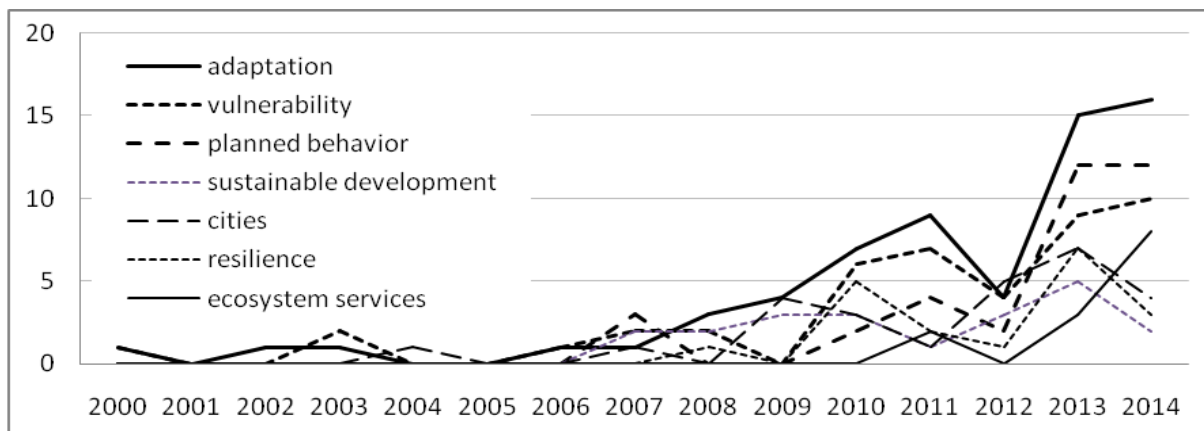


Figure10. The trend of “Environmental Planning”keywords in climate change

CONCLUSION

Social scientists are quite fond of the idea of adapting to climate change. “Adaptation” is the most popular keyword in social science regarding climate change issues. The keywords associated to “adaptation” include “vulnerability”, “sustainability”, and “resilience”. Sustainability has become a value statement to the human community; it is easy to envision, but difficult to achieve. As to “vulnerability” and “resilience”, “vulnerability” is used more often than “resilience”. In some fields, such as environment and resources management that have broader concerns, the occurrences of “resilience” have exceeded “vulnerability”. On the other hand, the keyword

“mitigation” is not used extensively. The administrative aspects of mitigation, like policy and governance, have received relatively more attention than mitigation itself.

In the land management and planning professions, the amount of effort that are devoted to climate change was quite limited before 2010. However, planning toolsets such as regional planning and ecological planning are gaining popularity in comparison to other toolsets. These toolsets have their specific scopes or techniques. Regional planning can address diverse issues that affect an area larger than a city, and also balance its economic development, livability, and environmental resources. Ecological planning is based upon the scientific analysis of environmental elements to

allocate human habitats. These toolsets can be very useful in dealing with the long-term loss reduction from climate change and disasters. Also, these planning tools can address social vulnerability better than resilience. Even though the discussion on resilience is rising, it is much easier to take social vulnerability concerns in planning practices. The concept of resilience is still fuzzy in practical applications. Nevertheless, the discussions of resilience are still mostly conceptual. It is not easily applicable in practice.

This study adopts a method that collects only the most popular ideas. It simply reiterates what others are discussing, and could not explore the new ideas at its birth. In other words, linkage between planning tools and resilience may be weak, but it could be an area that deserves more attention.

ACKNOWLEDGEMENTS

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BRIEF BIOGRAPHY

I have earned my PhD degree in Urban and Regional Science from Texas A&M University. My main research interests include disaster mitigation, risk management, and land use planning.

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August 3rd to 5th, 2016

Track Four:

**Emerging Trends in Physical Sciences and Applied Sciences
(ETPSAS)**

EFFECT OF PYROLYSIS TEMPERATURE ON THE PROPERTIES OF COCONUT FROND BIOCHAR

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ABSTRACT

Biochar has attracted interest due to its benefits in agricultural sector and environmental sustainability. Biochar can act as a useful tool to sequester carbon and reduce carbon dioxide (CO₂) which cause global warming and climate change. Biochar is also able to improve soil fertility and mitigate climate change by sequestering carbon. The functions of biochar depend greatly on its physical and chemical properties. The type of feedstock and pyrolysis conditions such as temperature, heating rate and residence time are the most important factors influencing the biochar properties. The objective of this study is to investigate and evaluate the effect of pyrolysis temperature on the biochar yield as well as the properties of biochar produced from slow pyrolysis of coconut frond (CF). The preliminary analysis such as proximate and elemental analysis, lignocellulosic determination and thermogravimetric (TG) analysis were carried out to determine the properties of CF feedstock. Laboratory-scale slow pyrolysis experiments were performed at five different temperatures, 400°C, 450°C, 500°C, 550°C and 600°C. Heating rate, residence time and nitrogen flowrate were set at 5°C/min, 1 hour and 0.5 L/min respectively. CF biochars produced at different temperatures were investigated using proximate and elemental analysis, Field Emission Scanning Electron Microscope (FESEM) and *Brunauer–Emmett–Teller* (BET) surface area analysis. The preliminary analysis results show that the CF is suitable to be used as feedstock for pyrolysis process. It contains high volatile matter of 75.27 mf wt% and low percentage of sulfur, 0.77%. CF feedstock also comprises of 21.46% of cellulose, 39.05% of hemicelluloses and 22.49% of lignin. The biochar yield decreased from 35.71 wt% to 28.53 wt% as the temperature increased from 400°C to 600°C. The fixed carbon of the CF biochar increases from 76.40 mf wt% to 78.38 mf wt% as the temperature increased from 400°C to 600°C. The FESEM shows the existence of pores at the wall of the fibrous strands of the CF biochar. The increment of pyrolysis temperature also lead to the formation of biochar with higher BET surface area and micropore volume. BET analysis reported maximum surface area of 215.30 m²/g and micropore volume of 0.07912 cm³/g at pyrolysis temperature of 600°C. The findings of this study show that an increased of pyrolysis temperature decreased the percentage yield and increase the fixed carbon, BET surface area and micropore volume of CF biochar. CF biochar therefore has the potential to be applied as soil amendments.

KEYWORDS: Biochar, Slow Pyrolysis, Coconut Frond, Pyrolysis Temperature, Characterization

INTRODUCTION

Global warming is largely caused by the greenhouse gases especially carbon dioxide (CO₂) emissions from the human activities. The anthropogenic activities increase the atmospheric concentration of CO₂ to almost 400 ppm at present compared to 280 ppm in the pre-industrial era (Lal, 2011). Since 1880, the mean global temperature has risen by 0.85°C and the impact is now evident from the rise in global sea level, melting of snow, increase in frequency of extreme events such as hurricanes including Katrina, Sandy and Rita, drought in many region including India and recently severe heat wave that stroke Pakistan (IPCC, 2014). The effect of global warming will bring risk to human support systems, such as food, agriculture, water resources, ecosystems and human health (IPCC, 2014; PIK, 2012).

Malaysia is likely to feel the force of climate events sooner, due to its climate and location. The effects of climate change can be seen in the form of coastal and inland flooding, rise in vector borne diseases and drops in agricultural yields due to continuous occurrence of droughts (DOSM, 2011).

Common renewable energy strategies can at best off set fuel emissions of CO₂, but not able to reverse the climate change. One promising approach of reducing the concentration CO₂ in the atmosphere is the conversion of biomass to biochar and its utilization as soil amendment. The International Biochar Initiative (IBI) defines biochar as “the solid material obtained from the carbonization of biomass that may be added to

soils with the intention to improve soil functions and to reduce emissions from biomass that would otherwise naturally degrade to green house gases (GHG)” (IBI, 2013). Biochar help ‘cleaned the air’ in two ways. Firstly, biochar is produced from biomass, which would otherwise left to decay and thereby release harmful GHG such as CO₂ and methane (CH₄) into the atmosphere. Secondly, biochar as the soil application allowed the plants to safely store CO₂ they pull out of the air during photosynthesis, which enable the atmospheric C sequestration and reduce the C in the atmosphere (Ansari, 2009; Sedjo & Sohngen, 2012). Biochar can sequester its C content in soil for many years because it had higher stability to against decay compared to its raw biomass (Lehmann, Gaunt, & Rondon, 2006). Interestingly, the stability of a biochar was similar whether the biochar was at the age of few hundred years old or several thousand years old (Liang et al., 2008). This is due to the pyrolysis process during the biochar production that made the C content becomes fixed into a more stable form (Hunt, DuPont, Sato, & Kawabata, 2010) and being recalcitrant in the biomass itself (Kwapinski et al., 2010). Moreover, using biochar as soil amendment will improve the crop productivity. Positive responses as a result of biochar applications have been reported by (Hoshi, 2001; Rondon, Lehmann, Ramírez, & Hurtado, 2007; Van Zwieten et al., 2007). The utilization of biomass as the feedstock for biochar production via thermochemical conversion process is also a way to reduce the waste management problems. The biomass residues which are improperly managed and unsuitable for certain application could be used as pyrolysis feedstock (Gómez et al., 2016). Besides, it is also a way to avoid negative impacts on human health and environment which is caused by the open burning activities.

Pyrolysis is a process in which thermal degradation of the chemical constituent of the biomass occurs (Tripathi et al., 2016). Generally, pyrolysis process is classified into three categories: slow pyrolysis fast pyrolysis and flash pyrolysis. These categories are distinguished by its temperature range, heating rate and also the percentage of product yields (Balat, Balat, Kırtay, & Balat, 2009; Jahirul, Rasul, Chowdhury, & Ashwath, 2012). The proportion of pyrolysis products such as biochar, bio-oil and gas vary according to the type of pyrolysis employed. For high char yield, low temperature and low heating rate are preferred (Yaman, 2004). Slow pyrolysis is the suitable process for biochar production.

Previous studies reported that the properties of biochar are influenced by the characteristics of the feedstock (Shariff, Aziz, & Abdullah, 2014) as well as the pyrolysis conditions such as terminal temperature (Noor, Shariff, & Abdullah, 2012; Rahman, Abdullah,

& Sulaiman, 2014), heating rate (Shariff, Noor, & Abdullah, 2012), residence time (Y. Wang, Hu, Zhao, Wang, & Xing, 2013) and carrier gas flow rate (Crombie & Mašek, 2015). Terminal temperature has been reported as the main factor that influence properties of the biochar significantly (Budai et al., 2014; Downie, Crosky, & Munroe, 2009).

Coconut palm is grown in more than 93 countries around the world. Coconut is one of the crops which produced vegetables oil besides soybean, sunflower, cottonseed, rapeseed and olive. In Malaysia, coconut is one of the oldest agro-based industries and the fourth important industrial crop after oil palm, rubber and paddy. Coconut is known as a tree of life and many products could be derived from coconut tree such as coconut oil, virgin coconut oil (VCO), cocopeat, coconut milk and other food product. The coconut leaves also can be used to make “ketupat” case, while the stiff mid-ribs of coconut leaves has been used to make brooms in Malaysia (Anem, 2014). According to Ministry of Agriculture and Agro-Based Industry Malaysia, MOA (2015), the total plantation area of coconut in Malaysia decreased from year 2007-2009 and year 2011- 2013. This reduction is due to the conversion of land utilization to the industrial crop such as oil palm as well as other development such as housing and industry (MOA, 2011). However, the total production of coconut shows the opposite trends from year 2009 to 2013 as it increased from 379,251 tonnes to 653,489 tonnes, and it is expected to continue to increase in the following years (MOA, 2015). Along with the increment of coconut production, higher percentages of residues generated from the coconut industry can be expected. The total production of coconut biomass excluding the coconut water is about 106,100 kilo tonnes, where 60.5% are unprocessed (Raghavan, 2010). The residues generated from coconut industries include coconut husk, coir fibre, coconut pith, coconut shell and coconut flesh waste were obtained after the extraction of coconut milk or coconut oil. Meanwhile, coconut frond and trunk are the common wastes which could be obtained from the coconut plantation. Large quantities of fronds are produced by natural pruning and silvicultural practice every year, and usually remain as waste in the forest floor (Njoku, Islam, Asif, & Hameed, 2014).

Biochars are not created to be equal. Presently, there is lack of understanding of the parameters that will affect the quality of the biochar being produced and insufficient data on the physical and chemical characteristics of biochar produced from coconut wastes especially coconut frond. The findings of this study will provide more understanding on the chemical and physical properties of coconut frond (CF) biochar

produced at various temperature. The study of biochar characterization is necessary to better understand the effect of temperature on the properties of biochar produced from CF feedstock. Biochar with large surface area and porosity will provide higher capability of water and nutrient retention. Good quality biochar has the potential for soil application and consequently benefit the environment.

The objective of this work is to investigate the effect of pyrolysis temperature on biochar produced from coconut frond. Slow pyrolysis experiments were conducted and the temperatures were varied between 400°C and 600°C. The percentage of biochar yield produced at various temperatures were determined. The properties of the biochar were analyzed via proximate and elemental analysis, Field Emission Scanning Electron Microscope (FESEM), and BET surface area analysis.

MATERIAL AND METHOD

Sample Collection and Preliminary Analysis

The coconut fronds originate from Butterworth, Penang, Malaysia. The samples were collected and dried in the oven for 24 hour at 105°C. The coconut fronds were cut into smaller size, around 3-5 cm and stored in desiccators.

The CF feedstock was analyzed via proximate and elemental analysis, lignocellulosic determination and thermogravimetric (TG) analysis. The proximate analysis was carried out to determine moisture, ash content and volatile matter. The result of proximate analysis is expressed in dry basis which is represented by moisture-free weight percentage (mf wt%). The moisture, ash content and volatile matter were determined according to ASTM E871 (ASTM, 2006b), ASTM E1755-01 (ASTM, 2007) and ASTM E872 (ASTM, 2006a) respectively. The fixed carbon was calculated from equation (1).

$$\text{Fixed carbon (mf wt\%)} = 100 - (\text{ash content} + \text{volatile matter}) \quad (1)$$

Perkin Elmer 2400 analyzer was used to conduct the elemental analysis to determine the percentages of carbon, hydrogen, nitrogen and sulfur in the feedstock. The percentage of oxygen was determined from equation (2)

$$\text{Oxygen (\%)} = 100 - (\text{carbon} + \text{hydrogen} + \text{nitrogen} + \text{sulfur}) \quad (2)$$

The percentages of lignin, cellulose and hemicelluloses were also determined using ASTM methods (Li, 2004). Mettler Toledo TG analyzer was used to evaluate the thermal behavior of CF feedstock. The analysis was carried out at 10°C/min heating rate and under 100 ml/min nitrogen gas flow.

Pyrolysis Experiment

The pyrolysis experiment was carried out using laboratory-scale slow pyrolysis system. This system consists of muffle furnace, sample holder (pyrolyzer), nitrogen gas system and condensing system. The diagram of the experimental setup is shown in Figure 1. The feedstock was tightly packed in the pyrolyzer and placed in the muffle furnace. The terminal temperature was varied between 400°C and 600°C while the heating rate, residence time and nitrogen flowrate were set at 5°C/min, 1 hour and 0.5L/min respectively. Biochar yield was calculated on weight basis according to Equation (3) below. The experiment was performed twice for each pyrolysis temperature and the average of biochar yield was determined.

$$\text{Biochar Yield (wt \%)} = (\text{Mass of biochar (g)} / \text{Mass of feedstock (g)}) \times 100 \quad (3)$$

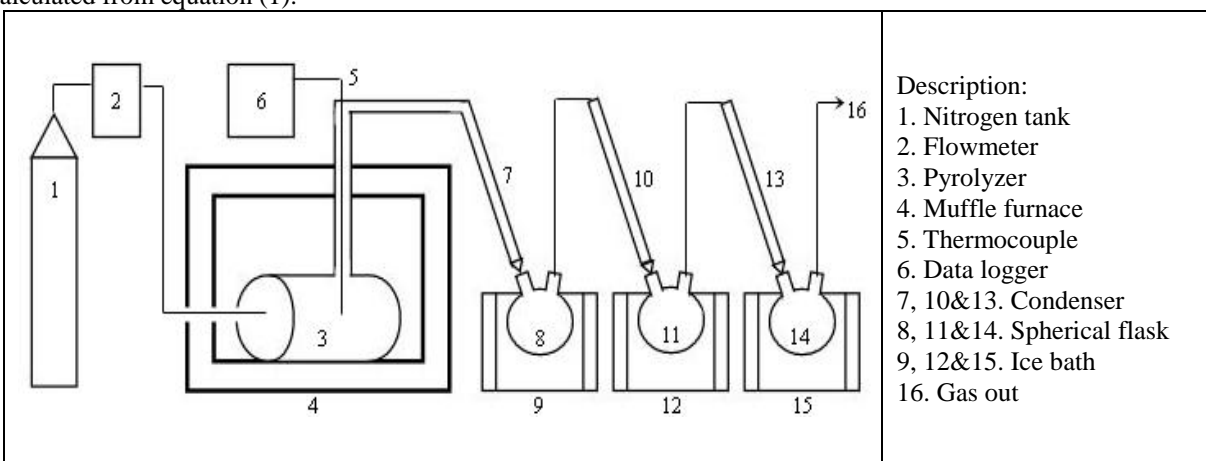


Figure 1 : Lab-scale slow pyrolysis system setup

Analysis of Biochar

The biochar derived from the slow pyrolysis of CF was analyzed via proximate and elemental analysis. The biochar was ground to powder form prior these analysis. Proximate analysis was carried out according to ASTM 1762 with some modification of temperature and heating period as suggested by McLaughlin (2010). The modification was done to provide much insight on how biochar actually partitions when applied as a soil amendment, hence the char is subjected to temperatures and conditions that are encountered in soils (McLaughlin, Anderson, Shields, & Reed, 2009).

Perkin Elmer 2400 analyzer was used to conduct the elemental analysis of biochar to determine the percentage of carbon, hydrogen, nitrogen and sulfur in the CF biochar. The percentage of oxygen was determined from Equation (2).

Field Emission Scanning Electron Microscope (FESEM) FEI Nova NanoSEM 450 was used to examine the surface morphology of CF biochar. The voltage applied was set to 10 kV. The images of biochars were magnified at 500 times. The images of biochar also were compared with the FESEM image of the CF feedstock.

Micromeritics ASAP 2020 surface area and porosimetry analyzer was used to determine the BET surface area and pore volume of biochar. The BET surface area was calculated by the BET equation, while the micropore volume was obtained using the *t*-plot method.

RESULTS AND DISCUSSION

Preliminary Analysis

The result of the proximate, elemental and lignocellulosic analysis of the CF feedstock are listed in Table 1. From proximate analysis, it was found that the CF feedstock contains 75.27 mf wt% of volatile matter, 5.03 mf wt% of ash content and 19.70 mf wt% of fixed carbon. From elemental analysis, the percentages of carbon, hydrogen, sulfur and oxygen of the CF feedstock are 42.81%, 7.23%, 0.77% and 49.19% respectively. CF is suitable to be used as feedstock for slow pyrolysis experiments due to its high percentage of volatile matter and low percentage of sulfur. From the lignocellulosic analysis, it was found that CF feedstock comprised of 21.46% of cellulose, 39.05% of hemicelluloses and 22.49% of lignin. Clearly, hemicellulose is the main component in the CF structure.

Table 1: Properties of the CF feedstock

Analysis	Results
Proximate Analysis (mf wt%)	
Moisture content	6.76
Ash content	5.03
Volatile matter	75.27
Fixed carbon ^a	19.70
Elemental Analysis	
Carbon	42.81
Hydrogen	7.23
Nitrogen	BDL
Sulfur	0.77
Oxygen ^a	49.19
Lignocellulosic Analysis (%)	
Cellulose	21.46
Hemicellulose	39.05
Lignin	22.49

^a: Calculated by difference

BDL: below instrumental detection limit

The thermal degradation behavior of the CF feedstock is shown by the thermogravimetric (TG) and derivative thermogravimetric (DTG) curve in Figure 2. TG curve represents the fractional weight loss of the feedstock as a function of temperature, while the DTG curve is the plot of the rate of mass change, dm/dt versus temperature.

The TG curve in Figure 2 shows that the weight loss of the CF feedstock was prominent between 245°C and 350°C. The weight of CF sample decreased from 87% to 39% in that temperature range. Beyond 350°C, the weight of CF sample continue to reduce but the weight loss is insignificant.

For the DTG curve, a small peak was observed below 100°C. The formation of this small peak is due to the removal of water in the CF sample. Between 200°C and 380°C, a small hump and a high peak could be observed. The small hump appeared in the range of 200°C – 300°C, with the maximum weight loss rate 0.0392 wt%/min at 281°C. Meanwhile the high peak occur in the range of 300°C – 380°C., with the maximum weight loss rate 0.0772 wt%/min at 333°C. These hump and peak represent the degradation of lignocelluloses component. According to Yang et al. (2007), the decomposition of hemicelluloses occur between 220°C – 315°C while the cellulose decomposed between 315°C – 400°C. Therefore, it could be concluded that the formation of small hump is due to the degradation of hemicelluloses while the the appearance of the high peak represents the degradation of cellulose. The decomposition of lignin could not be observed clearly in the DTG curve as its degradation occurs over a wide range of temperature, from ambient temperature to 900°C (Yang et al., 2007).

The percentage of lignin in biomass will influence the percentage of char yield. Biomass with higher lignin content will produce higher char yield as lignin preferentially forms char during pyrolysis (Antal & Grønli, 2003). The percentage of CF biochar yield in this study is expected to be lower than those produced by other biomass feedstock containing higher lignin percentage such as olive husk, corn cob (Demirbas, 2004) and oil palm shells (Abnisa, Arami-Niya, Daud, & Sahu, 2013) as coconut frond used as the feedstock contained lower lignin percentage.

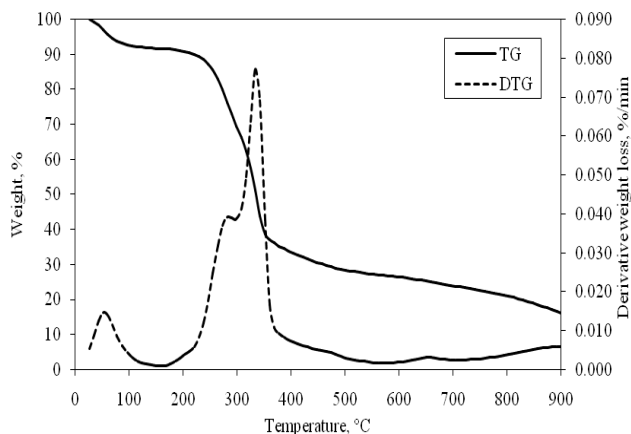


Figure 2: TG and DTG curves of CF feedstock

Biochar Yield From Pyrolysis Experiment

Biochar yield obtained from the slow pyrolysis experiments were calculated using Equation (3). The yield percentage of biochar produced at various temperature are presented in Figure 3.

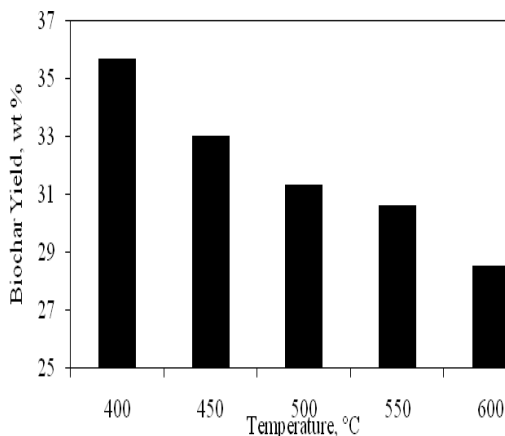


Figure 3 : CF Biochar Yield Produced at Various Temperature

From Figure 3, it could be observed that the yield percentage of the CF biochars decreased as the pyrolysis temperature increased. The highest biochar yield, 35.71 wt% was obtained from the 400°C pyrolysis

experiment. The biochar yield decreased to 28.53 wt% as the pyrolysis temperature increased to 600°C. The decrement of biochar yield is associated with the reduction of volatile matter as shown in Table 2 and degradation of lignocellulosic component such as lignin in biochar as shown by the TG analysis results. The similar trend of decreasing biochar yield as the temperature was elevated also has been reported by Y. Lee et al. (2013), Al-Wabel, Al-Omran, El-Naggar, Nadeem, and Usman (2013) and Budai et al. (2014).

Analysis of Biochar

The result of proximate and elemental analysis of the CF biochar produced at different terminal temperature are shown in Table 2.

Table 2: Proximate and elemental analysis of CF biochar

Analysis	Biochar				
	400°C	450°C	500°C	550°C	600°C
Proximate Analysis (mf wt%)					
Moisture content	1.41	1.23	1.37	1.94	1.37
Volatile matter	12.36	10.78	8.57	6.53	4.90
Ash content	11.24	12.48	13.81	15.38	16.72
Fixed carbon ^a	76.40	76.74	77.62	78.09	78.38
Elemental Analysis (%)					
Carbon	31.87	36.24	45.32	48.36	58.34
Hydrogen	2.06	2.00	1.94	1.11	1.08
Nitrogen	9.72	8.27	6.89	10.29	9.10
Sulfur	BDL	BDL	BDL	BDL	BDL
Oxygen ^a	56.35	53.49	46.85	40.24	31.48
H/C	0.065	0.055	0.043	0.023	0.019
O/C	1.768	1.476	1.034	0.832	0.539

^a: Calculated by difference

BDL: below instrumental detection limit

For the proximate analysis, the volatile matter of CF biochar decrease from 12.36 mf wt% to 4.90 mf wt%. The release of volatiles from breaking of weaker bridges and bonds in organic matrices caused the reduction of volatile matter in biochar as temperature increased (Pechyen, Atong, Aht-Ong, & Sricharoenchaikul, 2007). An increase in temperature also promoted the ash formation in biochar. Fixed carbon content of the CF biochar increased from 76.40 mf wt% to 78.38 mf wt%. The elemental composition of biochar was also influenced by the pyrolysis temperature. The C content increase from 31.87% to 58.34% as the temperature increased from 400°C to 600°C. In contrast, H and O content of the CF biochar decreased with the increasing temperature. According to Novak et al. (2009), this happened because the feedstock loses surface functional -OH groups due to dehydration, and structural core degradation which causes the loss of C-bound O and H atoms at the higher temperature. H/C and O/C ratios are

also calculated and presented in Table 2. H/C and O/C ratios are useful indicators of the character of biochars such as aromaticity (Mukome, Zhang, Silva, Six, & Parikh, 2013) and resistance to microbial degradation (Spokas et al., 2012). Result in Table 2 shows that H/C and O/C ratios are decreasing with increasing pyrolysis temperature. The reduction of H/C and O/C ratios are the result of dehydration and decarboxylation reactions respectively (Jindo, Mizumoto, Sawada, Sanchez-Monedero, & Sonoki, 2014).

The FESEM images of the CF feedstocks and biochar are shown in Figure 4. Significant differences could be

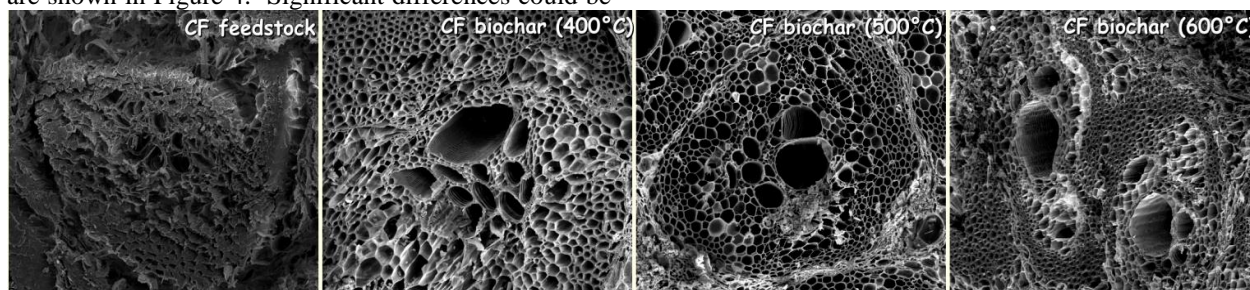


Figure 4: FESEM images of CF feedstock and biochars

Table 3: BET surface area and surface porosities of the CF biochar

Biochar	BET surface area (m ² /g)	Micropore Volume (cm ³ /g)
CF Biochar 400°C	4.26	0.00477
CF Biochar 500°C	76.43	0.01590
CF Biochar 600°C	215.30	0.07912

In Table 3, result of BET surface area of CF biochar shows that increased from 4.26 m²/g to 215.30 m²/g as the pyrolysis temperature increased from 400°C to 600°C. Y. Lee et al. (2013) and X. Wang, Zhou, Liang, Song, and Zhang (2015) also observed a similar trend of BET surface area increment. A gradual increase of surface area is due to the formation of micropores on the biochar surface (Suliman et al., 2016) as a result of the removal of volatilized residual material that blocked micropores (J. W. Lee et al., 2010). This is exhibited by an increase of micropore volume as shown in Table 3. The micropore volume increased from 0.00477 cm³/g to 0.07912 cm³/g as the temperature elevated from 400°C to 600°C. Biochar with higher surface area is preferable for soil amendment application as it helps in improving the soil structure and increases the total water retention in the soils (Shaaban et al., 2014).

CONCLUSION

In this study, biochar was produced from coconut frond using a laboratory-scale slow pyrolysis setup. The pyrolysis temperature influenced the percentage yield of

observed between the images of the CF feedstock and CF biochars produced at 400°C, 500°C and 600°C. All the images were magnified at 500x. For the CF feedstock, the fibrous strands are compact. No pores could be observed at the wall of the strands. For the CF biochars, the pores appeared at the wall of the strands. The existence of pores on the biochar is important for microbial activity, retaining soil nutrients and improving the water holding capacity (Shaaban et al., 2014).

CF biochar and its properties. CF biochar yield decreased from 35.71wt% to 28.53 wt% while the fixed carbon content increased from 76.40 wt% to 78.38 wt% as the temperature increased from 400°C to 600°C. The BET surface area increased significantly from 4.26 m²/g to 215.30 m²/g due to enhancement of pore development which could be observed from FESEM images. The micropore volume also increased sixteen times from 0.00477 cm³/g to 0.07912 cm³/g. The biochar produced at 600°C has the lowest yield percentage of 28.53 wt%, but contained the highest fixed carbon and BET surface area which made it preferable for soil application.

Biochar is a potential tool to manage agricultural wastes, mitigate climate change and reduce food insecurity by improving soil fertility. Application of CF biochar with high surface area and fixed carbon content into soil has high potential to retain soil nutrients, improve soil quality, increase soil water retention and crop yield. The findings of this study could be one of the initiatives towards the sustainable development and climate change abatement. Further studies on biochar soil application versus crop yield may be conducted in the future.

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COMBINATIONAL EFFECTS OF MANNAN (MOS) AND CHITOSAN ON SURVIVAL, GROWTH PERFORMANCE, FEED UTILIZATION, BODY COMPOSITION AND INTESTINAL HISTOLOGY OF SEA BASS (*DICENTRARCHUS LABRAX*)

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ABSTRACT

This study was conducted in order to investigate the combined effect of dietary Mos and chitosan on sea bass fry (initial weight of 0.30±0.01 g/fish) were fed either control diet without Mos and chitosan or one of five dietary diets (0.5, 1.0, 2.0, 3.0 & 4.0 g/kg diet⁻¹). After 75 days feeding, the results showed that; the highest weight gain (WG) was recorded with fish fed diet 3 (1 g kg⁻¹ of Mos and Chitosan) and diet 4 (2 g kg⁻¹ of Mos and Chitosan), compared with fish that were fed on the control diets. The best significantly survival rate was recorded at the fish were fed on the diet 3 compared with fish were fed diets 5 & 6. Feed conversion ratio (FCR) among the fish groups that were fed on Mos and Chitosan are significantly had FCR value better than the fish fed on the control diets. Protein efficiency ratio (PER) were be recorded significantly the highest value among the fish fed on the diets of 5 and 6 compared to the fish were fed on the control diet. Chemical composition of whole fish at the end of the experiment period showed that, the crude protein and gross energy was observed remarkably higher in the group of fish fed on diet 3. The results for dry matter were similar in all fish groups except for fish fed on diet 4 which had lower value. The crude fat value reaches maximum of fish fed on diet 1 and 2. In our study the intestinal microvillus length increased with increasing mixture of Mos and chitosan levels and became well developed at concentration levels 1 & 2 g kg diet⁻¹, while, at higher concentrations of mixture of Mos and chitosan, were highly developed to a degree of blocking the intestine pathway. In conclusion, Chitosan and Mos mixture diets could enhance the growth performance, Non-specific responses and reduce mortality in sea bass, higher than separated Chitosan and Mos diets due to synergistic effects of both compounds.

KEYWORDS: Sea bass- Mos – Chitosan- Growth performance- intestine morphology

INTRODUCTION

European sea bass (*Dicentrarchus labrax*) is an important cultivated fish species with great economic interest. The most important farming countries are Greece, Turkey, Italy, Spain, Croatia, and Egypt (FAO, 2014). The annual production was more than 120,000 tonnes in 2010 (FAO, 2011). However, nutritional, environmental, or husbandry factors in intensification of aquaculture production systems expose fish to numerous stressors such as poor water quality, crowding, handling and transport, which may negatively affect their health (Houlihan *et al.*, 2001). Use of micro nutrients, for example vitamins, trace minerals, probiotics, and immunostimulants, as dietary supplements may benefit animal health, by improving performance, by improving the availability or utilization of nutrients through a variety of pathways (Staykov *et al.* 2007). Prebiotics, such as mannan oligosaccharides (Mos) have proved to be effective at

enhancing health and growth performance of fish (Staykov *et al.*, 2007; Torrecillas *et al.*, 2007; Dimitroglou *et al.*, 2010), improve gut morphology (Salze *et al.*, 2008; Dimitroglou *et al.*, 2010), improve disease resistance and stimulate the immune response of aquatic animals (Daniels *et al.*, 2010) and is widely used in nutrition as natural dietary supplementation to improve gastrointestinal health as well as overall health (Zhang *et al.*, 2012). Mos has also been demonstrated to benefit the gut health by improved absorption (Sang and Fotedar, 2010). One of the alternatives being considered today is the use of mannan oligosaccharides (Mos) as growth promoter as was recently highlighted by Ronel *et al.*, (2012).

Mannan oligosaccharide (Mos) is derived from cell wall of *Saccharomyces cerevisiae*, result from the partial hydrolysis of mannan polysaccharides

(Quintero-Villegas, 2014). Ferket, (2004) described that when MOS is added to the animal diet, lectins of these pathogens with mannose-specific Type-1-fimbriae are tricked into attaching to the mannan sugar instead of the carbohydrates attached to the intestinal villi. These lectins are then flushed out without being able to metabolize the sugar, resulting in a "cleansing" effect of the intestinal wall and preventing permanent damage to the villi (finger-like protrusions on the intestinal wall containing sites for nutrient absorption).

The positively effects of dietary mannan oligosaccharides (Mos) in European sea bass demonstrated in a lot of studies ; Torrecillas, (2013) indicated that dietary Mos (4 g kg⁻¹ Mos) enhances European sea bass (*Dicentrarchus labrax*) posterior gut epithelial defense by increasing membrane lipids content , promoting posterior gut health status and produce a higher feed intake. Also, It was found that, 0.2% and 0.4% of Mos in European sea bass (*D. labrax*) trial could growth was significantly improved at both inclusion levels The authors suggested that the increased growth may be related with enhanced amino acid absorption as demonstrated in chickens (Iji *et al.*, 2001). Sea bass (*D. labrax*) juveniles showed improved specific growth rate (SGR) and relative growth which increased significantly by about 10% after fed with MOS at 0.2 and 0.4% inclusion rates (Torrecillas *et al.*, 2006).

Chitosan is a natural cationic polysaccharide (Zhang *et al.*, 2010). It is a derivative of chitin and it is primarily produced from chitin by exhaustive alkaline deacetylation (Fouad, 2008). Chitosan has several favorable biological characteristics, as biodegradability, biocompatibility and non-toxicity (Kurita *et al.*, 1998). Additionally its ability to promote the growth performance, improve immune functions, inhibit intestinal tract microbial pathogens and lower cholesterol, etc. (Shi-bin and Hong 2012). So, nutritional significance of chitosan and the effectiveness of it as feed additives are considered (Hirano *et al.*, 1990).

Chitosan is an growth promoter active compound that is extracted from the shell of shrimp and crab, which is the essential component important for the growth of aquatic animals, so, when it was incorporated in the diet at a moderate level, it could promote the biosynthesis of the organism rapidly, which could highly enhancing the shrimp growth by frequency of moulting process, improving the digestion and absorption of nutrients at moderate levels, which result in high growth performance (Niu *et al.*, 2011). A number of studies have been conducted on effective utilization of chitosan as a fish feed supplement to promote growth, feed

utilization and survival rate; The inclusion of chitosan at a level of 2% in the diet of common carp (*Cyprinus carpio*) enhanced the non-specific immunity, reduced the fish mortality and enhanced the growth under stress conditions (Maqsood *et al.*, 2010). Geng *et al.*, (2011) investigated the effects of various levels of dietary *Bacillus subtilis* and chitosan on the growth performance, non-specific immunity and protection against *Vibrio harveyi* infection in cobia (*Rachycentron canadum*), he found that the combination of 1.0 g/kg⁻¹ *B. subtilis* and 6.0 g/kg⁻¹ chitosan is the best for the growth, innate immunity and disease resistance of cobia with an 8-week oral administration. The chitosan coated diet was also found to enhance the growth of the olive flounder (*Paralichthys olivaceus*) (Cha *et al.*, 2008).

Many studies showed that chitosan has immune stimulating action in different species of fishes (Siwicki *et al.*, 1994, Romeran *et al.*, 2002 and Cha *et al.*, 2008). Additionally, Meshkini *et al.*, (2012) found that, the adding chitosan at 0.25 % into the diet could stimulate the white blood cells activity and enhance resistance against some environmental stressors in rainbow trout (*Oncorhynchus mykiss*).

A combination of different carbohydrates showed synergistic effects on intestinal Ca absorption and balance in rats. The complexity and the variety of these later components may allow maintenance of high fermentation activity throughout the large intestine, which can increase their beneficial effects on mineral absorption (Younes *et al.*, 2001). In addition to, the combination of two different dietary fibers may result in a synergistic prebiotic effect, and may confer greater health benefits to the host throughout the entire colon (Rodríguez-Cabezas *et al.*, 2010). Prebiotic combination products and especially chewable Tablets as the preferred dosage form are described with high acceptability for the prophylaxis and treatment of inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), calcium and magnesium deficiency including osteoporosis, food intolerances, the regulation of the digestion, stimulation of the immune system, energy management, prophylaxis of colon cancer and protection of the gut microbial ecosystem in man. A prebiotic combination of inulin/oligofructose and resistant starch in very low amounts has been found to give a prebiotic effect. The low dosage of the two prebiotic components makes it possible to formulate inexpensive dosage forms with good compliance due to a small amount of ingredients. The small amount of the prebiotics also result in a virtually absence of side-effects.

To the author's knowledge no studies on Mos and Chitosan combination were carried out. So the objective

of this study to evaluate combinational effects of mannan oligosaccharide (Mos) and chitosan on survival, growth performance, feed utilization, body composition and intestinal histology of sea bass (*Dicentrarchus labrax*).

MATERIAL AND METHODS

Experimental Diets

Formulation and proximate composition of the experimental diets are presented in Table (1). Mos and chitosan (obtained from National Institute of Oceanography and Fisheries Alexandria) was included in the diet at (0.5, 1.0, 2.0, 3.0 & 4.0 g kg diet⁻¹) and control without mixture of Mos and Chitosan based on the best results obtained before, in terms of growth performance, feed utilization and survival. The diets preparation and feeding system were as same as explained before in the first experiment.

Water Quality

Water quality parameters (temperature, dissolved oxygen, pH, ammonia, nitrate and nitrite) were monitored to ensure water quality remained well within limits recommended for Sea bass. Water temperature and dissolved oxygen were measured every other day using an YSI Model 58 oxygen meter (Yellow Springs Instruments, Yellow Springs, OH). Ammonia and nitrite were measured at weekly intervals using the titration methods of Golterman, *et al.*, (1978) pH was monitored twice weekly using an electronic pH meter (pH pen Fisher Scientific, Cincinnati, OH). During the feeding trial, the water quality parameter averaged (\pm SD): water temperature 27.8 \pm 0.8°C dissolved oxygen 6.8 \pm 0.4 mgL⁻¹; pH 7.4 \pm 0.6; ammonia 0.2 \pm 0.04 mgL⁻¹; nitrite 0.1 \pm 0.05 mgL⁻¹; nitrate 1.5 \pm 0.2 mgL⁻¹, salinity 35.2 \pm 1.1 gL⁻¹

Chemical Analysis of Diets And Fish Carcasses

Proximate analysis of the formulated diets and fish carcasses were determined according to standard methodology (AOAC, 2006). At the end of the experiment, six randomly sampled fish from each treatment were collected for carcass analysis. Crude protein content was determined by the Kjeldahl method using an Auto Kjeldahl System, crude lipid content by the Soxhlet extraction method, ash content by a furnace muffler (550 °C for 4 h), moisture content by a dry oven (105 °C for 24 h) and crude fiber content by an automatic analyzer (Fibertec, Sweden) (AOAC, 2006).

Histological Analysis

About 6 fish per treatment were sacrificed to obtain intestine. Intestine were fixed in Bouin's solution (Carson, 1992) for 24 hours and then transferred to alcohol (70%). After conventional histological processing, sections (5-7 μ m thick) were stained with

haematoxylin and eosin and observed under a light microscope (Leica DM500). Assessment of intestine development followed the description of Holden and Raitt (1975).

Calculations and Statistical Analysis

Calculations of growth parameters were conducted according Cho and Kaushik (1985). Data were analyzed by analysis of variance (ANOVA) using the SAS ANOVA procedure (Statistical analysis system 1993) Duncan's multiple range tests was used to compare differences among individual means. Treatment effects were considered significant at P<0.05. All percentages and ratio were transformed to arcsine values prior to analysis (Zar, 1984).

RESULTS

Growth Performance

The effect of mixture of Mos and Chitosan on Sea bass fry growth parameters is shown on Table (2). The results revealed that at the start of the experiment, there were no significant differences (P \leq 0.05) in average initial body weight, which indicates that there was homogeneity among these groups. At the end of the experiment, significantly (P \leq 0.05) the highest body final body weight (FBW), Weight gain and average daily gain (ADG) was recorded with fish fed diet 3 (1 g kg⁻¹ of Mos and Chitosan) and fish fed on diet 4 (2 g kg⁻¹ of Mos and Chitosan) followed by the fish that fed on diet 2 (0.5 g kg⁻¹ of Mos and Chitosan) and fish fed on diet 5 (3 g kg⁻¹ of Mos and Chitosan), compared with fish that were fed on the control diet, which had the lowest body final body weight (FBW), Weight gain and average daily gain (ADG). The groups of fish fed diet 2, 3, 4 & 5 had significantly (P \leq 0.05) the highest values of SGR and RGR compared with groups of fish fed control diet 1 and the fish that fed on the diet 6.

Survival Rate

The effect of mixture of Mos and Chitosan on the survival rate of sea bass is shown in Table (2). The best significantly survival rate was recorded at the fish were fed on the diet 3 followed by the fish that fed on diet control, 2 and 4 compared with fish were fed diets 5 and 6, which had the lowest survival rate.

Feed Utilization Efficiency

The effect of dietary treatments on sea bass fry were shown on Table (3). The fish that had fed on the diets 3 and 4 showed significantly the highest feed intake ratio (FI, g/fish) compared to fish fed on the control diets which had significantly the lowest FI value. There was no significant variation among feed conversion ratio (FCR) of the fish groups that were fed on diets 1(control), 3 and 4 but the all of them are significantly had FCR value varied from the fish fed on the diet 5

and 6. Protein efficiency ratio (PER) were recorded significantly the highest value among the fish fed on the diets of 5 and 6, compared to the fish fed on the diet 1, 2, 3 and 4 which significantly had the lowest PER value. Protein productive value (PPV) was the best at fish fed the diets 1 and 3, followed by the groups of fish fed on diets 2, 4, 5 and 6. The highest significant Energy gain (kcal) value was recorded at fish fed on diet 1, 2, 3 & 4 compared to other treatments. For Energy utilization Values, there was no significant variation among all treatments.

Fish Proximate Composition

Chemical composition of whole fish at the end of the duration of the experiment is shown in Table (4). A general tendency of increased crude protein was observed in fish fed on diet 1 (control), followed by fish fed on diet 2&3, and fish fed on diet 6 had the lowest crude protein, the results for dry matter percentage were similar in all fish groups except for fish fed on diet 4 which had lower value, The crude Fat value reaches maximum was of fish fed on diet 1 and 2 followed by fish fed on diet 4. The lowest was recorded with fish fed on diet 3. For ash content, values were the highest for fish fed on diet 1, 2 and 3, followed by fish fed on diet 5, the lowest value was for fish fed on diets 4. Gross energy was the highest for fish fed on diet 3.

Histological Analysis

At the end of the experiment, the microscopic structure of sea bass intestines as affected by different levels of mixture of Mos and Chitosan supplement is shown in figures 1 (A-F). In our study the intestinal microvilli length increased with increasing Mos and Chitosan levels and reach maximum at concentration levels 1& 2 g kg diet⁻¹ as shown in Fig 1 (B&C) And the decreased small intestinal microvilli length of sea bass in this study when fed on control But it was observed, at higher Mos and Chitosan concentrations Figure 1, it was found that intestinal microvilli were highly developed to a degree of blocking the intestine which may prevent the mobility of the food through it.

DISCUSSION

The results of the present study indicated that Mos and Chitosan mixture supplementation in the diets of sea bass was helpful in improving growth rate, enhanced the nonspecific responses and reduced mortality, and the improvement mechanism may be partly attributed to improving morphological structure of small intestine. Histological analysis of intestine showed that the intestinal microvilli length increased with increasing Chitosan and Mos mixture levels, and became well developed at a concentration levels (1& 2 g kg diet⁻¹), which might lead to increase the absorptive surface area of intestine which means the increasing of nutrients

absorption and as a result, enhanced the growth performance of the fish. In the same time, the intestinal microvilli length was poor developed with control diet, but at higher Chitosan and Mos mixture concentrations (3 & 4 gkg diet⁻¹), it was observed that intestinal microvilli were highly developed to a degree of blocking the intestine pathway which might hinder the movement of the food through it, consequently, it depressed the nutrients absorption in blood stream which negatively affected the growth performance of the fish, this may explain why the growth of sea bass fish decreased as the Chitosan and Mos mixture concentration increased in the sea bass diet in this study. But, Chitosan and Mos mixture may showed synergistic effects on enhancing the digestion and absorption of nutrients at lower levels in comparison to the results of the experiment 1 and 2 where Chitosan and Mos when used separately produced better growth rate, the nonspecific responses and reduced mortality than the combined mixture of Mos and Chitosan. A number of studies have been conducted, Mos could improve growth of European sea bass (*D. labrax*) (Iji *et al.*, 2001; Torrecillas *et al.*, 2007), European catfish (*Silurus glanis*) (Bogut *et al.*, 2006), rainbow trout (Staykov *et al.*, 2005), tilapia fry (Samrongpan *et al.*, 2008), freshwater crayfish (*Cherax destructor*) (Sang *et al.*, 2011) and European lobster (*Homarus gammarus*) (Daniels *et al.*, 2010). Green tiger prawn (*Penaeus semisulcatus*) (Genc *et al.*, 2007), Pacific white shrimp (*Litopenaeus vannamei*) (Zhang *et al.*, 2012), tropic spiny lobster (*Panulirus ornatus*) (Sang and Fotedar, 2010) and rainbow trout (*O. mykiss*) (Staykov *et al.*, 2007). Additionally, it was found that dietary Mos (4 g kg⁻¹ Mos) enhances European sea bass (*Dicentrarchus labrax*) posterior gut epithelial defense by increasing membrane lipids content, promoting posterior gut health status and produce a higher feed intake (Torrecillas *et al.*, 2013). In addition to, the dietary Mos could improve the survival and decrease the mortality of marron (*Cherax tenuimanus*) (Sang *et al.*, 2009), European catfish (*Silurus glanis*) (Bogut *et al.*, 2006) and European lobster (*Homarus gammarus*) (Daniels *et al.*, 2010) and rainbow trout (*O. mykiss*) (Staykov *et al.*, 2007).

Intestinal microvilli provide a vast absorptive surface area, the increase in microvilli length and/or density can increase nutrient absorptive ability (Daniels *et al.*, 2010). In the present study, that dietary Mos could significantly increase intestinal microvilli length of sea bass (*D. labrax*), which suggested that dietary Mos could improve its nutrient absorptive ability. These results are similar to other studies of European lobster (*Homarus gammarus*) (Daniels *et al.*, 2010), gilthead sea bream (*Sparus aurata*) (Dimitroglou *et al.*, 2010), rainbow trout (*Oncorhynchus mykiss*) (Dimitroglou *et*

al., 2009) and cobia larvae (*Rachycentron canadum*) (Salze *et al.*, 2008). Those studies shown that the application of Mos in diets has promoted the health of epithelium as well as the micro villi of the gut indicated by a more complicated architectural gut structure with longer villi, and hence a large surface area for nutrient absorption.

A number of studies have been conducted on effective utilization of Chitosan as an animal feed supplement. (Kono *et al.*, 1987) studied the effect of chitin, Chitosan and cellulose as supplemental diet on the growth of cultured red sea bream, Japanese eel, and yellow tail. The growth rate of the three fishes fed with a 10% chitin supplement was the highest, Feed efficiency in the red sea bream and Japanese eel fed a 10% chitin supplemented diet was also the highest. a Chitosan coated diet was also found to enhance the growth of the olive flounder (*Paralichthys olivaceus*) (Cha *et al.*, 2008). The inclusion of Chitosan at a level of 2% in the diet of fish enhanced the non-specific immunity, reduced the fish mortality and enhanced the growth of common carp (*Cyprinus carpio*) under stress conditions (Maqsood *et al.*, 2010). (Geng *et al.*, 2011). investigated the effects of various levels of dietary *Bacillus subtilis* and Chitosan on the growth performance, non-specific immunity and protection against *Vibrio harveyi* infection in cobia (*Rachycentron canadum*). He found that the combination of 1.0 g kg⁻¹ *B. subtilis* and 6.0 g kg⁻¹ Chitosan is the best for the growth, innate immunity and disease resistance of cobia with an 8-week oral administration.

In addition to, the adding Chitosan at 0.25 percent into the diet could enhance the hematological parameters and resistance against some environmental stresses in rainbow trout (Meshkini *et al.*, 2012). Chitosan could stimulate the white blood cells function and rainbow

trout immune system. Also, the fish received 0.25% Chitosan in their diet significantly had less mortality rate at hypoxic stress than other groups and the control (Meshkini *et al.*, 2012). (Gopalakannan and Arul, 2006) reported that the addition of 1% Chitosan to the growth of carp (*Cyprinus carpio*) resulted in a significant increase. The incorporation of Chitosan at a level of 2% in the diet of fish enhanced the non-specific immunity, reduced carp (*Cyprinus carpio*) mortality and enhanced the growth of fish under stress conditions (Maqsood *et al.*, 2010). (Niu *et al.*, 2011) stated that moderate Chitosan was benefit to the growth and survival of (*Litopenaeus vannamei*) and the optimum supplement of dietary Chitosan level should be between 2.13 and 2.67 g/kg⁻¹ diet.

To the author's knowledge no studies on Mos and Chitosan combination were carried out to support these findings. But in general, a combination of different carbohydrates showed synergistic effects on intestinal Ca absorption and balance in rats. The complexity and the variety of these later components may allow maintenance of high fermentation activity throughout the large intestine, which can increase their beneficial effects on mineral absorption (Younes *et al.*, 2001). In addition to, the combination of two different dietary fibers may result in a synergistic prebiotic effect, and may confer greater health benefits to the host throughout the entire colon (Rodríguez-Cabezas *et al.*, 2010).

CONCLUSION

In conclusion, Chitosan and Mos mixture diets could enhance the growth performance, Non-specific responses and reduce mortality in sea bass, higher than separated Chitosan and Mos diets due to synergistic effects of both compounds.

Table (1): Composition of a diet similar to a high quality commercial sea bass diet and experimental diets supplemented with various percentage of mixture of Chitosan and Mos feed to fry

Ingredients (%)	Diets					
	1	2	3	4	5	6
Fish meal (C.P.70%)	50.0	50.0	50.0	50.0	50.0	50.0
Soybean meal (C.P.44%)	19.0	19.0	19.0	19.0	19.0	19.0
Yellow corn meal	7.0	7.0	7.0	7.0	7.0	7.0
Rice bran	11.7	11.7	11.7	11.7	11.7	11.7
Fish oil	3.0	3.0	3.0	3.0	3.0	3.0
Sunflower oil	3.0	3.0	3.0	3.0	3.0	3.0
Vit. & Min premix ¹	2.0	2.0	2.0	2.0	2.0	2.0
Calcium diphosphate	1.0	1.0	1.0	1.0	1.0	1.0
Molasses ²	2.0	2.0	2.0	2.0	2.0	2.0
Colin	0.2	0.2	0.2	0.2	0.2	0.2
Vitamin C	0.3	0.3	0.3	0.3	0.3	0.3
Lysine	0.3	0.3	0.3	0.3	0.3	0.3
Methionine	0.3	0.3	0.3	0.3	0.3	0.3
Antitoxins	0.1	0.1	0.1	0.1	0.1	0.1
Enzymes	0.1	0.1	0.1	0.1	0.1	0.1
Mix. Mos & Chi (g/kg)	0.0	0.5	1.0	2.0	3.0	4.0

Proximate analyses (%) ³						
Dry matter	91.9	96.2	94.9	93.7	94.8	94.5
Crude protein	45.1	45.1	45.1	45.1	45.0	45.1
Crude fat	11.2	10.3	10.1	10.1	10.3	10.7
Ash	10.2	10.6	10.4	10.7	10.5	10.0
Crude fiber	3.2	3.3	3.4	3.8	3.8	3.5
NFE ⁴	30.3	30.7	30.9	30.8	30.9	30.8
Gross energy Kcal	484.8	478.1	476.9	476.0	478.3	482.1
N:C ratio (mg cp :kcal)	93.0	94.3	94.6	94.7	94.2	93.6

¹Vitamin and mineral premixed according to Madan, et al. (2009).

²Molasses was used as a binder and attractant according to El-Saidy and Gaber (1998).

³Values represent the mean of three sample replicates.

⁴NFE = 100 - (% protein + % fat + % fiber + % ash).

Table (2): Effects of mixture of Chitosan and Mos 1.on growth performances of Sea bass fed control diet and the experimental diets 2-6

Diets	Average (g/fish)		Gain (g/fish)	ADG (g/fish/day)	SGR (%/day)	RGR (%)	Survival (%)
	Initial	Final					
1		3.05±0.05 ^c	2.84±0.1 ^c	0.037±0.001 ^c	3.55±0.1 ^b	1436.5±112.0 ^b	90.0±5.0 ^b
2		3.38±0.04 ^b	3.16±0.1 ^b	0.042±0.001 ^b	3.70±0.1 ^a	1610.2±72.0 ^a	93.0±2.9 ^b
3		3.68±0.04 ^a	3.46±0.02 ^a	0.046±0.002 ^a	3.80±0.1 ^a	1728.5±105.5 ^a	100.0±0.0 ^a
4		3.59±0.11 ^a	3.36±0.1 ^a	0.045±0.002 ^a	3.68±0.1 ^a	1587.9±122.0 ^a	93.33±2.9 ^b
5		3.4±0.05 ^b	3.19±0.3 ^b	0.043±0.001 ^b	3.71±0.1 ^a	1622.7± 68.8 ^a	86.67±2.9 ^c
6		3.01±0.05 ^c	2.80±0.2 ^c	0.037±0.001 ^c	3.55±0.1 ^b	1433.3± 52.8 ^b	85.0±0.0 ^c
F	0.84	60.16**	56.36**	56.28**	4.65*	4.66*	10.57**
M.S.	0.60156	0.00373	0.00389	0.0000007	0.00627	8546	8.33

¹Values are mean ± standard deviation. Values in the same column with same superscripts are not significantly different. IBW, initial body weight. FBW, final body weight. SGR (% per day), specific growth rate = (ln FBW/ln IBW)/time days /75).

Table (3): Effects of mixture of Chitosan and Mos. on feed utilization of Sea bass fed control diet and the experimental diets 2-6

Diets	Feed intake g/fish	FCR	PER	PPV%	Energy gain (kcal)	Energy utilization
1	6.08±0.017 ^c	2.14±0.10 ^b	1.04±0.05 ^b	19.42±1.15 ^a	4.65±0.05 ^a	15.81±0.64
2	6.65±0.12 ^b	2.11±0.04 ^b	1.06±0.01 ^b	16.50±1.47 ^b	4.69±0.46 ^a	14.76±1.35
3	7.25±0.29 ^a	2.10±0.07 ^b	1.06±0.04 ^b	17.9±0.8 ^a	4.98±0.07 ^a	14.42±0.9
4	7.06±0.09 ^a	2.10±0.05 ^b	1.06±0.02 ^b	16.98±0.07 ^b	4.88±0.19 ^a	14.52±0.29
5	6.36±0.09 ^b	1.98±0.01 ^a	1.12±0.01 ^a	17.82±0.60 ^b	4.53±0.29 ^{ab}	14.93±0.82
6	6.55±0.07 ^b	1.98±0.02 ^a	1.12±0.02 ^a	17.21±0.50 ^b	3.93±0.19 ^b	14.72±0.71
F	51.37**	4.60*	4.91*	3.91*	6.44**	1.05
MS	0.0239	0.00297	0.000761	0.783	0.0648	NS

¹Values are mean ± standard deviation. * = (P≤0.05) ** = (P≤0.01)

Values in the same column with same superscripts are not significantly different.

FCR, feed conversion ratio=dry feed fed/body weight gain. FER=feed efficiency ratio. PER=protein efficiency ratio.

Table (4): Initial and final whole body composition (wet weight basis) of Sea bass fed control diet and 2-6 diets supplemented with Mixture of Mos and Chitosan as feed attractant.

Diets	Dry matter	Crude protein	Crude fat	Ash	Gross energy (kcal)
1	32.31±0.44 ^a	16.20±0.69 ^b	5.91±0.27 ^a	7.10±0.35 ^a	143.85±12.53 ^b
2	28.80±2.51 ^a	16.46±0.20 ^b	6.09±0.7 ^a	7.19±0.87 ^a	139.87±2.84 ^{bc}
3	28.44±0.35 ^a	18.09±0.31 ^a	4.98±0.18 ^d	6.72±0.08 ^a	157.81± 0.78 ^a
4	27.94±0.48 ^b	15.70±0.25 ^c	5.54±0.24 ^b	5.44±0.03 ^d	140.85±0.85 ^b
5	28.77±0.50 ^a	15.56±0.54 ^c	5.28±0.41 ^c	6.24±0.6 ^b	137.67±6.93 ^c
6	28.72±1.21 ^a	14.98±0.54 ^d	5.47±0.41 ^c	5.66±0.13 ^c	135.94±6.93 ^c
F	5.24**	16.54**	4.14*	9.61**	4.28*
MS	1.42	0.210	0.119	0.169	43.7

Means in the same row bearing different superscripts differ significantly at 0.05 levels. Values are means ± SD (N = 3 for whole wet body composition).

The values of initial whole body composition were as follows: dry matter 20.56 ± 0.4, crude protein 10.12 ± 0.1, crude fat 2.2 ± 0.1, ash 3.9 ± 0.01, and gross energy 105.48 ± 1.51 kcal/100 g.

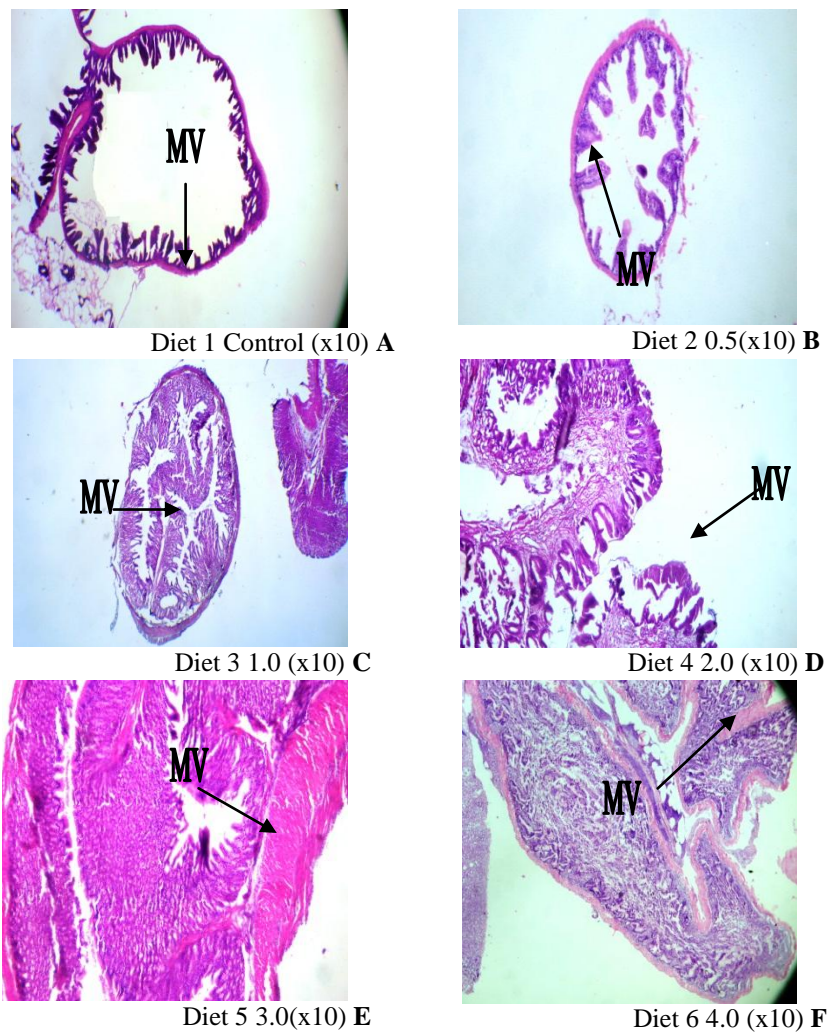


Fig. (1) Light photomicrograph of intestine sections (H&E) sea bass (*Dicentrarchus labrax*) fed on Mos and Chitosan.

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**Hugh Aston Conference Hall
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August 3rd to 5th, 2016

Track Five:
Emerging Trends in Engineering and Technology (ETET)

Bidirectional DC-DC Converter with Outer Loop Voltage Based on Fuzzy PID Control

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ABSTRACT

This paper introduces the Bidirectional DC-DC Converter with Outer Loop Voltage Based on Fuzzy PID Control. Since the traditional PID controller cannot better balance the dynamic and static performance problems, we took Boost converter as an example and proposed a double closed-loop control system with the outer voltage loop based on fuzzy PID control and the inner voltage loop using PI control in view of the fact that in fuzzy control, it is unnecessary to establish the accurate mathematical model of the controlled object. And then we designed a bidirectional DC-DC converter with the outer loop voltage using fuzzy PID control. A Boost simulation model was established in Matlab/Simulink. The contrastive simulation experiments show that compared with the traditional PID control methods, the response speed and the output voltage ripple of the bidirectional DC-DC converter are greatly reduced. It means that the proposed fuzzy PID control on the outer loop voltage can solve the nonlinear problems of the bidirectional DC-DC converter, and represents an emerging trend in physical sciences and applied sciences as well.

KEYWORDS: Bidirectional DC-DC Converter; Fuzzy PID Control; Nonlinearity; Control Performance

INTRODUCTION

In recent years, with the rapid development of new energy technology, bidirectional DC-DC converter has been widely used in the new energy vehicles. bidirectional DC-DC converter is a kind of strongly nonlinear system. How to make the converter system work steadily and fast is a hot research area^[1-3].

With the development of modern control theory, nonlinear control has been widely used in the control of power electronic converters, such as the sliding mode control, feedback linearization, passive control, neural network control and fuzzy control. Literature [4] analyzes the nonlinear characteristics of traditional converter and bidirectional DC-DC converter, puts forward the feedback linearization and high-order sliding mode control to solve the nonlinear problems of bidirectional DC-DC converters and traditional converters. Literature [5] is a nonlinear problem for the bidirectional DC-DC converter, combined with the advantages of sliding mode control and sliding mode variable structure controller, using both switch control method, obtained the good robustness and rapidity.

Although the above methods can better solve the problem of nonlinear system, the structure of controller is too complex, difficult to practice. Based on the advantages of fuzzy control in solving nonlinear problems, the system uses fuzzy PID control voltage outer loop and PI control current inner loop, which

constitutes voltage and current double closed loop control. Voltage loop control keeps the output voltage in a timely manner to track the given value, current loop control can effectively reduce the peak and ripple of the output current, improve the response speed.

TOPOLOGICAL STRUCTURE AND WORKING PRINCIPLE

The topology of the bidirectional DC-DC converter has a lot of kinds, compared with other bidirectional DC-DC converter, bidirectional half-bridge DC-DC converter has small voltage and current stress, and use less number of inductance, so as to reduce the cost and volume. After using the method of multiple technology, it can effectively reduce the input and output current ripple, thereby reduce the design difficulty of inductance. The most important is that the multiple design can achieve a wide voltage output, this is a big advantage for the charging and discharging performance of hybrid electric vehicle^[6-7], so this article using the two phase interleaved bidirectional DC-DC converter to meet the requirements of the hybrid power conversion device. Figure 1 is the topology of the two phase interleaved bidirectional DC-DC converter.

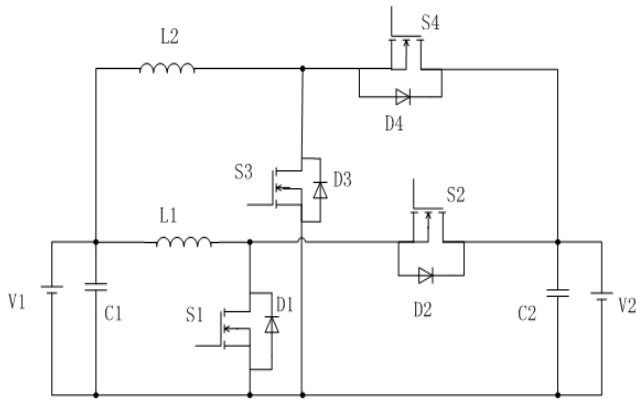


Fig. 1 Topology of the two phase interleaved bidirectional DC-DC converter

When the hybrid electric vehicle starts or accelerates, the two phase interleaved bidirectional DC-DC converter works in Boost mode, the energy flows from V_1 to V_2 , switch tube S_1, S_3 stagger work, switch tube S_2, S_4 does not work, and its reverse parallel diode D_2, D_4 are the fly-wheel diode.

When the hybrid electric vehicle stops or slows down, the two phase interleaved bidirectional DC-DC converter works in Buck mode, the energy flows from V_2 to V_1 , switch tube S_2, S_4 stagger work, switch tube S_1, S_3 does not work, and its reverse parallel diode D_1, D_3 are the fly-wheel diode.

SYSTEM STRUCTURE AND CONTROLLER DESIGN

Control System Structure

The two phase interleaved bidirectional DC-DC converter uses voltage and current double closed loop control structure. According to the deviation between the voltage setting and the output voltage, the voltage controller adjusts the current setting in real time, the current controller controls PWM signal and the output is always followed by a given, stable output voltage and current^[8-9]. In the process of booster, the dc voltage ripple can be reduced effectively, ensure that drive performance; in the process of decompression, the voltage output of the converter is steady, and the effect of the current ripple on the battery charging performance is reduced.

The traditional double closed loop control uses the PI controller to adjust the switch device. However, due to the nonlinear characteristics of the bidirectional DC-DC converter, control often can not reach the expected effect. The voltage outer loop uses fuzzy PID control to modify the parameters of the controller, which can improve the adaptive ability of the nonlinear system. The block diagram of the control structure is shown in figure 2.

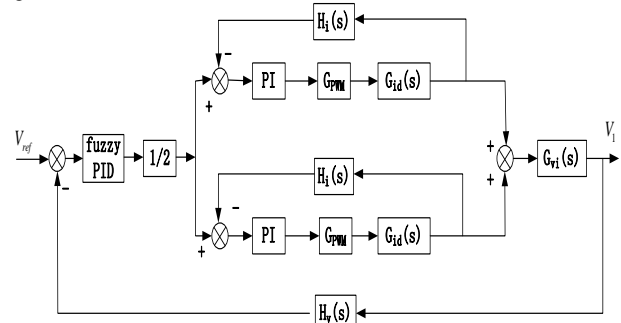


Fig. 2 Control block diagram of the system

A.

Design of Fuzzy PID Controller

Fuzzy PID control is a kind of intelligent control method, using the basic theory and method of fuzzy mathematics, the rules of the condition and operation represented by fuzzy sets, and the fuzzy control rules of the relevant information is stored into the computer knowledge base, then according to the actual situation of the control system, the computer uses fuzzy inference to set of PID control parameters online, so as to achieve the best adjustment of PID parameters^[10]. The input of the fuzzy controller is error e and error change ec , to achieve the purpose of real-time correction K_p, K_i, K_d , make the PID parameter can be adjusted continuously with the change of system structure and the actual situation. Figure 3 is a block diagram of fuzzy PID.

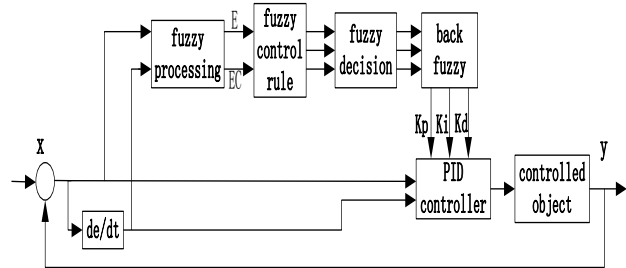


Fig. 3. Block diagram of fuzzy PID

1) Selection of Input and Output Variables

Output voltage deviation and deviation change rate of the bidirectional DC-DC converter is used as the input variable of the fuzzy controller, the parameters of the PID controller K_p, K_i, K_d are modified by the fuzzy controller in real time. The correction formula is as follows:

$$\begin{cases} K_p = K'_p + \Delta K_p \\ K_i = K'_i + \Delta K_i \\ K_d = K'_d + \Delta K_d \end{cases} \quad (1)$$

2) Determination of Fuzzy Rules

The fuzzy subset of fuzzy controller input error e and error change rate ec is: {NB, NM, NS, ZO, PS, PM, PB}, the domain is defined as {-3, -2, -1, 0, 1, 2, 3}; Output variable fuzzy subset of $\Delta K_p, \Delta K_i, \Delta K_d$ are as follows: {NB, NM, NS, ZO, PS, PM, PB}, respectively defined the domain $\Delta K_p = \{-0.3, -0.2, -0.1, 0, 0.1, 0.2, 0.3\}$, $\Delta K_i = \{-0.06, -0.04, -0.02, 0,$

0.02, 0.04, 0.06}, $\Delta K_D = \{-3, -2, -1, 0, 1, 2, 3\}$. In order to facilitate the design, take the input e , ec and the output K_P , K_I , K_D membership functions are based on triangle function^[11]. Fuzzy rule is “if... then...” conditional statement^[12]. The specific fuzzy control rules table is shown in table 1, table 2, table 3.

Tab. 1 fuzzy rule table of ΔK_P

ec e	ΔK_P						
	NB	NM	NS	ZO	PS	PM	PB
NB	PB	PB	PM	PM	PS	PS	ZO
NM	PB	PB	PM	PM	PS	ZO	ZO
NS	PM	PM	PM	PS	ZO	NS	NM
ZO	PM	PS	PS	ZO	NS	NM	NM
PS	PS	PS	ZO	NS	NS	NM	NM
PM	ZO	ZO	NS	NM	NM	NM	NB
PB	ZO	NS	NS	NM	NM	NB	NB

Tab. 2 fuzzy rule table of ΔK_I

ec e	ΔK_I						
	NB	NM	NS	ZO	PS	PM	PB
NB	NB	NB	NB	NM	NM	ZO	ZO
NM	NB	NB	NM	NM	NS	ZO	ZO
NS	NM	NM	NS	NS	ZO	PS	PS
ZO	NM	NS	NS	ZO	PS	PS	PM
PS	NS	NS	ZO	PS	PS	PM	PM
PM	ZO	ZO	PS	PM	PM	PB	PB
PB	ZO	ZO	PS	PM	PB	PB	PB

Tab. 3 fuzzy rule table of ΔK_D

ec e	ΔK_D						
	NB	NM	NS	ZO	PS	PM	PB
NB	PB	PB	PM	PM	PS	PS	ZO
NM	PB	PB	PM	PM	PS	ZO	ZO
NS	PM	PM	PM	PS	ZO	NS	NM
ZO	PM	PS	PS	ZO	NS	NM	NM
PS	PS	PS	ZO	NS	NS	NM	NM
PM	ZO	ZO	NS	NM	NM	NM	NB
PB	ZO	NS	NS	NM	NM	NB	NB

SIMULATION RESULTS ANALYSIS

In order to verify the effectiveness of the controller, the boost model of two phase interleaved bidirectional DC-DC converter is established by using Fuzzytoolbox and

“SimPowerSystems” toolbox in Matlab/simulink. Figure 4 is the Boost model simulation model.

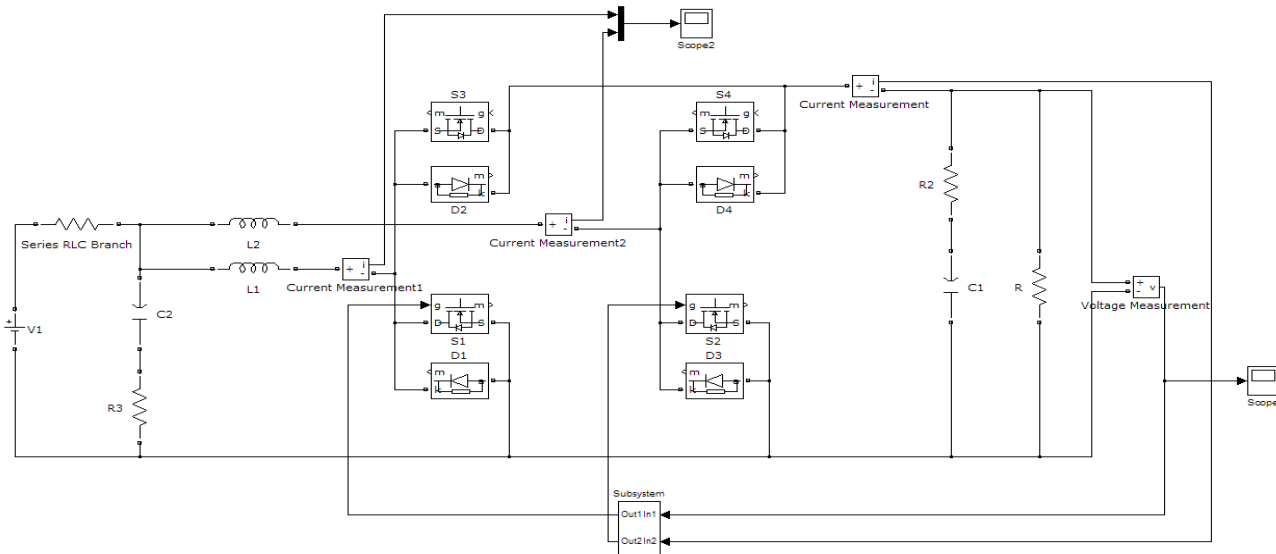


Fig. 4 Boost simulation model

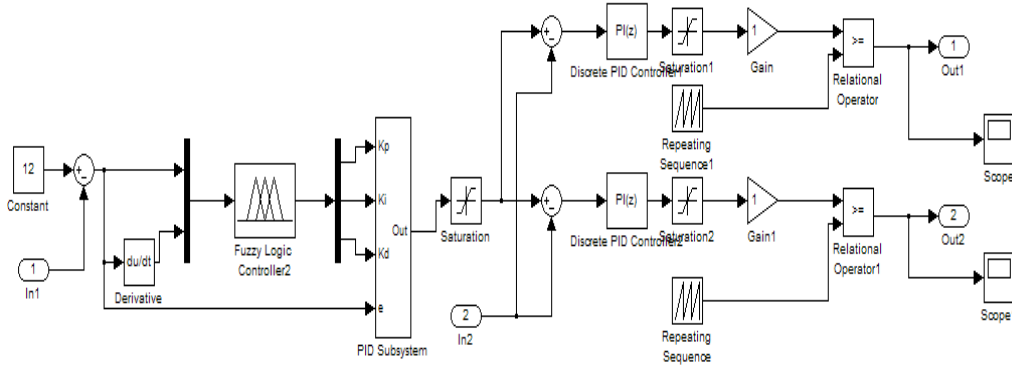


Fig. 5 Control subsystem simulation model

In figure 5, the control subsystem will use a fuzzy PID control voltage loop and two PI control current loop structure. After regulator adjusting voltage outer loop, the output voltage will be the current inner ring of the given value compared with the inductance of the converter current value, so as to control the output voltage pulse.

short time, shows that the fuzzy PID control system has the characteristics of stability and fast dynamic response.

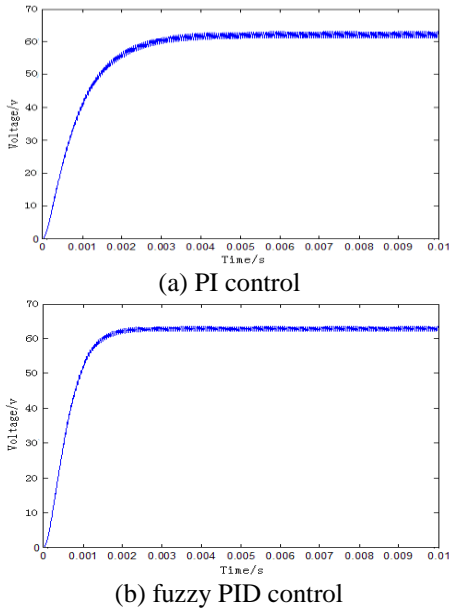


Fig. 6 Voltage output waveform under Boost mode

Figure 6 is the simulation output voltage oscillogram of PI control and fuzzy PID control in Boost mode. It can be seen that the output voltage ripple of the bidirectional DC-DC converter is improved after fuzzy PID compensation, and the output voltage response speed is improved, the steady-state error is negligible.

In order to simulate the case of sudden start and acceleration of hybrid electric vehicle, it can be realized by using the load. $t=0.005s$, suddenly reduce load, used to simulate the vehicle speed running. The simulation results as shown in figure 7, when the system uses fuzzy PID control, the amplitude change of the output voltage is small, and equilibrium is reached within a relatively

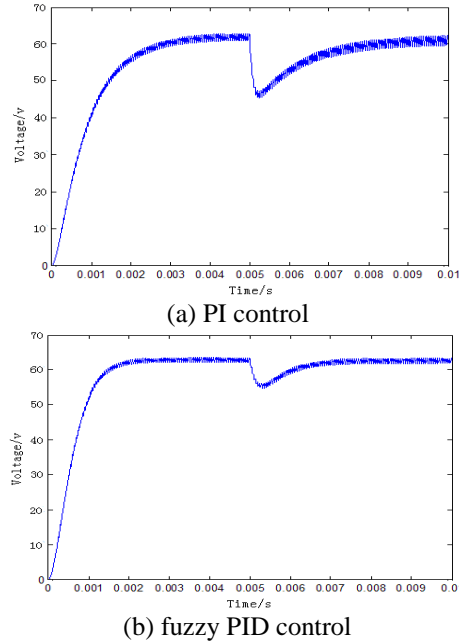


Fig. 7 Output voltage waveform when the load is reduced under Boost mode

CONCLUSION

The paper takes the Boost converter as an example , achieves the design of a fuzzy PID controller, and accomplishes matlab simulation verification experiment. Experimental results shows: outer voltage loop adopts fuzzy PID control have solved the problem of nonlinear system. Compared with the traditional PI control, the fuzzy PID control of the outer voltage loop can effectively improve the response speed of the two phase interleaved bidirectional DC-DC converter, and reduce the output voltage ripple.

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Strategies for Achieving Sustainability in the Nigerian Building Design and Construction Industry

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ABSTRACT

Sustainable development has been in the forefront of debates because of the far reaching effect of climate change on this earth. This is principally due to the activities of industries that pollute the atmosphere and use up non-renewable resources to fuel our growth and development. As a consequence of this, it has become necessary for all major consumers of resources including the building industry to adopt sustainable development measures as a way of prudently using our scarce resources. Nigeria does not have a sustainable development action plan that encapsulates strategies for attaining sustainability in the built environment. This is an attempt at proposing some strategies of achieving sustainable building design and construction focusing on the principles of sustainable design and construction and the technologies for their achievement. These strategies revolve round the five principles of Sustainable Site Design; Water Conservation and Quality; Energy and Environment; Indoor Environmental Quality; and Conservation of Materials and Resources.

KEYWORDS: Sustainability, buildings, climate change, environment, energy.

INTRODUCTION

Climate change is real, it is happening now, affecting us more and will impact us greatly until urgent and holistic interventions are carried out to mitigate as well as to adapt to its disastrous consequences. This is the summary of the much anticipated report from the United Nation's Intergovernmental Panel on Climate Change (IPCC, 2013). This implies that how we live and impact our environment has a direct bearing on the quality of life we live as individuals and societies. This explains the drive towards more energy efficient and sustainable resources, materials and processes in order to preserve our fragile ecosystem in light of the climate change question. The main culprit in this change is attributed to emissions from fossil fuel based industries which has given rise to the greenhouse effect and resulted in a warming of global temperatures and altering the weather pattern all over the world (Mohammed et al, 2011).

One of the consequences of global warming is seen in desertification. Deserts worldwide have grown by over 50% between 1980 and 2000, affecting energy demands for cooling, increasing water consumption to compensate for rising evapotranspiration, and raising morbidity and mortality in regions adjacent to deserts, and even rather far away from them (Meir and Pearlmutter, 2010).

The importance of buildings to our lives cannot be over emphasised because it is estimated that we spend 90% of our time in some form of building; as a home, office, school, leisure centre etc. (Plank, 2005). As a result of this, the building industry is the biggest energy consumer in the society using up about 40% of all energy produced, through the manufacture of building materials like steel and cement, construction of buildings and their eventual demolition. Additionally, almost 60% of the world's electricity is consumed in residential and commercial buildings (Berge, 2009). A breakdown of energy use in tropical buildings is shown in Figure 1. It shows that most of the energy is used in cooling the building in order to achieve a comfortable indoor environment. This suggests, that if passive solar cooling techniques were incorporated in the design and construction of buildings, a substantial quantum of energy would have been saved and used for various other needs like in small and medium scale enterprises industries in order to create jobs in the economy.

Sustainable construction is thus one of the greatest challenges that we face as a planet so as to mitigate some of the detrimental effects of climate change. To this end, sustainable development principles in the built environment are necessary if Nigeria were to realise her goal of reducing the huge housing deficit currently put

at around 16 million houses in a manner that does not negatively impact the environment and result in more carbon emissions in to the atmosphere.

Aim and Significance

This paper focuses on the need for sustainable development through the use of sustainable design and construction strategies in the Nigerian building industry. The significance of this cannot be over emphasised seeing that as signatory to the recent Paris agreement, Nigeria has a commitment to all measures outlined towards climate change adaptation and mitigation as outlined in articles 7 and 4 (COP21,2015). The United Nation Environment Programme (UNEP) has climate change as its top most thematic area. Under climate change mitigation housing and the construction industry in general is given a prominent role; being responsible for a third of all greenhouse gases emissions globally. The strategies outlined in this paper is aimed at achieving that central objective of mitigating climate change throughout the construction process. Sustainable or Green construction can also have a positive effect on productivity, public health, and even employment: according to estimates, every US \$ 1 million invested could give rise to ten to fourteen jobs (UNEP, 2016).

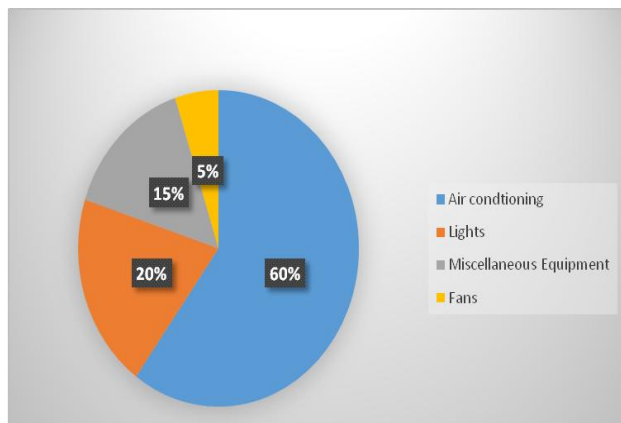


Figure 1- Breakup of energy use in Buildings, Adapted from (CII, 2005)

Sustainability/Green Buildings

Sustainability is defined as the ability of a development to meet the needs of the present without compromising the ability of future generations to meet theirs (Institution of Structural Engineers, 1999).

A green building is one whose construction and lifetime of operation assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources. The optimum design solution is one that is effectively in tune with all of the natural systems and conditions of the

pre-developed site after the completion of construction(GGGC, 2014).

Sustainable construction is an integration of the building materials and construction methods to promote and benefit social and environmental quality and economic vitality throughout all stages of the building life cycle. Sustainable construction merges sound environmentally responsible practices into one discipline that looks at the environmental, economic and social effects of a building or building project as a whole (Grabar and Dailey, 2003).

Statement of the Problem

Architectural Design

Sustainability is not currently taken into consideration in the design of buildings in Nigeria. As a result no effort is made to incorporate aspects of the environment or climate that could enhance the design of the buildings in a sustainable way. For example most buildings do not have shading devices and other passive solar cooling considerations in order to naturally cool the building interior for human comfort in Nigeria's tropical climate.

Building Materials

The most widely used walling material are hollow sand-cement blocks. Because the walls are hollow they have a low heat mass consequently resulting in a higher heat transmittance. This makes the buildings unbearable hot during most of the year in the northern part of the country.

Furthermore, the roofing materials and design do not take the climate and environment into consideration. The roofing materials of choice are long span aluminium and galvanized iron roofing sheets. Both of these materials are very good conductors of heat, thus resulting in a considerable built of heat in the roofing space. Also, because there are no vents and outlets for the heat to be expelled from the roofing space, the heat absorbed can only be dissipated downwards to the living areas of the building thus creating a very uncomfortable indoor environment.

Policy

There is a lack of clear policy for encouraging sustainable building design and construction practice in Nigeria presently. This is corroborated by findings of (Dahiru et al, 2012) that the National building code of 2006 does not sufficiently address the issue of sustainability.

Strategies of Sustainable Design

For sustainable development, the design, specification, supervision and management of buildings and the building process must make efficient use of resources

and ecological processes. This is good practice common to most engineers who follow the basic laws of engineering to minimise waste of resources. All decisions need to be taken to ensure the development attains a plateau with a reasonable level of sustainability (Institution of Structural Engineers, 1999).

The five major elements of green building design are: Sustainable Site Design; Water Conservation and Quality; Energy and Environment; Indoor Environmental Quality; and Conservation of Materials and Resources. This information supports the use of the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System, but focuses on principles and strategies rather than specific solutions or technologies, which are oftensite specific and will vary from project to project. (GGGC, 2014)

The strategies outlined here are principally the purview of the building professionals; architects, engineers and builders. The role of government and other stakeholders are not discussed here.

Sustainable Site Design

Principles:

This is achievable through minimizing urban sprawl and needless destruction of valuable land and habitat, which are the usual consequences from inefficient low-density development. Encourage higher density urban development, urban re-development and urban renewal, and brownfield development as a means to preserve valuable green space.

Preserve key environmental assets through careful examination of each site. Engage in a design and construction process that minimizes site disturbance and which values, preserves and actually restores or regenerates valuable habitat, green space and associated eco-systems that are vital to sustaining life.

Strategies:

- a) Make more efficient use of space in existing occupied buildings, renovate and re-use existing vacant buildings, sites, and associated infrastructure and consider re-development of brownfield sites.
- b) Nigeria's cities and towns should be well planned to include valuable green spaces in the form of greened play grounds, parks, etc. in all neighbourhoods. This green landscape not only helps in keeping the environment beautiful it also acts as a carbon sink by absorbing Co₂ from the atmosphere. (CABE, 2005)
- c) When new development is inevitable, avoid sites that are important in the local or regional ecosystem. Identify and protect valuable greenfield and wetland sites from development.

- d) Recognize that allowing higher density development in urban areas helps to preserve green space and reduce urban sprawl.
- e) Evaluate each site in terms of the location and orientation of buildings and improvements in order to optimize the use of passive solar energy, natural daylighting, and natural breezes and ventilation.
- f) Help reduce the urban heat island effect by reducing the building and site development footprint, maximizing the use of pervious surfaces, and using light coloured roofs, paving, and walkways. Provide natural shading of buildings and paved areas with trees and other landscape features (RCAC, 2009).
- g) Minimize the boundaries of the construction area.
- h) Use landscape design to preserve and restore the region's natural habitat and heritage while emphasizing the use of indigenous, hardy, drought resistant trees, shrubs, and plants (GGGC, 2014).

Water Conservation

Principles:

Preserve the existing natural water cycle and design site and building improvements such that they closely follow the site's natural "pre-development" hydrological systems. Emphasis should be placed on retention of storm water and on-site infiltration and ground water recharge using methods that closely follow natural systems. Minimize the unnecessary and inefficient use of potable water on the site while maximizing the recycling and reuse of water, including harvested rainwater, storm water, and grey water.

Strategies:

- a) Site and storm water management design should use the existing natural flows and features of the land, instead of designing the building and site improvements with total disregard for the site, which results in needless, extensive, disruptive, costly and time consuming excavation and earthmoving.
- b) Conduct a thorough site assessment and strategically locate buildings and site improvements so as to preserve key natural hydrological features. Preserve existing forest and mature vegetation that play a vital role in the natural water cycle by absorbing and discharging up to 30% of a site's rainwater through evapotranspiration.
- c) Minimize the building's footprint, site improvements and construction area, and minimize excavation, soil disturbance and compaction of existing topsoil as this soil in its natural uncompacted state serves a vital role in absorbing and storing up to 80% of natural rainfall

- until it can be absorbed by vegetation or enter the site's natural sub-surface ground water system.
- d) Design and locate buildings and site improvements to optimize use of low-impact storm water technologies such as bio-retention, rain gardens, open grassy swales, pervious bituminous paving, pervious concrete paving and walkways, constructed wetlands, living/vegetated roofs, and other technologies that support on-site retention and ground water recharge or evapotranspiration.
 - e) Implement a design that minimizes the use of potable water by using low-flow plumbing fixtures and toilets and waterless urinals. Harvest, process and recycle rainwater, site storm water, and building grey water and identify appropriate uses within the building and site.
 - f) Conserve water and preserve site and ground water quality by using only indigenous, drought resistant and hardy trees, shrubs, plants and turf that require no irrigation, fertilizers, pesticides or herbicides. (PTI, 1996)
- e) plumbing equipment, chillers, and water heaters, etc.
 - e) Optimize the use of natural ventilation and where practical use evaporative cooling, solar regenerated desiccant dehumidification or absorption cooling. Identify and use sources of waste energy.
 - f) Use Energy Star certified energy efficient appliances, office equipment, lighting and HVAC systems.
 - g) Consider on-site small-scale wind, solar, and/or fuel cell based energy generation and co-generation (Smith, 2003).

Energy and Environment

Principles:

Minimize adverse impacts on the environment (air, water, land, natural resources) through optimized building siting, optimized building design, material selection, and aggressive use of energy conservation measures. Maximize the use of renewable energy and other low impact energy sources.

Strategies:

- a) Optimize passive solar orientation, building massing and use of external shading devices such that the design of the building minimizes undesirable solar gains during the summer months.
- b) Optimize building orientation, massing, shape, design, and interior colours and finishes in order to maximize the use of controlled natural day lighting which significantly reduces artificial lighting energy use thereby reducing the buildings internal cooling load and energy use.
- c) Use high performance low-e glazing, which can result in significant year round energy savings. Consider insulated double glazing, triple glazing or double pane glazing with a suspended low-e film. Selective coatings offer optimal light transmittance while providing minimal solar gain and minimal heat transmission.
- d) Use state-of-the art, high efficiency, heating, ventilation and air conditioning (HVAC) and

Indoor Environmental Quality

Principles:

Provide a healthy, comfortable and productive indoor environment for building occupants and visitors. Provide a building design, which affords the best possible conditions in terms of indoor air quality, ventilation, thermal comfort, access to natural ventilation and daylighting, and effective control of the acoustical environment.

Strategies:

- a) Use building materials, adhesives, sealants, finishes and furnishings which do not contain, harbour, generate or release any particulate or gaseous contaminants including volatile organic compounds.
- b) Maximize the use of natural daylighting. Optimize solar orientation and design the building to maximize penetration of natural daylight into interior spaces.
- c) Maximize the use of operable windows and natural ventilation. Provide dedicated engineered ventilation systems that operate independently of the buildings heating and cooling system.
- d) Design building envelope and environmental systems that not only treat air temperature and provide adequate ventilation, but which respect all of the environmental conditions which affect human thermal comfort and health. This include a well-ventilated overhanging sloping roof, well shaded openings and windows, using trees to provide shade, etc.

Materials and Resources

Principles:

Minimize the use of non-renewable construction materials and other resources such as energy and water through efficient engineering, design, planning and construction and effective recycling of construction debris. Maximize the use of recycled content materials, modern resource efficient engineered materials, and

resourceefficient composite type structural systems wherever possible. Maximize the use of re-usable, renewable, sustainably managed, bio-based materials. Remember that human creativity and our abundant labour force is perhaps our most valuable renewable resource. The best solution is not necessarily the one that requires the least amount of physical work.

Strategies:

- a) Optimize the use of engineered materials which make use of proven engineering principles such as engineered trusses, composite materials and structural systems that have been proven to provide high strength and durability with the least amount of material.
- b) Encourage use of timber, bamboo, straw bale, and other earth based construction that have proven low carbon imprint in order to have buildings with low embodied energy and reduced carbon emissions.
- c) Identify ways to reduce the amount of materials used and reduce the amount of waste generated through the implementation of a construction waste reduction plan. Adopt a policy of “waste equals food” whereby 75% or more of all construction waste is separated for recycling and used as feedstock for some future product rather than being landfilled.
- d) Identify ways to use high-recycled content materials in the building structure and finishes. Consider everything from blended concrete using fly ash, slag, recycled concrete aggregate, or other admixtures to recycled content materials such as structural steel, ceiling and floor tiles, carpeting, carpet padding, sheathing, and gypsum wallboard.
- e) Explore the use of bio-based materials and finishes such as various types of agriboard (sheathing and insulation board made from agricultural waste and byproducts, including straw, wheat, barley, soy, sunflower shells, peanut shells, and other materials).
- f) Evaluate all products and systems used for their ability to be recycled when they reach the end of their useful life. Preference should be given to products and systems that facilitate easy, non-energy intensive separation and recycling with minimal contamination by foreign debris.
- g) Recognize that transportation becomes part of a product or building materials embodied energy. Where practical, specify and use locally harvested, mined and manufactured materials and products to support the regional economy and to reduce transportation, energy use and emissions.

Example of Green Buildings in Nigeria

One of the best examples of green building in Nigeria is a commercial building located in Ikoyi, Lagos. Comprising 15,736 sq m of office space over eight floors, the large floor plates offer great flexibility and efficiency to the modern occupier and are fitted to internationally recognised Grade A standards, available from 450 sq m to 2,000 sq m. They are serviced by a double-height reception, meeting and dining area on the ground floor and over 350 private car parking spaces. It holds the distinction of the first commercial building in Lagos and possibly the whole of Nigeria to achieve LEED certification in both design and construction (Actis group, 2016).

Some of its prominent green credentials are:

- a) Water is recycled throughout: from rain water harvesting to water re-use in the irrigation of the gardens, condensate recovery from the building’s cooling units and accurate control systems in the bathroom facilities to reduce wastage
- b) Automatic presence detectors and high-efficiency lighting reduce and resupply energy when and where it is needed
- c) The building’s orientation maximises natural light and ventilation, and minimises solar exposure, reducing the energy requirements for cooling, heating and air quality systems
- d) High efficiency glazing and external thermal envelope also reduce demand on cooling requirements.

The green features of this building which correspond to the strategies that have been outlined, show that if there is the will for change, the Nigerian building industry can by themselves be the main drivers for a shift towards sustainable building design and construction.

CONCLUSION

The foregoing has illustrated the perilous climate emergency facing us all and the need for concerted efforts aimed at mitigating its effects. The particular case of the building industry is quite challenging because of the need to provide shelter to a rapidly increasing population and also to limit its environmental impact in order to preserve our fragile ecosystem.

The proven strategies discussed provides an opportunity for meeting the goal of rapid development while ensuring sustainability in building design and construction. This is the surest way of providing buildings that are in tune with the environment and fit for purpose and the future. The government and other stakeholders in the industry must be the main drivers of these efforts if this vision is to be realised. This has

already started with the construction of the first commercially certified LEED building in Nigeria, but more needs to be done if Nigeria was to achieve the mitigation of the impact of climate change through sustainable construction methods and materials.



Figure 2 – The Heritage Place in Ikoyi Lagos (Actis Group, 2016)

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ASSESSING THE SAFETY USE OF TOWER CRANES ON CONSTRUCTION SITES IN CENTRAL REGION OF GHANA

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ABSTRACT

Safe use of plants, equipment and moving machineries on construction sites are complex and delicate and these are determined by the immense number of brands and types of moving equipment options. Continuously Ghanaian operators get injured and even killed in plant associated accident in the construction industry. This is due to lack of occupational health and safety education to both the employer and their operatives. The construction industry is faced with problems of cost reduction, as accidents add to the cost of the construction, thereby reducing profit margins. The aim of this study is to investigate the safe use of plants on construction site. The objectives are to identify the causes of plant accidents on construction sites and to determine the level of enforcement of safety laws and rules. The study was conducted on finding out the problems associated with the safety of operators on construction sites in some selected sites in Central Region of Ghana. Convenient sampling technique method was used to select three DIKI construction companies and fifteen (15) operatives and three health and safety officers were selected. The research instrument that was used includes questionnaires, personal interviews and observations. The data was analyzed using the descriptive statistics that comprises mean and tables. The findings revealed that respondents with a mean score of 3.5 confirmed that competent persons are used to carry out the erection, dismantling and height alternation of tower cranes. However inadequate training and fatigue of operators are one of the main reasons causing unsafe practices of tower crane operations.

KEYWORDS: Safety; Tower; Cranes; Construction; Sites

INTRODUCTION

Haslam et al (2005) alluded that over 70 percent of industrial and construction site accidents are due to unsafe acts by operators of the machineries at those sites. Construction works are mostly dangerous and risky thus making safety and health care issues very important, (Tam, et al., 2004). Due to the fact that accident rates in construction are high when compared to other industries, the construction and projects managers need to be fully prepared to deal with accidents when they occur. Accident statistics represent not only terrible human tragedies but also substantial economic lost. This is because accidents cause damage to plant equipment and the loss of productive work time until the normal site working rhythm and morale are restored. Accidents can also cause work disruption and reduce the work rate drastically (Enshassi et al., 2007).

The major causes of accidents are related to the unique nature of the industry, human behavior, difficult work site conditions, and poor safety management, which result in unsafe work methods, equipment and procedures. Emphasis needs to be placed on training

and the utilization of comprehensive safety programs (Farooqui, 2008).

Plants, materials and manpower are the core resources on which all operations in the construction industry are successfully executed. This gives the indication that the absence of one part shall cause problems such as delay in operation, poor work amongst others. Plants usage therefore is of great benefit to the execution of every construction process. Transportation plants such as; cranes, chutes, vans, lorries, hoists and fork lifts have sped up construction works over the years by transporting materials from one place to the other in various directions. Excavation plants such as: bulldozers, skimmers, face shovels amongst others have provided builders the speed they needed to execute works in the shortest possible time.

Problem Statement

Andoh (2013) reported that a man in his 30s died on the spot when a crane he and others were operating collapsed, at La, in Accra. The heavy weight lifting device mutilated the body of the operator, who was

standing beneath the device when it collapsed. The other worker who survived the accident has been left traumatized. The crane, used in the construction of high rise buildings was being worked on when the accident occurred.

In 2002 two overhead cranes crashed on the ground killing an operator instantly. According to sources the two cranes were performing the normal lifting of heavy iron when they crashed to the ground (Peace Fm, 2002).

According to Joanne, (2011), work at height accounts for about 50 to 60 deaths more than any other workplace activity and 4000 injuries are recorded each year. This is being addressed by the introduction of the work at Height Regulation (WAHR) which applies to all operations carried out at height, and not only construction work, but to others too such as window cleaning and changing street light lamps.

Aim

The aim of this study is to investigate into the safety of cranes and their operators on construction sites.

Objectives of the Study

1. To identify the causes of crane-associated accidents on site.
2. To recommend the safety measures to be put in place to ensure crane accident-free policy.

LITERATURE REVIEW

Tower-crane work constitutes a critical component in the range of elements that make the work environment of construction sites essentially hazardous (Shepherd et al. 2000; Neitzel et al. 2001).

The use of tower cranes, however, have their own safety problems as well; with the large-area work envelopes of tower cranes that commonly cover the entire site and the crane that often oversails beyond site boundaries, these safety problems have a major bearing on the overall work safety on site.

Operator

A crane operator is someone who uses the crane to transport various objects. There are many different types, makes, models and sizes of cranes, such as mobile cranes, tower cranes, boom trucks and self-erect tower cranes. Mobile cranes are used to do work a boom truck can't do – higher lifts, heavier loads, and lifts that need a longer reach. Ilo, (1992)

Ilo, (1992) outlined the following duties of crane operators:

- Control equipment with levers, wheels, or foot pedals

- Move material according to a plan or schedule they receive from their superiors
- Set up and inspect material moving equipment
- Make minor repairs to their equipment
- Record the materials they have moved and where they moved them from and to

In warehouse environments, most crane operators use forklifts and conveyor belts. Automated sensors and tags are increasingly used to keep track of merchandise, allowing operators to work faster. In warehouses, operators usually work closely with hand material movers.

Many crane operators work for underground and surface mining companies as well. They help to dig or expose the mine, remove the earth and rock, and extract the ore and other mined materials. In construction, crane operators remove earth to clear space for buildings. Some work on a building site for the entire length of the construction project. For example, operators often help to construct high-rise buildings by transporting materials to workers far above ground level. (Sokanu, 2016)

Slinger Signaller

The job of a slinger signaller is one of the most important jobs on a building site. It requires skill, diligence, and concentration, working alongside the lifting teams to provide safe direction and supervision to the crane operators.

The slinger signaller normally acts as the eyes and ears of the crane operator, who is likely to have an obstructed view of their surroundings. This obstructed view increases the risks involved with loading, lifting and generally operating the crane and so they need the slinger signaller to communicate via a series of hand signals to assist with maneuvers.

Their main responsibility is to ensure the safety of the operators, and any other workers or site visitors that could be at risk.

The standard hand signals used by slinger signallers are detailed in the Health and Safety Signs and Signals Regulations 1996, L64.

They must be:

- Precise
- Clear
- Easy to make
- Easy to understand

In some situations these hand signals are not sufficient to maintain a safe working environment and more

signals will need to be used. If this happens, the signaller must only use signals that have been pre-arranged with the operator (Health Safety Training, 2015).

Factors Affecting Safety in Tower Crane Operations *Negligence or Misjudgment of Participants in Tower Crane Operations*

Most of the fatalities are due to carelessness, such as working too close to energized power lines, improper rigging, or lifting loads exceeding weight capacities of cranes (Shapiro et al., 2000; Beavers et al., 2006).

Inadequate Training

Workers who do not have sufficient training or knowledge about their jobs should not be expected to identify all unsafe conditions surrounding their work (Abdelhamid and Everett, 2000; Shapira and Lyachin, 2009). Lack of safety training and formal education are significant risk factors for accidents (Wong, 1994; Tse, 2005).

Sub-Contracting Practices in Tower Crane Operations

Most construction contractors do not own and operate their tower cranes rather they rent them and operate them by in-house or contracted personnel (Neitzel et al., 2001). According to Tam and Fung (2011) Multi-layered sub-contracting in tower crane operations bring salaries down for crane operators, resulting in chronic long working hours and mobility of crane operators which directly influences construction safety.

Pressure From Deadlines

A tight construction schedule is the most significant factor that hinders the implementation of construction site safety (Mohamed, 2002). Tam and Fung (2011) noted that a job behind schedule can create an atmosphere of tension, tending to force people to work usually faster than normal, thus compromising safety. This gives rise to risks to the cranes, to nearby objects, to the rigging crew and to workers in the vicinity (Shapiro et al., 2000).

General Provisions in Using Tower Crane

According to ILO (1992) some of the general provisions in using tower cranes are stated as follows: The characteristics of the various machines available should be considered against the operating requirements and the surroundings in which the crane will operate before a particular type of crane is selected. Care should be taken in the assessment of wind loads both during operations and out of service. Account should also be

taken of the effects of high structures on wind forces in the vicinity of the crane. The ground on which the tower crane stands should have adequate bearing capacity. Account should be taken of seasonal variations in ground conditions. Bases for tower cranes and tracks for rail-mounted tower cranes should be firm and level. Tower cranes should only operate on gradients within limits specified by the manufacturer. Tower cranes should only be erected at a safe distance from excavations and ditches. Tower cranes should be sited where there is clear space available for erection, operation and dismantling. As far as possible, cranes should be sited so that loads do not have to be handled over occupied premises, over public thoroughfares, other construction works and railways or near power cables. Where two or more tower cranes are sited in positions where their jibs could touch any part of the other crane, there should be direct means of communication between them and a distinct warning system operated from the cab so that one driver may alert the other to impending danger. When the tower crane is left unattended, loads should be removed from the hook, the hook raised, the power switched off and the boom brought to the horizontal. For longer periods or at times when adverse weather conditions are expected, out of service procedures should be followed. The main jib should be slewed to the side of the tower away from the wind, put into free slew and the crane immobilized. Devices should be provided to prevent loads being moved to a point where the corresponding safe working load of the crane would be exceeded. Name boards or other items liable to catch the wind should not be mounted on a tower crane other than in accordance with the manufacturers' instructions.

RESEARCH METHODOLOGY

Convenient sampling technique was used to select five DIKI construction companies and twenty (20) respondents comprising (5) operatives; (5) slinger signalers; (5) health and safety officers and (5) contractors were selected. The research instrument used includes questionnaires, personal interviews and observations. A five-point Likert scale was adopted in the questionnaire. The questionnaires were sent to construction personnel who are handling tower crane related operations, including crane operators, slinger signalers, safety officers and contractors. The data was analyzed using the descriptive statistics that comprises mean and tables.

FINDINGS AND DISCUSSION

Table 1: Reported cases of Accidents of tower cranes from 2002 to 2015

Date	Location	Accident/incident
10/10/2002	Tema Steel Works Factory	Two overhead cranes crashed on the ground killing one operator instantly. According to sources the two cranes were performing the normal lifting of heavy iron when they crashed to the ground
9/10/2013	La, Accra	A man in his 30s died on the spot when a crane he and others were working on collapsed, at La, in Accra. The heavy weight lifting device mutilated the body of the operator, who was standing beneath the device when it collapsed. Another operator who survived the collapse of the crane has been left traumatized.

Table 2: Responsibilities of crane operators and signalers

Item	Factor Or Activity Description	Ratings based on the respondents experience over crane operations					Scores	
		Least Influential ← Most Influential →					Total	Mean
		1	2	3	4	5		
1	You can be easily identify crane operators	0(0)	0 (0)	3 (9)	7 (28)	10 (50)	87	4.35
2	You understand signalers' responsibility	4 (4)	3(6)	4 (12)	4 (16)	5(25)	63	3.15
3	An unobstructed field of vision is provided	2 (2)	2 (4)	3 (9)	8(32)	5(25)	72	3.60
4	You are capable of handling slinging works of tower crane operations, particular to hearing	1(1)	3(6)	9 (27)	5 (20)	2 (10)	64	3.20
5	You are capable of handling slinging works of tower crane operations, particular to eyesight	1 (1)	4 (8)	3 (9)	6(24)	6(30)	72	3.60
6	You are capable to handle slinging works of tower crane operations, particular to reflexes	0(0)	5(10)	4 (12)	6 (24)	5 (25)	71	3.55
7	You are agile to handle lift	3 (3)	4(8)	8(24)	2(8)	3 (15)	58	2.90
8	You have the physique to handle	7 (7)	8 (16)	0(0)	3 (12)	5 (25)	60	3.00
9	You are capable of directing movement of cranes and loads for ensuring safety of personnel and plants	12 (12)	2 (4)	1(3)	3 (12)	2 (10)	41	2.05
10	You fully understand radio/tele-communication signals among crew members	13 (13)	3 (6)	2(6)	2 (8)	0 (0)	33	1.65
11	You are familiar with signals for crane directions	11 (13)	3 (6)	2(6)	2 (8)	2 (10)	43	2.15

Table 2 reveals that most of the respondents were able to identify crane operators, having a mean score of 4.35. The respondents revealed that crane operators often work without a clear and unrestricted view of load carried, point of loading and vicinity of cranes. This highlights a rise in danger of tower crane operations with a mean score of 1.65.

All respondents agreed that they are capable of handling slinging works of tower crane operations on hearing, eyesight and reflexes, and they are agile and have the physical strength to handle lifting works.

Tam and Fung (2011) concluded that An effective communication between crane operators and other personnel is essential for safe crane operations. Failure to implement an effective communication between crane operators and other personnel will lead to unsafe crane operations, and may contribute to injuries to people from dropped loads and collision with other plants and structures. Radio/tele-communication signals and hand signals are the major communication methods between crane operators and other personnel.

Table 3: safety of erection and dismantle of tower cranes.

Item	Factor Or Activity Description	Ratings based on the respondents experience over crane operations					Scores	
		Least Influential ← Most Influential →					Total	Mean
1	2	3	4	5				
1	You fully understand procedures of erecting and dismantling tower cranes and alternating height of tower cranes	0(0)	0 (0)	3 (9)	9 (36)	8 (40)	85	4.25
2	You fully understand manufactures' instructions in erecting and dismantling tower cranes and alternating height of tower cranes	1 (1)	2(2)	4 (12)	5 (20)	7(35)	70	3.50
3	You erect and dismantle tower cranes and alternate height of tower cranes in compliance with manufacturers' instructions in such procedures	6 (6)	4 (8)	2 (6)	3(12)	5(25)	57	2.85
4	You carry out erection, dismantle and height alternation of tower cranes under supervision of a competent person	2(2)	3(6)	4 (12)	5 (20)	6 (30)	70	3.50
5	For the erection, dismantling and height alternation operations, a roped-off area is provided which is clear of other personnel who are not involved	3 (3)	4 (8)	3 (9)	6(24)	4(20)	64	3.20
6	Before the erection, dismantling and height alternation operations, a competent examiner carries out test or examination	2(2)	5(10)	3 (9)	6(24)	4 (20)	65	3.25
7	After the erection, dismantling and height alternation operations, a competent examiner carries out test or examination	3 (3)	4(8)	8(24)	2(8)	3 (15)	58	2.90

Table 3 one observes that a greater number of the respondents having a mean score of 4.25 fully understand procedures of erecting and dismantling tower cranes and alternating height of tower cranes however most of the respondents indicated that the erection and dismantling of tower cranes and alternate height of tower cranes in compliance with manufacturers' instructions in such procedures are not followed giving a mean score of 2.85. Also most of the respondents acknowledge that before the erection, dismantling and height alternation operations, a competent examiner carries out test or examination meanwhile after the erection, dismantling and height alternation operations, a competent examiner do not always carry out test or examination. The respondents indicated that they have not been provided formal training by their employers. They normally exercise their skills via on-job training.

Usually it is common to employ sub-contractors to provide services with operatives and tools for erecting, dismantling and alternating height tower cranes. It is because most main contractors do not have their own tower cranes. They may not have workers who are familiar with the required procedures. The use of sub-contractors for the erection, dismantle and height alternation of tower crane operations may do not also help in the provision of training related to tower crane operations.

The respondents with a mean score of 3.5 noted that competent persons are used to carry out the erection, dismantling and height alternation of tower cranes. Most of the respondents agreed that for the erection, dismantling and height alternation operations, a roped-off area is provided which has been clear of other personnel who are not involved; it had mean score of 3.2.

Table 4: Procedures and precautions for tower crane operations

Item	Factor Or Activity Description	Ratings based on the respondents experience over crane operations					Scores	
		Least Influential		Most Influential			Total	Mean
		1	2	3	4	5		
1	At the beginning of each shift or working day, competent operators or competent persons carry out routine checks	0(0)	2 (4)	5 (15)	6 (24)	7 (35)	78	3.90
2	Apart from routine checks, at least once a week, a full inspection of tower cranes is carried out by competent persons	2 (2)	5(10)	3 (9)	4 (16)	6(30)	67	3.35
3	You fully understand items to be inspected	0 (0)	0 (0)	4 (12)	7(28)	9(45)	85	4.25
4	A check list is used in each routine check and inspection	6(6)	4(8)	3 (9)	4 (16)	3 (15)	54	2.70

Procedures and Precautions for Tower Crane Operations

From table 4: a greater number of the respondents with a mean score of 3.90 noted that at the beginning of each shift or working day, competent operators or competent persons carry out routine checks, however a check list is not used in each routine check and inspection this had a mean score of 2.70. Tam and Fung (2011) admitted that preventive maintenance can effectively eliminate accidents caused by defective parts of tower cranes. Routine checks and thorough inspection are precedent to preventive maintenance. Therefore, inspection is one of the key precautions to prevent tower crane accidents. However, sometimes, tower cranes are rush to move to another sites, some tower crane providers or owners may omit checking and maintenance of tower cranes. According to the respondents , tower crane components, such as slings, hooks and masts have been periodically checked and tested by competent examiners.

CONCLUSION

The firms the researcher visited do organize, train and educate their operatives on health and safety programs, but the operatives do not put in to practice the knowledge acquired from the health and safety programs organized for them. The firms have safety officers to educate operatives on the risk involved in their work and also to show commitment to the implementation of the safety but the officers are not punctual. The firms were not linked to any medical personnel, clinic or hospital in case of injuries sustained.

Blind lift is the major cause for crane-associated accidents followed by obstacles and congested site, power lines, cab ergonomics, sight distance and angel, and overlapping cranes. Almost all the crane operators get so excited when performing lifting's, they therefore lift before considering the exact location in most cases

hence exposing both the operators and the employees in the area of operation to safety hazards and probable crane associated accidents on the sites. The measure put in place in order to maintain and improve the safety of cranes operator is to implement Safety policies. But though the firms have safety policies, they were not effective.

RECOMMENDATION

These recommendations are based on the findings and conclusion drawn in the study.

The firms should make sure they organize, train and educate operators the need to execute their task ensuring accident free activity. The training for different duties in tower crane operations should be strengthened, particular in rigging operations as well as erecting, dismantling, climbing and alternating height of tower cranes. In addition, training for new entrants in the field should be strengthened. The firms should put measures in place in other to ensure the operators of the crane carry out lifting's as required of them as professionals. The firms should make it a point that their policies are implemented and working effectively, and also the entire operatives on the site are aware with the safety policies of the firms and it should be written in a clear and simple language so that it is easily understood.

It can consider expanding certification mechanism from crane operators to other relevant parties in tower crane operations, such as erectors, signalers, foremen and coordinators.

Proper checks, inspections and examination of tower crane should be carried out by a recognize company mandated in ensuring standard. The companies should make sure they provide enough safety equipment's to the employees and also set a site safety committee to make adequate supervision on the employees in

wearing and using the safety equipment when it is due to be used for works.

It is well known fact that, the promotion of safety in the construction industry plays a vital role in providing a guide to employers and the government as well.

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**Hugh Aston Conference Hall
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August 3rd to 5th, 2016

Track Seven:
Emerging Trends Humanities and Social Sciences (ETHSS)

FAMILY STRUCTURE AND MEMBERSHIP IN RELATION TO EMERGING TREND IN CHILDREN'S WELL-BEING IN A COMMUNITY IN NIGERIA

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ABSTRACT

The study investigated the influence of family structure and membership on the emerging trend in children's well-being, in terms of feeding, education, clothing, health, rest, freedom and recreational facilities. A sample of 1550 school children made up of 763 males and 787 females randomly selected from 23 schools were involved. The instrument was a questionnaire, with section A containing demographic information of the children and section B containing 24 items where pupils rated the extent to which they enjoy parental provision of the well-being items on a scale of five points. Pupils rated that they were 68.9% well-fed; 67.1% well-clothed; 68.5% health cared for; 66.4% educationally provided for and 63.9% recreationally opportune. There is a significant difference between children living with both parents and children not living with parents in their well-being. There is also a significant difference between the well-being of children whose fathers live with their mothers and those whose fathers do not live with their mothers. Children from large size home do not enjoy well-being as children from small size homes. Accordingly, parents should be concerned with the well-being of their children in their actions and inactions. Equally, large size family in terms of number of children should be discouraged progressively through public education that may take both formal and informal approaches, the later such as mass media, social media and government regulations.

KEYWORDS: Family Structure, Children's Well-Being, Feeding, Clothing, Rest, Recreation

INTRODUCTION

Family structure and membership could have serious impact on children's well-being. To a large extent, children's well-being: feeding, clothing, health, education and recreation, may be determined by home environment (Thomson, Eccles and McLanahan (1994). The family, the basic unit of social life, forms the link between the individual and the society. Akpata (2004) says that the family is the most enduring and permanent of all groups. It is where we derive our identity and fulfill the potentialities for personal growth and development. It is a fundamental social institution which provides for the rearing of children and for meeting other important human needs. The family is generally made of the nuclear and extended systems. Members of the nuclear family are father, mother, brother and sister. The extended family is larger and it includes father, mother, children, grandfather, grandmother, aunt, uncle, cousin, niece and nephew.

African traditional societies have beliefs and values that directly affect family structure and membership, such as acquiring many wives or giving birth to many children or desire to have a son etc. all which definitely affect the growth of population in the family. The birth of a child brings changes in the family – increase in the family member, increased attention, expenses and other responsibilities. As the family population increases, more money is needed to feed the family members. If

the increase in the family is greater than the increase in resources, then many problems such as malnutrition and other diseases are likely to face the family. Also where there are few children in the family, each child may receive more attention than a family where there are many children (Ewelukwa, 2004). Therefore there is a correlation between family membership and the children well-being. Apart from the usual monogamous and polygamous structure of African family system, the practice of putting children in care of grandparents, aunts and brothers is still prevalent. Single parenthood is also becoming more prevalent (Ogundare 2010). Also large size number of children is still much present. These forms of structure impact greatly on children well-being and it is instructive to study in details their impact on children's well-being today.

Fundamental to child well-being is feeding. Food attention plays an important role in the life of the human beings. The body requires food for the various parts so that they can function well. This is because food is any substance, either liquid or solid which can provide the body with substances for growth and repair; heat and energy and the regulation of its functions. These functions are fulfilled by eating foods from the various classes. Akanbi (1987) says the type of foods consumed in a family is somehow determined by its membership. Kadiri (2008) observed that only very few husbands

cope effectively with feeding where there is large number of children from multiple wives.

Another concern is clothing. Clothing covers the nakedness of the individual, keeps him/her warm, comfortable and boosts his/her ego. Clothing therefore, takes quite a large chunk of the family income. Children need clothes for schools, organizations, religious bodies that are identified by their uniforms, which also takes its toll on family resources. In fact, our quality and standard of living are associated with the type of clothing we wear. Thus the poor are poorly dressed while the rich are adorned in rich clothing and apparels. As the family size expands, so do the demands made on clothing. A large family requires more money for clothing than small sized one (Downey, 1995).

Feeding and clothing are associated with health. Appearance can give us some information about a person's health. Health is a state of well-being of the whole body. A person who is in good health is usually lively and happy. He enjoys life. His eyes are clear and alert. He does not worry too much and he sleeps well. He has no diseases and feels no pain or discomfort in his body. As a result he can take full part in the activities in the family. The family in turn is concerned with the health of every individual in the family (Teachman, 2010).

The family also plays a significant role in the development of their children's attitude and behavior to various sports. Certain behaviours and actions of the parent may strongly influence the enjoyment level of their children. Parental involvement is defined by Genn (1999) as the time, energy and money parents invest in their child's sports participation and including aspects such as providing instructional assistance and purchasing equipment. Genn further said that through parents' involvement, they can help create feeling of enjoyment by providing support and encouragement or they can be a source of stress and anxiety by placing excessive pressure on a child.

In respect of family and children's performance in school, Akanbi (1987) in his study of the relationship between types of family structures and student performance in Lagos, Nigeria concluded that a family structure with tension breeds worried children. Similarly, previous studies indicate that most of the adolescent thinking and behaviour are derived from the families and other social groups, which the children belong to. For instance, most nuclear families (monogamous family) are concerned about the scholastic records of their children, attend P.T.A meetings regularly, visit the schools, save for their children's future education at higher levels, provide the

children with learning tools such as adequate text books, uniform, regular school fees payment and in general leaving no stone unturned in an attempt to ensure success for their children in the education venture. Parents of the children in large family (polygamous and extended families inclusive) on the other hand, may put little premium on education and well-fare (Odetola 1983). Many of these parents will at times encourage truancy and be-little education. They want their children to get married quickly or get job in order to be on their own.

Family size is likely to reduce the resources available to each family member and to diminish the attainment these resources can produce. In larger families, parents have fewer resources to invest in each child and each child consequently fares worse both immediately and over time. Research on educational attainment demonstrates that as family size increases, material resources, parental attention and intervention and opportunities are reduced (Blake 1989). There are fewer material resources such as home quality, funds for education, space to study and access to books and newspapers in larger families (Teachman 2010). Children from larger families are also less likely to take dance and music lessons, to travel out of the country or to have other stimulating educational experiences. Non-material resources are similarly diluted in larger families. Parental involvement, encouragement, intervention and opportunities to engage the world are all vital to well-being and these are less available to children in larger families. As a result, people from larger families perform worse in school and attain lower levels of education (Downey 2005).

If the relationship between family size during childhood is largely a result of resource dilution, the effect of family size will be noticeable only when the family has sufficient resources to strain. More precisely, the negative effect of siblings is likely to be evident where financial resources exceed family needs because it is not until this point that resources dilution can take effect. At lower levels of family resources, there are insufficient resources to dilute and the effect of additional siblings will be a strain but is unlikely to reduce adult wealth accumulation noticeably. The effect of family size in childhood on adult wealth is also likely to diminish at high levels of financial resources where additional strains are more easily absorbed financially.

But today family structure is changing (Ogundare 2010, Seogner 2005) arising from: one, fertility change: The reduction in the average annual rate of population growth which is a global phenomenon primarily occurred due to reductions in fertility levels. An inevitable outcome of declining fertility rates and

increasing age at first birth in most of the countries in the world is a reduction in family size. Though much slower in Africa (Freedman 1995). Another factor is in change in age at marriage and age at first birth: In many countries in Asia where significant declines in fertility are being experienced, reductions in the proportion of people married have often coincided with or preceded declines in marital fertility. A substantial increase of the proportions never married among both males and females at young ages, as noted in many countries (Bakar, 1996). A third factor is change in mortality. Mortality declines, particularly infant mortality, everywhere preceded fertility declines. Improved survival rates of children mean that when women reached the age of 30, they increasingly had achieved the completed family size they desired. Earlier, much larger number of births was required to achieve the desired completed family size. The countries in South and Central Asia that have achieved a low level of fertility also have a low level of infant mortality (Downey 2005).

STATEMENT OF PROBLEM

Since many aspects of children's life depend on the family of orientation, the question is: what is the emerging trend in family structure and membership's impact on children's well-being today? Previous studies have looked at individual aspects of children's well-being in isolation, and did not obtain information from the children. This study attempts a wide spectrum of children's well-being, through children expressions.

PURPOSE AND OBJECTIVES

This study investigates the impact of family structure and membership on children's well-being. The objectives of the study are to:

- 1) Examine the extent to which children consider they are being cared for in feeding, clothing, education, health and recreation
- 2) Compare the well-being of children living with their parents and those who are not.
- 3) Compare the well-being of children whose fathers live with their mothers and those who are not.
- 4) Compare the well-being of children based on father's number of children and mother's number of children.

RESEARCH QUESTIONS

- 1 How well is the general well-being of the children in terms of feeding, clothing, education, health and recreation?
- 2 Is there significant difference between children living with parents and those who are not in their general well-being?

- 3 Is there any significant difference between the children whose fathers are living with mothers and those who are not in their general well-being?
- 4 Is there any significant difference in the well-being of children based on fathers' number of children and mother's number of children?

Significance of the Study

The importance of this study lies in providing empirically based instructive information on the close relationships between family structure and children's well-being and the emerging trend observable presently. This information is useful to social workers, community development advisers, NGOs on children's well-being and other relevant social scientists in their callings and contributions to the different aspects of sustainable development.

Method

The research design was descriptive survey of family structure and membership in relation to children's well-being in Ikenne Local Government, Ogun State. The population of this study was all pupils in primaries 4, 5 and 6 Ikenne Remo Local Government. A sample of 1550 pupils was involved from the 23 schools. They were made up of 763 males (42.0%) and 787 females (58.0%). Their aged ranged between 8 to 15 years with mean age of 9.8 years. Between 35 and 42 pupils were chosen from each of the schools on proportionate basis. Nine hundred and seventy-seven were living with their parents while 573 were not. Their other characteristics are shown in table 1.

Table 1: Sample Characteristics

Parameter	Group	N	%
Gender	Male	763	49
	Female	787	51
Children living with parent	No	573	37
	Yes	977	63
Father's Number of wives	1-2	553	36
	3 and above	997	64
Number of mother's children	1 – 4	860	55.6
	5 and above	690	44.4
Number of father's children	1 – 6	864	55.7
	7 and above	686	44.3
Father lives with mother	No	681	44
	Yes	869	56

The instrument was a questionnaire. The questionnaire was divided into two parts. Section A contains general information on the children while section B contains items meant to find out information on family structure and membership in relation to children's well-being. Each child rated the extent to which he/she was

enjoying details of feeding, clothing, health, educational opportunities, recreation, freedom and rest on a scale of five steps (zero to four points). The questionnaire was designed by the researcher and it was validated by two researcher's colleagues. From a trial test with 53 pupils in another local government, Cronbach alpha yielded 0.862.

The researcher was assisted by four undergraduates who visited all the schools involved. After permission had been granted, they administered the questionnaires on

the pupils with the help of the class teachers. One thousand, hundred and fifty copies of the questionnaire were found analyzable. The responses for each item in the questionnaire were graded. The data were analysed with descriptive and inferential statistics.

FINDINGS AND DISCUSSION

Research Question 1: How well is the general well-being of children in terms of feeding, clothing, education, health and recreation?

Table 2: Children's Ratings of their well-being.

Aspects of children's well-being	Mean	SD	Remarks
Health care: mouth, skin, bathing, general wellness	10.96	4.60	Very good
Feeding : breakfast, lunch, supper and in-between meals	10.89	4.58	Very good
Clothing: festivals, school uniform, outing dress and under-wear	10.75	4.87	Good
Education: writing materials, care for regularity, punctuality and performance	10.63	4.49	Good
General comfort: freedom, happiness, sound sleep and rest	10.62	4.64	Good
Recreation: support with materials, encouragements and practice.	10.23	4.38	Good

From table 2 above, the children rated themselves generally above average in feeding, with a mean score of 10.89, out of 16 maximum obtainable points, which amounts to 68.06% in the scale of feeding. However, there are minor variations in the different aspects of feeding. For instance, breakfast is slightly better taken by the children than other means while in-between meal is the least taken by them. Lunch and supper were rated equal in supply to them (68%). The standard deviation of 4.58 suggests a very close agreement among 1550 children. In clothing, children rated availability as in feeding, though a little lower, 10.75 (67.19%). Details show that festival dress was rated highest and underwear was rated least in availability. School uniform and outing dresses tied as being above average (67.3%). The standard deviation of 4.87 also suggests a very close unanimity among 1550 children. In the realm of health care, children rated their health highest, compared with other aspects of children well-being, with a mean score of 10.96 (68.56%). Care of skin, teeth, eye and general wellness were all close to 70% in their ratings. Care of the teeth stood tallest. Children were not very markedly different in their ratings as shown in the standard deviation of 4.60.

In the educational provision, children rated their well-being well above average (66.4%), with a standard deviation of 4.5. In the details of educational provision, the children rated their parent's concern to be regular at school as their first priority, followed by provision of writing materials. However, they indicated that their parents' concerns for punctuality and academic performance come a little below regularity in

school and provision of writing materials. The standard deviation shows that there is unanimity among the children in their ratings of educational provisions. In the realm of recreation, children rated this aspect slightly below the other aspects of well-being, with a mean score of 10.23 which amounts to about 64%. Children indicated that they were more permitted to do sports and games than being provided sports and games materials by their parents. In the same vein as in other aspects of well-being, the children were more united in their ratings than being different. In the aspect of comfort, the mean score is 10.62 which amount to about 66%. The children rated enjoyment of freedom highest in this aspect, about 70%. They also rated enjoyment of sound sleep and happiness high, about 68%. However, they ranked *rest* lowest in the area of general comfort. On the whole, the children ranked the following aspects of well-being in descending order: health, feeding, clothing, education, comfort and recreation.

Research Question 2: Is there any significant difference between children living with their parents and those who are not in their general well-being?

From table 3, there is a significant difference between children living with parents and those who are not in all the aspects of well-being tested. Children living with their parents enjoy better well-being than those who do not live with their parents.

Table 3:t-test analysis of well-being of children living with parents and those who are not.

Well-being	Group	Mean	Std. Dev.	t	df	Sig
Feeding	LWP	13.45	3.95	8.625	1548	0.000
	NLWP	8.18	3.50			
Clothing	LWP	13.42	4.08	8.553	1548	0.000
	NLWP	7.95	3.73			
Health	LWP	13.47	3.90	8.254	1548	0.000
	NLWP	8.32	3.73			
Education	LWP	13.04	3.87	8.054	1548	0.000
	NLWP	8.10	3.62			
Recreation	LWP	12.64	4.00	8.368	1548	0.000
	NLWP	7.68	3.17			
Comfort	LWP	13.32	3.95	9.132	1548	0.000
	NLWP	7.77	3.46			

LWP = Living with Parents; NLWP = Not Living with Parents

Research Question 3: Is there any significant difference in the well-being of children whose fathers live with their mothers and those who are not?

Table 4:t-test analysis of children whose fathers live with their mothers and those who are not.

Well-being	Group	Mean	Std. Dev.	t	df	Sig
Feeding	FLWM	13.45	3.98	7.380	1548	0.000
	FNLWM	8.70	3.87			
Clothing	FLWM	13.38	4.17	7.200	1548	0.000
	FNLWM	8.52	4.06			
Health	FLWM	13.52	3.89	7.318	1548	0.000
	FNLWM	8.78	4.01			
Education	FLWM	12.93	4.11	6.533	1548	0.000
	FNLWM	8.68	3.96			
Recreation	FLWM	12.43	4.11	6.420	1548	0.000
	FNLWM	8.35	3.68			
Comfort	FLWM	13.01	4.08	6.614	1548	0.000
	FNLWM	8.58	4.10			

FLWM = Father Living with Mother, FNLWM = Father Not Living with Mother

From table 4, there is a significant difference between children whose fathers live with their mothers and those who are not in all the aspects of well-being tested. Children whose fathers live with their mothers enjoy better well-being than those who are not.

Research question 4: Is there any significant difference in the well-being of children based on mother's number of children?

Table 5: Children's well-being according to mother's number of children

Well-being	Group	Mean	Std. Dev.	t	df	Sig
Feeding	1 – 4	11.54	3.58	9.56	1548	S
	5 and above	9.81	3.51			
Clothing	1 – 4	12.01	4.03	15.50	1548	S
	5 and above	8.95	3.72			
Health	1 – 4	13.24	4.05	25.69	1548	S
	5 and above	8.22	3.63			
Education	1 – 4	12.14	3.88	15.89	1548	S
	5 and above	9.10	3.63			
Recreation	1 – 4	10.64	4.14	0.20	1548	NS
	5 and above	10.68	8.81			
Comfort	1 – 4	7.80	4.05	27.25	1548	S
	5 and above	13.41	4.01			

From the sample 860 children came from mothers whose number of children is between one and four, while the remaining 690 came from mothers whose number of children are five and above. In the areas of

feeding, clothing, health and education there are significant differences between the well-being of children from small size mother's children and those from large size mother's children. In this respect,

children from small size mother's children enjoy better feeding, clothing, health facilities and education than those from large size mother's children. However the table shows that in the aspect of recreation there is no significant difference between the two groups of children. In the aspect of comfort there is a significant difference between the two groups. But in this respect children from large size mother's children enjoy more comfort than their counterpart from small size.

Research question 5: Is there any significant difference in the well-being of children based on father's number of children?

Table 6: Children's well-being according to father's number of children

Well-being	Group	Mean	Std. Dev.	t	df	Sig
Feeding	1-6	13.01	3.88	25.0	1548	S
	7 and above	8.10	3.81			
Clothing	1-6	10.32	4.17	-1.05	1548	NS
	7 and above	10.54	4.07			
Health	1-6	11.52	3.91	3.11	1548	S
	7 and above	10.88	4.12			
Education	1-6	11.11	4.12	5.48	1548	S
	7 and above	9.98	3.96			
Recreation	1-6	10.43	4.11	0.39	1548	NS
	7 and above	10.35	3.98			
Comfort	1-6	13.11	4.18	23.78	1548	S
	7 and above	8.08	4.10			

From the sample, 864 children came from fathers whose number of children is between one and six, while the remaining 686 came from fathers whose number of children are seven and above. It is revealed from the table that there are significant differences between the two groups in the areas of feeding, health, education and comfort: with children from smaller father's number of children having better advantages than their counterpart. However, there are no significant differences between the two groups in the aspect of clothing and recreation.

DISCUSSION

The findings of this study reveal that children were generally well-fed. Most children take breakfast but not very many of them take in-between meals. Some of the factors that could be responsible for this result include the fact that children wake up from home and participate in the family breakfast, whereas most parents are at work in the afternoon and hardly provide lunch for the children. Another possible reason is that breakfasts are generally fast food like bread and tea, rice and stew, rice and beans and yam and tea. Some parents

are also accustomed to giving their children money for breakfast which they can easily purchase along the way to school. In-between meals are not generally popular in the community, as some parents consider it as a waste of money while others do not encourage such meals on health ground (Ogunsanya, 2015).

Concerning how well the children are clothed, it was found that most children are well-clothed. Festival dress is ranked first possibly because of the psychological desire to satisfy children. Festival dresses are also occasional dresses and they are culturally valued. School uniforms are equally important and they are imperatives for schooling. Generally under-wears are not considered necessary for the young ones except during the wet season.

The health condition of the children was rated well enough as revealed in table 3. The table further shows that children mostly have good teeth condition and general health condition. This may be attributed to improvement in the provision of hospitals and child care centers (Blackwell 2010). In recent time, Nigeria has benefited from UNESCO health facilities and today health care has been the responsibility of the local government, state government and the federal government. Non-governmental organizations and Nigerians in diasporas are contributing to improvement in health care.

The education aspect of children well-being was rated fourth position among the six aspects. The children considered this aspect as thus being good enough in terms of its provision. There is an indication that parents are more concerned with children's regularity in school which has not been matched with parents' concern with children's performance in school. It may be that parents focus more on their economic activities than monitoring of their children's academic performance, as suggested by Keister(2003). In the aspect of the general comfort, the indication that children have less time to rest deserves attention. Sufficient rest is paramount to healthy living and good performance in the school. Studies (Gesinde 2011, Okoza *et al* 2011) have shown that children are much engaged in child labour such as hawking, food vendor and other menial activities in addition to domestic chores that they routinely do, (Ogundare 2010). Recreation was rated last in the aspect of children well-being, Parents' encouragement in terms of provision of materials was rated low. Parents must have considered this as of low priority and some might consider recreation as good only for children who are academically weak. Low level of recreation can also be explained by little or no encouragement by the government at the local level in terms of provisions of play grounds and sporting materials. Even today,

private schools hardly have playing ground for children in the school, all which are discouraging games and sports among the children. This finding is similar to Glenn (1996) shows that parental support for children's sports and games is becoming low world-wide.

Findings from this study also reveal the positive impact of intact parents on the well-being of their children. Children who do not live with their parents and children whose fathers and mothers as separated do not enjoy considerable well-being in all the aspects investigated in this study. It could be that finances are inadequate for such children; they could also be victim of psychological trauma or severe child abuse. Family size in terms of number of mother's children and in terms of father's children have negative influence on some aspects of children's well-being. Families with large size number generally encounter financial problems to cater for all the children. They also have less time to pay attention to all the children and they have the tendency of favouring or disfavouring of some children which will reflect in their well-being.

CONCLUSION AND RECOMMENDATIONS

The main contribution of this paper to knowledge is the establishment that changes that are emerging in family structure and membership are impacting on children's well-being in a community in Nigeria. The aspects of well-being attended to in the study are clothing, feeding, education, health, sports and recreations. While the children in this study rated their well-being generally impressive, marked differences exits based on structure and membership of family. It is therefore relevant and important to suggest a radical re-structuring of family system among the Yoruba. In particular, the practice of giving children to relatives for caring and upbringing should stop progressively in the interest of children's well-being. Similarly, intact family, (as opposed to separation and divorce), should be encouraged by religious organizations, social workers, NGOs and community development agencies. Equally, large size family in terms of number of children should be discouraged progressively through public education that may take both formal and informal approaches, the later such as mass media, social media and government regulations. In sum, the focus of family life should be children's well-being.

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ASSESSMENT TO “COMMUNICATION STRATEGIES USED BY WORLD VISION TO ALLEVIATE POVERTY IN NKAYI COMMUNITY” 2014-2015

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ABSTRACT

The study focused on the communication strategies used by World Vision to alleviate poverty in Nkayi community from 2014 to date. Communication is essential for every organisation to survive in its operational environment and to create a rapport and mutually understanding with the surrounding community. The study also focuses on identifying the communication strategies that are used by World to alleviate poverty. The study had to assess the effectiveness of communication strategies used by World Vision and the extent to which the community of Zhende and Mantoni in Nkayi expressed satisfaction. The study was influenced by two way communication, stakeholders' salience and open system theory. Furthermore, the study was guided by qualitative research design to attain results that are closer to reality. Interviews, questionnaires and participation observation were used to tape information from the targeted population who are World Vision workers from various departments and community members in Mantoni and Zhende. The study seeks to establish the importance of communication by non-governmental organisation like World Vision, and the extent to which poverty can be reduced.

KEYWORDS: Communication, Strategies, Vision, Nkayi, Zimbabwe.

INTRODCUTION

The study focuses on the communication strategies used by World Vision from 2014 to date, to assist the Nkayi community, particularly Mantoni and Zhende village in reducing poverty. Communication is a process whereby messages are transmitted and distributed in space for control and people (Carrey 1989:13). The study is essential in the sense that it would assess the effectiveness of strategies used by World Vision to alleviate poverty in Nkayi community. The study would be guided by qualitative research and it would enable the study to attain results that are closer to validity and reality. It would be also guided by theories of open system, stakeholder salience and two way communications. The study also employed in depth interviews, participant observation and questionnaires as methods for data gathering. This would assist the study to get effective results since some people might not freely give accurate answers in face to face interviews. In addition, the study seeks to find out if communication strategies used by World Vision reinforces two way communications that creates mutual benefit between Nkayi community and World Vision from 2014 to 2015. Effective communication in an organization like World Vision can be achieved through implementation of corporate strategies that involve stakeholder participation address the needs of the communication in order to alleviate poverty in Nkayi. Corporate strategy is functional and operational strategy that is concerned with how corporate

communication can develop communication programmes towards different stakeholders.

Background to the Study

World Vision is an Evangelical, relief and developmental organization whose goal is to follow the Lord and Jesus Christ in working with the poor and oppressed to promote human transformation. World Vision is one of the largest relief and development organizations in the world. The late Bob Pierce was the founder of the World Vision organization.

The dilemma of children which Bob Pierce saw on his and later trips to China and Korea affected him deeply. They encouraged him to write in the front of his Bible: 'Let my heart be broken by the things that break the heart of God.' He made it his passion and commitment to find a way of supporting missionaries and other local people he met on his trips, who were caring for orphans and widows. This resulted in him establishing World Vision in 1950. World Vision later on spread to developing countries in a way to alleviate poverty that was emerging in those countries. During the 1970s World Vision began training families to build small farms by teaching agricultural skills. Around the world, World Vision is working in partnership with more than 400 million people in nearly 100 countries in their struggle to alleviate poverty, hunger and injustice and religious beliefs. World Vision began operating in

Zimbabwe in 1973, mainly providing assistance to children's homes and offering relief to Zimbabweans in refugee camps. After independence in 1980, focus changed to rehabilitation and development programs to accommodate returnees from exile and previously displaced groups.

There are significant differences in poverty rates among the provinces. Matabeleland North has the highest poverty rate in the country, with 70 per cent of its inhabitants classified as poor or extremely poor. This statics has lead the researchers to choose Nkayi as a case study since it is between the poorest provinces. Poverty is also concentrated in the south-eastern provinces of Manicaland and Masvingo, which are among the driest and least productive areas in the country. World Bank (2000) argue that, with the rise in unemployment and consequent male migration away from rural areas, households headed by women are increasingly common. These households are nearly always the most disadvantaged.

In the study, the researchers deduce that the root causes of poverty in Zimbabwe can largely be attributed to the disintegration of the traditional African society following the inception of colonialism. It cannot be disputed that casualties of poverty in traditional society were kept at a minimum because interaction between family care, community support and institutional provision was especially intricate. This was so because the ideological framework insisted that individualism was alien to the African culture, hence the extended family system served as a social safety net for the poor.

Corporate Communication in Nkayi

Corporate communication was developed 158 years ago. The move towards less stable, more competitive markets and harsher economic circumstances led to constant redefining of the scope and practices of communications in many organisations. It is argued that corporate communication evolves from persuasion and propaganda to more open and symmetrical dialogue between an organisation and its stakeholders in their environment. However, most companies take issues to do with external stakeholders to be of less importance thereby concentrating on the business side forsaking the stakeholders.

Corporate communication is a management function that offers a framework and vocabulary for effective coordination of all means of communication with the overall purpose of establishing and maintaining favourable reputations with the stakeholder groups upon the organisation is dependent (Cornelissen:2008). The MACS department in World Vision Nkayi allows

the free flow of information from the community to the organization and vice versa without bias.

Development Communication Through World Vision Communication Strategies

Development communication is a group of method-driven and theory based employment of media and communication to influence and transform the political economy of development in ways that allow individuals, communities and societies to benefit (Manyozo, 2012:9). The guiding principles include gender mainstreaming, equity, diversity, tolerance and partnership that promote change and solidarity in the community. Development communication is the art and science of human communication applied to speedy transformation of a country and a mass of its people from poverty to a dynamic state of economic growth (Quebral,1975, 1988, 2002 and 2011). In development communication, communication is used to engage stakeholders and devise effective strategies leading to better and sustainable development initiatives. Development communication's purpose is to communicate the mission and activities of the organization, mostly to external audiences (Mefalopus 2008:5). In this case World Vision communicates through media products and outputs to promote its mission and values as well as informing selected audiences about relevant activities.

Poverty alleviation is among human development. The article 6 of general assembly (1997) asserts that development for communication stresses the need to support two way communication systems that enable dialogue and that allow communication to speak out, express their aspirations and concerns and participate in the decisions that relate to their development. The group of grassroots communicators (noted as journalists), gather success stories from the community to the organization that are used to alleviate poverty. World Vision communicates with everyone who is affected and affects the existence of the organization in Nkayi. Children who are sometimes given blind eye when it comes to development are confronted by the organization seeking to find their thoughts on how they would like to view their community after poverty has been eradicated. Children communicate their thoughts through drawings. For example children draw their dream school and homes to their respective sponsors hence enlightening the sponsors on how they can assist to develop Nkayi community. More so, World Vision has adopted the dominant language (Ndebele) of the community, when communicating with the stakeholder most of the times.

Corporate Social Responsibility by World Vision Nkayi

Corporate social responsibility is defined by Reddi (2009:160) as the process by which a corporate participates in the welfare of both internal and external community, enhancing its environment and well being to the advantages of the organization and the community concerned. However, one may critique the above statement arguing that the movement from Neo-classical economic to socio economic theory is to try to increase the profits of the organization. World Vision Nkayi Greenfield engages itself in corporate social initiatives to support the health and education development of the host communities. World Vision has donated computers to more than five schools which include Dimpamiwa primary, Nkayi primary, Mathetshaneni primary, Tohwe high and Nkayi high. Mpumelelo high has pioneered the ICT education using I-Pads. Village health workers are trained under different themes under the expense of World Vision.

Health clubs are formulate and sponsored by World Vision. All this is aimed at building strong relationships with the stakeholders, at the same time alleviating poverty in the community. Organizations must create convergence between its corporate social responsibility agenda and stakeholder's social expectations thereby increase corporate legitimacy (Colleoni; 2013:229). Redefining the relationship between the business and society brings about the creation of a new form of corporate legitimacy and implications for business to open a dialogue in society. This means World Vision would interact with Nkayi community so that it considers societal priorities and include them in their contribution to social responsibilities that World Vision is meant to fulfil.

Theoretical Framework

The study was guided by the three theoretical framework namely stakeholders salience theory, Open system theory and two-way communications theory. The concept of Stakeholder Salience was proposed by Mitchell et al (1997). The authors proposed a Theory of Stakeholder Identification and Salience in response to the many competing definitions of stakeholder and the lack of agreement 'Who and What Really Counts' in stakeholder management (Mitchell et al. 1997:). Considering the principle, proposed by Freeman (1994), of 'Who and What Really Counts' Mitchell et al. (1997) argue that the first question calls. Salience may refer to the property of being important and notice on a certain environment. In this study the theory will assist in finding out how World Vision prioritizes their stakeholders. The open system theory was propounded by a biology scientist called Von Bertalanffy. It was immediately applicable to all disciplines including

social science. Bertalanffy (1956) argues that systems which in this case are naturals relate with surrounding environment to be effective. Lubbe and Puth (1994) cited in Masuku (2014) discusses system approach which is similar to open system theory. Open system theory requires an organization to respond to feedback from the environment. Two way symmetrical model of communication consists of a dialogue strategy between the organization and its publics. Reddi (2009:48) asserts that the two way communication is based on the ideal of mutual understanding. This model is relevant to the study of World Vision communication strategies in the sense that it allows equal opportunities for expression and free exchange of information through advertisements, training, campaigns, newsletters and face to face communication.

METHODOLOGY

The study was guided by qualitative research design and methods. Gray (2009:166) asserts that qualitative research is not built upon a unified theory or methodological approach and can adopt various theoretical stances and methods such as observations, interviews, questionnaires and document analysis. Another important distinguishing feature of qualitative methods is that they start from the perspective and actions of the subjects studied, while quantitative studies typically proceed from the researcher's ideas about the dimensions and categories which should constitute the central focus (Alvesson and Skoldberg 2005:4). In addition, the researchers employed non-probability sampling like purposive sampling whereby the researchers choose the sample based on who they think would be appropriate for the study. As a result the manager, human resources and staff members from communication department were selected using purposive sampling. Convenience sampling was also used in the article to select appropriate population to provide required information. Convenience sampling differs in that sample selection is less preconceived and directed, more the products of expediency, chance and opportunity than of deliberate intent (Deacon, Pickering, Golding and Murdock 1999:54). "Weak" convenience sampling where sampling units were selected simply because they are nearest to hand were used. All World Vision workers that could be accessed together with the Mantoni and Zhende village were interviewed and some were issued questionnaires to fill. The researchers developed two different sets of questionnaires. Overall the researchers distributed seventy questionnaires. One set was meant for World Vision's employees including the manager. The researchers found them-selves distributing a total of seven questionnaires to the World Vision staff as the organization are composed of seven workers. Five were females and two males, as it is the structure of the

organization. The researchers decided to give all staff members questionnaires as they all partake in communication, whether internal or external.

The other set was meant for the stakeholders of the organization mainly the two selected villages which are Zhende and Mantoni. A total number of sixty three questionnaires were distributed in the field. Balance between male and female who answered the questionnaires was made, having thirty male and thirty three female. However, males were hard to find since most of them are out of the community for employment to sustain the remaining family. The questionnaires were successfully returned and ensured hundred percent. On questionnaires the community needed translations from English to isiNdebele, since some of the members were not able to understand English and they were free to answer in isiNdebele. In addition, as the researcher is competent enough to read and understand isiNdebele even though she is Venda. Allowing the respondents to answer in isiNdebele made the respondents to freely express themselves in answering the questions.

Targeted audiences of the study were both interviewed and filled the questionnaires. World Vision staff and Nkayi community (Zhende and Mantoni village) were both interviewed. A total number of thirty people were interviewed. The study made a total number of four focus groups, made up five people. The rest were interviewed individually, especially the World Vision staff. This assisted the study to gather all the information that might be skipped if one used one method for data gathering. The study interviewed six workers from World Vision as the step user for sponsorship excused herself due to tight schedule. In the study the researchers interviewed the staff using structured questions. The interviewees would express their feelings both verbally and non-verbally. This also assisted the researchers to depict meanings from non verbal communication that was expressed by the interviewees. The community would even stress their points using hands to add value to what they were saying.

Interviews in Zhende and Mantoni were conducted in isiNdebele for the benefit of those who are not able to understand and speak English. The researchers faced a challenge of balancing female and males for the interviews as males are a scarce resource in the community due to lack of employment. Out of twenty four people interviewed ten were male and fourteen were female.

Table 1

Methods	Males	Females	Total
Questionnaires	32	38	70
Interviews	17	23	40

Response Rate for Questionnaires and Interviews

The above table illustrates the respondents' rate of the questionnaires and interview. Out of seventy questionnaires distributed in Nkayi for the study. Questionnaires were effectively returned. However, only three questionnaires were invalid for the study as they were not well answered. Interviews were conducted with World Vision staff, Zhende and Mantoni community. More women in contrast with men were interviewed in the study. Most men are out of the community for employment seeking since Nkayi is a rural area without enough employment for all.

RESEARCH FINDINGS

Communication Strategies Used By World Vision To Alleviate Poverty

The study found out through participant observation and interviews with the MACS department that World Vision uses various communication strategies to communicate with the Nkayi community from Zhende and Mantoni from 2014 to date. The study also found out that World Vision communicates with its stakeholders in many different strategies, depending on the type of the stakeholder they are focusing on. Sixty seven questionnaires and thirty five interviews highlighted that World Vision make use of telephones, letters, meetings, brochures, posters and community newsletter to disseminate information to their stakeholders. The other eight indicated ignorance on the communication strategies used by World Vision in assumption that they failed to understand the question well.

The study also found out through interviews, questionnaires and participant observation that World Vision makes use of brochures to communicate with the community to alleviate poverty. Fifty questionnaires, of which three quarters were female, stated that the brochures are used mainly in addressing issues of health. Poor health is identified as part of being poor by Chinake (1997). Through interview with the development facilitator working with health issues she highlighted that World Vision partners with the ministry of health to promote health facilities of the community. This is a strong way of communicating with the community of Nkayi as an attempt to alleviate poverty in the community. This has been concluded after one of the villagers in Zhende highlighted that:

“okungamabhuku lokhuyana kuyachaza ukubala

njengoba kubhalwe ngesiNdebele, kusinika imifanekiso kanye lolwazi lokuqakatheka kokuvikela imikhuhlane. Lokhu kusenza ubuyaba besigaba bunciphe”.

The researchers in the study also discovered that World Vision uses grassroots communication. Thirty interviews illustrated grassroots communicators as community members selected to gather stories for the newsletter. World Vision has a total of almost twelve grassroots communicators. These individuals are selected in the community by the community, for them to communicate with the organization on behalf of the community and vice versa. Every citizen has a right to information. The grassroots communicators are also entitled to write stories for Nkayi World Vision newsletter. These stories pertain the developmental stories that are done by the organization. Skills on story writing and photographing have been disseminated to grassroots communicators. Good quality angled pictures are shot and used for newsletter. Through participant observation the researcher noted that grassroots communicators are essential strategy for communication. Most of the stories that happen at community level could not be captured by World Vision as they do not provide enough evidence.

Effectiveness of Communication Strategies used by World Vision

From the interviews conducted by the researchers with the manager, the study found out that the communication strategies employed by World Vision are effective as they allow participation of the stakeholders in coming up with suitable strategies. The MACS department has made it clear that community must feel free to engage with the organization in whatever issues they have concerning the organization. In an interview, a member of Zhende community highlighted that the impact of newsletter in communicating with the community is less effective. The newsletter is not enough to be given to all the community members and some does not have the opportunity to get hold of the newsletter. In the questionnaire some highlighted that the newsletter is written in English language that make some of the community members to be restricted to read the newsletter and benefit from it since they cannot read English.

Sixty questionnaires administered to the community reveals that content written allows proximity and prominence. All information that is included is from within Nkayi community, hence the community would love to associate themselves with news drawn local. Posters are designed with pictures of community members mainly the influential leaders like chiefs and kraal heads making it easier for the community to

accept the information that is communicated by World Vision. By using prominent individuals the organization is certain that whatever is associated with leaders is viewed in a positive way. Through participant observation the researchers discovered that children have fallen in love with the newsletter. Distributing the newsletter, children would even ask for more newsletters as they highlighted that they feel special to be seen in the newsletter by other children. Children would not only view images but also read the stories, attain skills of poverty alleviation. Hence communication strategies employed by World Vision are effective to Nkayi community. World Vision found that the community of Nkayi has low literacy rate, therefore by introducing the newsletters, brochures and posters it is trying to boost the literacy in Nkayi. The community would improve their reading and writing competence by reading the stories from newsletters and brochures and writing the stories for the newsletter.

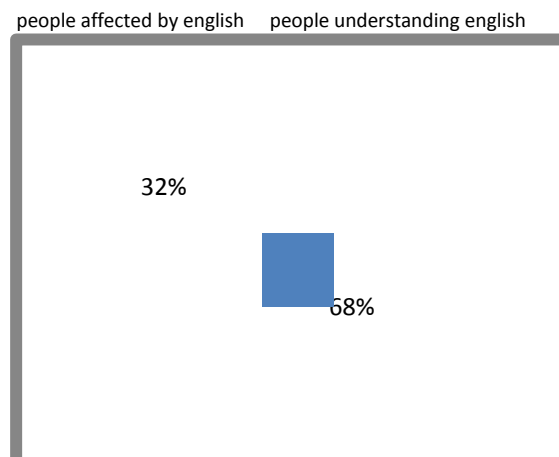
Challenges on Communicating Strategies used by World Vision

Through seven questionnaires from World Vision staff and an interview with the department of MACS it was found that English language to communicate with Nkayi communities is a challenge. However, they have decided to stick to English which is a universal language. “Some of our stakeholders are not able to read isiNdebele, while others cannot read English language so it becomes a challenge for us on choose language that can suits all stakeholders” reads one of the questionnaire response from the World Vision’s staff.

Judging from twenty three interviews conducted with Nkayi community specifically Manton and Zhende, the community highlighted that the communication strategies use the language they do not understand as a community. The response from the community highlighted that they are not familiar with the newsletter that is produced by the organization reflecting that it is a challenge as they do not bring enough copies that can reach each and every individual in the community so they may partake in addressing issues of poverty in the community.

The study deduced through questionnaires from the community that even though most of the community has cell phones that can be used as a communication strategy to alleviate poverty. They are challenges of connectivity as the network might be down most of the times. Moreso, the community faces challenges of power to recharge the mobile phones leading to communication to be a challenge when relying on phones.

Pie chart 1



Number of People Affected by the English Language used for Communication

The pie chart above shows the number of people who are affected by the English language used in communication strategies used by World Vision. A total number of 23 which constitute sixty percent of the community identified themselves as having problems with English as they do not understand the language. Thirty two percent are the ones that understand English. The low percentage of people understanding English reinforces the fact that World Vision should consider to be bilingual in communication.

Inter cultural communication is more important for communication to be effective. Intercultural communication is defined as the relationship or acceptance of each other's culture for communication to be effective. World Vision during the review meeting was told that the culture of community seeks all people to stand up as sign of respect and to welcome the head man. Hence World Vision has to abide by that culture in order for communication to be effective and not cause challenges. To avoid challenges in communication one has to liaise or accept the culture of the other. This would assist in building good relationships between the organization and the community. The challenges that the organization and the community face in the communication strategies is because they fail to accommodate each other's culture. World Vision is failing to accommodate the isiNdebele language in compiling their newsletter hence the community would find itself developing an attitude towards the newsletter hence communication not effective to alleviate poverty in the community.

The open system theory requires the organization to interdependent to the environment. Bastedo (2004)

argues that for organizations to survive in unpredictable environment they is need for the organization to be flexible to change. The challenge is that the organization would not be constant on the communication strategies they used to alleviate poverty. Once the organization uses isiNdebele in their newsletter, those who cannot even read isiNdebele would also be complaining to the organization for alternative medium that would accommodate them. Hence World Vision would be mainly dealing with the community's issues relaxing on meeting their objectives.

Prospects on Communication Strategies used by World Vision

Basing on the study findings from face to face interview with the management of World Vision, the researchers found out that to improve the effectiveness of current communication strategies would improve the eradication of poverty in a speedy way. This means that the communication strategies need to be revised by the organization together with the community of Nkayi in order to enhance two way communications at the same time. The Nkayi Newsletter needs to be revisited on the issue of language. In order for communication to be effective they should be something common to both the sender and the receiver, and language is one that must be common to both the sender and receiver. In order to solve the issue of language the organization has to develop multi lingual newsletter. Each publication of a newsletter must be publish in two languages which are English and Ndebele to cater for those who does not understand English or Ndebele to have an option hence making the communication strategy of newsletter being effective to reduce poverty in the community.

On the questionnaires, the community highlighted that World Vision does not communicate effectively with community. This is because the organization relies on one communication strategy to disseminate information. Therefore it would be ideal if the organization may try to make use of more than one communication strategy. For example, they may write letters to the community at the same time making phone calls so that information may reach all the targeted audiences. Without the community of Nkayi, the organization of World Vision Nkayi would cease to exist. Hence dependency is essential to all the parts. Stakeholder salience is never static. It is always in a form of change. World Vision therefore needs to also change the communication strategies that they use for the stakeholders as their salience and relevance always change.

CONCLUSION

The study focused on the communication strategies used by World Vision to alleviate poverty from 2014 to 2015. Communication strategies employed by World Vision were established also highlighting their importance in alleviating poverty. The targeted population was the Mantoni village, Zhende village, World Vision organization mainly the Marketing and Communication in Sponsorship (MACS). The two villages were selected basing on the fact that they are part of the area development programme (ADP) of World Vision. The communication strategies assessed were the community review meetings, Nkayi Newsletter, posters, brochures and grassroots communicators. The analysis of the organizational political economy would assist the readers to understand better the environment which the organization operates. Theories related to communication in a community such as the stakeholder salience theory, two way communication and open system theory were used to guide the study on assessing the effectiveness of communication strategies used to alleviate poverty in the community of Nkayi from 2014 to date. Basing from the findings of the study, the researchers strongly recommends World Vision to use communication strategies that enhances two way communications which is dialogical. Meetings, social media such as Whatsapp, facebook should be used since they enhance transactional communication which can enable World Vision and Nkayi community to reach mutual understanding. Again the researchers recommend World Vision to use suggestion boxes in the community so that they may post their suggestions to the organization.

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THE END

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(NSDDM 2016) /EXHIBITION**

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