

International Research Journal of Natural and Applied Sciences

Volume No. 12

Issue No. 3

Sep - Dec 2025



ENRICHED PUBLICATIONS PVT. LTD

JE-18, Gupta Colony, Khirki, Extn, Malviya Nagar, New Delhi-110017

PHONE : - + 91-8877340707

E-Mail : info@enrichedpublications.com

International Research Journal of Natural and Applied Sciences

Aims and Scope

The Journal of Aerospace Science and Applications published three issues yearly by Enriched publications. Journal of Aerospace Science and Applications is peer reviewed journal and monitored by a team of reputed editorial board members. This journal consists of research articles, reviews, and case studies on Aerospace Research. This journal mainly focuses on the latest and most common subjects of its domain.

Authors are invited to submit papers on new advances in the following topics to aerospace applications:

- Materials and structures
- Flight mechanics
- Navigation, guidance and control
- Electromagnetism and radar
- Signal and image processing
- Information processing
- Human behaviour
- Robotics and intelligent systems

International Research Journal of Natural and Applied Sciences

Editor in Chief

Dr. K Senthilkannan

Dean R&D, Vice Principal cum Research Scientist
EGS Pillay Arts And Science College
Nagapattinam 611002
TamilNadu, India.

Editorial Board

Dr. Saber Mohamed Abd-Allah
Associate Professor of Theriogenology,
Faculty of Veterinary Medicine, Beni-Suef
University, EGYPT.

Dr. Aparna Sarkar Associate Professor,
Amity Institute of Physiotherapy,
Coordinator, Amity Institute of Physiology &
Allied Sciences, Amity University
Uttarpradesh, INDIA.

Dr. Mora Veera Madhava Rao
Researcher, Osmania University,
Hyderabad, INDIA

Dr. Umesh Gaur
Principal, Gateway Institute Of Dynamic
Education (An Affiliated College of
Barkatullah University, Bhopal) Bhopal
[MP]- INDIA.

Dr. B. R. Venkatraman
Associate Professor, Post Graduate and
Research Department of Chemistry, Periyar
E.V.R.College (Autonomous),
Tiruchirappalli, Tamilnadu , INDIA.

Dr. Kiran B. R. Research & Teaching
Assistant, DDE, Kuvempu University,
Shankaraghatta, Shimoga, INDIA.

Dr. Ummed Singh
Senior Scientist, ICAR-Indian Institute of
Pulses Research, Kanpur, INDIA.

Vural Fidan MD
Deputy Director of Otorhinolaryngology,
Head and Neck Dept Yunus Emre Govt.
Hospital, Eskisehir, TURKEY.

Mr. Jiban Shrestha
Scientist, Nepal Agricultural Research
Council, National Maize Research
Program, Rampur, Chitwan, NEPAL.

Dr. Rabin Chandra Paramanik
Principal & Research Scientist, Karnataka
PU Board, Govt.of Karnataka, Bangalore,
INDIA.

Dr. Pinak Ranade
Principal Technical Officer, Centre for
Development of Advanced Computing (C-
DAC), Under Ministry of IT &
Communications, Govt. of India, INDIA.

Dr. Amarnath Mishra
Associate Professor, Department of
Forensic Medicine, Tribhuvan University,
NEPAL.

International Research Journal of Natural and Applied Sciences

(Volume No. 12, Issue No. 3, Sep - Dec 2025)

Contents

| Sr. No | Articles/Authors | Pg No |
|--------|--|---------|
| 01 | Civil Society and Development Assistance: USAID-Northern Education Initiatives (NEI) in Nigeria <i>-Musa Adamu Wunti1</i> | 1 - 8 |
| 02 | GUIDED PAPER ON DEVELOPMENTAL SUPERVISION: CRITICAL REVIEW <i>-By Mulatu Dea</i> | 10 - 21 |
| 03 | ESTIMATING THE CAPACITY OF THE SURFACE AREA OF JABI LAKE, ABUJANIGERIA USING NORMALIZED DIFFERENCE WATER INDEX ALGORITHMS DERIVED FROM OPERATIONAL LAND IMAGER, ABUJA-NIGERIA <i>-Yahaya Usman Badaru1 + Yakubu Mohammed Nassir2 Musa Yakubu3</i> | 23 - 28 |
| 04 | PERSECUTION AS A UNIQUE MARK OF CHRISTIANITY: A COMPARATIVE STUDY OF THE EARLY CHURCH AND THE MODERN CHURCH <i>-Adegbite, Deborah Doyinsola (PhD)</i> | 30 - 42 |

Civil Society and Development Assistance: USAID-Northern Education Initiatives (NEI) in Nigeria

Musa Adamu Wuntl

ABSTRACT

The paper examined the impact of civil society groups in actualizing the developmental goals of donor agencies with specific reference to USAID-NEI project in Northern Nigeria. The article argues that civil society organizations involvement in implementing development programmes has significantly improved the life of the poor residence and brought about change in education system management. Thus, the civil society as agent of development has become a symbol of development assistance and also celebrated its unique attributes of emancipatory project. Within the case of USAID-NEI, the article has explained the implication of civil society active participation in development project and finally discussed the success offered by civil society groups in addressing problems associated with basic education in educationally disadvantaged society of Nigeria.

Keywords: civil society, donor agencies, development assistance, northern education initiatives,

Introduction

The presence, purposes and increasing involvement of civil society organizations in humanitarian assistance in the developing countries has greatly impacted the life of poor people mostly at the grassroots level. Their contributions and supports vary between societies and their impending predicaments and existing flights. Thus, majority of civil society organizations has chosen to involve with welfare, well-being and freedom of the people they are serving. Their concerned with individual welfare has motivated them to engaged with ideal community based organizations and local governments for programs that will change the life of poor residents. Resources availability and capacity of most civil society organizations had created ample opportunities for their political influence in societies where their programs have played a role in gaining benefits for local level development. Generally, civil society is associated with programmes of progressive social and political change, of which, its most well-known agents; Non-governmental organization (NGOs) take a leading role in promoting emancipatory projects (Abdelrahman, 2004).

There are two perspectives through which activities of civil society groups are perceived and theorized. One supported the existence of civil societies and their activities as important instrument for democratization and social provisioning; demonstrating the weakness of state and its institutions. The other perspective disagrees with the capacity of civil society organizations to replace the state in social services delivery, especially social and economic development (Muhammed, 2010). These conflicting perspectives are connected with existential realities associated with distrust level against civil society groups both by poor residents and government at all levels. And also, their ability to improve the life of peoples, especially, the poor in terms of local level development. This paper is aimed at examining civil society organizations and their commitments to achieving individual development with special reference to poor education system in Northern Nigeria. Using Northern Education Initiatives (NEI) introduced to Sokoto and Bauchi states of Northern Nigeria under the support of USAID. The article will evaluate the impact of this initiative. In doing that the study will also examine the extent to which Northern Education Initiatives (NEI) effects human development. The question is; how will improve education system introduced by such liberal intervention have affect the frequency of human

development? First, let consider how specifically basic education might be related to issue of individual development.

Civil Society Groups as Agent of Development in Africa

The concept of development in this article is in the context of structural change and transformation in social, economic, cultural and political life of the people (Duffield, 2010). The central idea is that of civil society organizations presence in assistance programmes in the continent of Africa as a form of ‘liberal interventionism’ to support the poor southern population. It is not only its profound impact on political change but in the core aspect of human security and development (Hettne, 2010). The use of NGOs as important agents for development will also help us understand how this interventionism affected the life of the poor at the grassroots level. Therefore, to limit civil society organizations involvement in political processes alone will leave us with their activities “in nearly every sub-Saharan country to remove autocratic repressive governments and empower African people to reclaim control over their political destinies” (Harbeson, 1994:1). Thus, perceiving civil society organizations as agent of development will automatically link it as a component of western democracy promoting modernization project and ensuring structural change within developing countries, particularly the African countries (Adamou, 2010; Ziegler, 2010). To explicate civil society groups as agent of development in Africa, let’s examines the nature of civil society organizations from its social provisioning perspectives.

According to Ziegler, civil society needs cooperation of the state to operate within a narrow political space and that enable foreign donors to effectively assist the development of civil society (Ziegler, 2010 815-816). As such, civil society organizations needs guide from the collaborative structures that will enable them reaching out to the poor local people. However, there exist some exceptions whereby civil society groups exceeded their limits to meet their ends. To describe civil society organizations, Bratton seem to believe that, civil society is about public political activity that occurs through collective action in which individuals join to pursue shared goals in an organized institutional form far beyond the boundaries of the household (Bratton, 1994). Others posited social movement and participation in assistant program to be the very nature of civil society mostly in emerging democracies (Goetze, 2006; Adamou, 2010; and Ziegler, 2010).

When considering the existing discussions, it is obvious that civil society presence in many developing countries has direct linkages with its emancipatory project and welfare to the poor residents. But the question of whose interest civil society organizations is protecting remain a topic of scholarly debate that cannot be ignored. Despite the existence of conflicting theories over whose goal civil society groups, especially, NGOs strives to achieve, the involvement of civil society organizations in local level development in Africa has created great opportunities for addressing problems. When looking at the efforts of addressing problems associated to economic and social flights in the continent, civil society organizations has proven its impact in the development process as well as having considerable influence in decision making process. To be effective and free from restrictions, the activities of civil societies require some degree of freedom or spaces to connect to the poor. As noted by Callaghy, once a link is made between political liberalization and economic rehabilitation, civil societies will strengthen to attract changes to socio-economic life of the people (Callaghy, 1994). Now that almost all African states are democratized, civil societies has interacted with a great number of poor residents. This permitted them share the experiences of different communities and know much of their problems and

challenges particularly issue related to education, health care delivery and the like. Studies show that collaborations between civil societies with the state and other donor agencies were often indicative of presence of civil societies and their assistance programmes on health and education in local areas. Engagements into public life and desire to improve the living conditions of the people mostly the poor has been adduced to consider civil society organizations as agents of local levels development. They reach out through various ways and serve people both concrete and in material terms.

Why Assisting the Local Poor Matter?

Many scholars have noted why civil society groups concerned more about development. Reducing poverty and empowering vulnerable people especially children has long been considered by civil societies a significant aspect of sustainable development. Shigetomi, for instance, asserts that, “the existence of people who have been left out by both the state and the market seems to be the most fundamental factor behind the establishment and continued existence of NGOs in developing countries” (Shigetomi, 2002). This simply means that the current globalizations reordering and restructuring has systematically excluded a large number of people mostly from the grassroots and this is evident from the persistence of monetarism and rolling back of the state from provision of essential social services.

Another important aspect that motivated civil societies to engage more in helping the poor residents has connection with the internal structure of the state that vividly exposes its weakness as to why it insidiously failed to manage available resources. In Africa, states work with modern institutions but only that “there are factors which dominate the weak state, making it powerful without being capable of governing effectively”. (Whaites, 1996:28). Thus, government inability in meeting up the yearning and aspirations of the people is what led to lack of development therefore promoting civil society groups as an important factor in the development thinking. Adoption of collective mechanisms and village level project has boast growth of local organizations through which civil societies promote its emancipatory project. In Nigeria, civil society’s active involvement in social provisioning has fastened interaction of social change and growth of civil society groups within the country development process which in return nurture development.

In 2007, Nigeria country office of UNICEF highlighted that; “the global figure for out-of-school children is estimated at 121 million, 65 million being girls. Over 80% of these girls live in subSaharan Africa”. It further illustrated that, in Nigeria girl’s access to basic education especially in the northern states has remained low indicating possibility of having high illiteracy among women in the northern region at the time of this investigation. The outcomes of the study shows that, it is only few as 20% of women in the north west and north east of the country are literate and have attended school (UNICEF, 2007). And this is what intimated USAID to initiate education programme, knowing fully that, education is a right and instrumental in advancing humanity. Likewise, it is also essential in ensuring investment in local people and their local level development.

USAID-Northern Education Initiatives (NEI) in Nigeria

The United States Agency for International Development (USAID) is one of the United States’ foreign assistance working around the world to expand democracy, free markets and improves the life of individuals in developing countries. Its partnership with Nigeria is all about assisting the citizens of the

country to build sustainable development and healthy relocated population. Thus, it supports the government of Nigeria in all aspects of human life, more especially nowadays the goals of the Millennium Development Goals. Most of USAID/Nigeria's development activities are executed with the help of Nongovernmental organizations that are receiving grants and on contrast basis. According to Public Affairs section of United States Embassy, in Nigeria, the quality of basic education in Nigeria is poor; therefore it leads to poor performance among children. The section also estimated that seven million children of primary school-age in the country are not enrolled in school.

From these indices, the Northern region is seriously the most affected with high numbers. UNICEF (2007), for instance, has reported that; in Nigeria, girl's access to basic education, especially in the Northern States has remained low. As such there exist wide variations across states and the zones. And in the Northern part of the country, the number of children out of school is particularly high. It is thus that, USAID's support pay attention on initiating activities to strengthen education systems at the state level. Although, there are different names given to different intervention or support, the Northern Education Initiative (NEI) is what USAID introduced in two states of the Northern Region: Bauchi and Sokoto. Through coordinated programs the initiative improves the capacity of both state and local governments in the selected areas. It assists in delivering key education services through effective management, sustainability and oversight functions. NEI also have enabled vulnerable children to acquire basic education and other important services through innovations and improves formal education system. Girlchild education program helped reasonable numbers of girl-child to be enrolled, mostly orphan and vulnerable children. Teachers were trained to support the system, for the simple reason that educating a girl-child is all about educating the family.

Knowing fully that, the project is for the period of four years (2009-2013), and the funding is estimated to reach \$3,800,000 (US Dollars). Its expected results are strengthened key education management systems in target states, strengthened delivery of teacher training services for primary schools, improved capacity to develop and deliver education services to at-risk populations, improved student performance, policy decisions based on strategic information at state and local levels (USAID 2013). The intervention involves both governmental and nongovernmental institutions to ensure successful delivery of formal and informal education services to the pre-primary school population as well as marginalized out of school children, including itinerant Qur'anic students (Almajirai) and girls. In Bauchi State, the mission has affected all the 20 local government areas of the state. Considerably, more finance was channeled to various local authorities through State Universal Basic Education Board (SUBEB), of which provisions of basic traditional inputs like books, equipment and instructional materials were provided. While the civil society groups were supported with innovative policy to approach both the enrollment system and the quality assurance and sustainability, the programs and its development activities uses contracts to engage or hire to provide specific services and goods, while grants were given to enter into partnership and collaboration with local organizations (USAID, 2013).

Civil Society and Education: Implication for Human Development

The influence of civil society on education depends on local authority's recognition of its role as partners in education sector, its contributions in the scaling up of activities and about all collaboration with international donors. Focusing on education is important as an instrument for human development as well as public responsibility in the society, primarily; the concern for basic education particularly in the Northern region of Nigeria is in connection with global efforts to address challenge of illiteracy and

making education accessible to all for the development of human being. This is in line with international commitments aimed at achieving universal basic education for all by 2015. UNICEF in its 2005 state of the world's children report observed that, more than 121 million primary school age children are out of school, and the majority of them are girls (UNICEF, 2004).

Civil society organizations works in education has essentially connected to its role in social provisioning as a strategic intervention, with some innovative approaches to ensure sustainable human development. In most cases, the self-reported areas of focus of civil society groups shown advocacy campaign, assisting orphans and the vulnerable to attain school has dominated the thematic priority in education. For example FOMWAN one of the beneficiary and partner in USAID project has been using enlightenment campaigns to reach out to local level residence and encourage them to allow their children attend school at their early age. Also they use to enroll orphans in their own primary and secondary schools as part of support in meeting the goals of USAID-NEI Project in Bauchi.

Technical and financial support that government institutions like SUBEB received from USAIDNEI project also help significantly in assisting many civil society groups; in areas like man power training, provision of materials and equipment to support orphans under their control in schools and other education system. Provided that human development at individual level concern more on how one overcome major requirement of life, education right from early age has been arguably became an important yardstick by which possibilities of one's development is measured. Literate societies are always considered societies with sense of social transformation and productivity. Thus, development as perceived by different thinkers has greater linkages with what really transform society in terms of their practical changes in social, political and economic spheres of life. Once the level of education among individuals is effective, there is every tendency that such society will improve the socio-economic capacity of that society in question. An illiterate society on the other side can be said to have shown its inability to transform its economy to achieve certain positive changes that in return help improve the quality of life of individual and the productivity of the state as well.

As such, civil society group's commitment to ensure every family educate its child at least with basic education has demonstrated how such groups become active in child education, at least in its emancipatory project and social change plan. By giving assistant to educate individuals in society with high rate of uneducated children has elucidates in practice high commitments to improve local level development for future development of the society and the state as well. For, example Routley (2011) has pointed out that within development policy civil society groups, NGO in focus which stood out as effective NGOs are always associated with profound desire and engagement to ensure public goods are distributed equitably and efficiently among members of the society. This concern about the human development, specifically education has corroborate with the goals of most donor agencies like USAID and international interventionism like UN-MDGs plan to improve human security and development in the year 2015. The activities of civil society groups as regard to reaching out to poor residence at the grassroots symbolizes key concern among civil society groups to ensure at local level there is increases in open access to education which increasingly become difficult to poor residence or rather poorly delivered to societies due to their location in remote areas.

Apart from encouraging poor people mostly in local areas to allow their children access to basic education, civil society organizations has remain the most effective organization reaching out to schools and offer adequate training with innovation to teachers and principal officers. Among other

things the new education management techniques has been effective for quality assurance.

Different groups of people gained from what civil society contributed not only in the area of education but in other important aspects of community like political and social freedoms, poverty alleviation and empowering homeless and the poor. This is particularly clear from commitment of NGOs in activities of the United Nations' Millennium Development Goals (MDGs).

In partnership with state, NGOs supported by USAID-NEI project in northern Nigeria has been a workable collaboration going by what are expected to be the outcomes of the project. Within the selected areas of Bauchi and Sokoto states, local authorities are found to be working with NGOs actively involved in supporting poor people more especially in pro-poor policies which education happened to be one of the most important aspect of human development. Donor agencies like USAID have supported the programme as design in their policy directives. Likewise in financial terms the USAID have played a role in seeing all needed are provided to civil society groups and authorities partnering to actualize the success of such intervention. The relationship exhibited in this collaborative efforts has demonstrate how effective USAID intervention is, and how relevant it is to assisting the poor not only in single human life such as education, but generally as its affects economy, good governance and businesses aimed at reducing the hardship poor residence are faced with. It is by using the civil society organizations as middle actors in social services delivery that development assistance civil society groups more especially NGO's become effective and successful in gaining benefits for poor residences in Nigeria (Muhammad 2007, Routley 2011). Thus, what civil society organizations has done help significantly in supporting proper functioning of the state, and also their action represent attempt at reaching the goals of donor agencies idealized from desire to improve human development in the continent of Africa.

While in practice what come out as development assistance from donor agencies is the realization of the goals in terms of reaching the poor or delivering to the right needed person. It has resided with logical effort of civil society groups as emancipators. NGOs' contribution in concretizing and organizing the poor residence on how they will go about pressing the state to actualize certain policies or even influencing the state to pay more attention to issues related to human right helped a lot against issues that are trivial. These in turn have different implication for the ability of the poor residence to become literate and productive in the future by virtue of following the strategies and tactics employed by civil society groups. Shigetomi (2002), for instance have acknowledged that, civil society groups in most of the developing countries are effective and have some concern on welfare of the people especially in taking steps in addressing issues of development and empowering the poor. Lack of education among most people is to a greater extent linked with the condition they found themselves in the state. Therefore lack of basic knowledge that will determine their involvement in productive sector of the economy is profoundly among the reasons why large number of poor people persists. Not only that, the skills they need to improve on what they are doing to earn a living or relation with financial institution also has direct linkages with one's education and his/her ability to operation within the system.

The Impact of USAID-NEI on Education Development in Northern Nigeria

It is without doubt that, United States policy on educational development in Nigeria has recorded certain degree of improvement and change in the manner in which access to good education is becoming a mirage to poor residence. The policy has achieved a lot especially in increasing the number

of children enrolled in schools and also in improving the quality of teaching as well as innovative change enshrined in education system and management. Among these achievements is promoting learning in educationally disadvantaged states in Northern Nigeria, training of teachers, increasing community involvement and supporting infrastructure improvements for schools.

According to Akunga (2010), development assistance and interactions in education, more especially in areas with acute deprivation and weak governance has tremendously encourage access to education by making schools safer and creating enabling environment for girl-child education which realistically promote learning and also became acceptable to parents. This corroborates with what in practice USAID achieved. NEI project in partnership with civil society groups has provides numerous assistance to education sector alone as part of the intervention. For example, in 2010, USAID-NEI enrolled over 64,000 students in the 200 NEI demonstration schools; about 15,000 of those students were identified as orphans and vulnerable children. A total of 317 administrators and other officials were trained on Mid-term Sector Strategy (MISS) Planning, Support and Monitoring, Education Management Information System (EMIS) Utilization and State Education Accounts (USEA) implementation in Bauchi and Sokoto States of Northern Nigeria. Likewise, in 2011 teachers and educators were trained to support basic education delivering in the same states (USAID-NEI 2011).

According to United Nations-Nigeria country report on girl-child education 2011, the 2005 National school figures revealed that substantial proportion of children of primary school age are not enrolled in school. But in 2011 after United Nations Girl-child Education project had involved civil society organizations to push NGEI agenda in some states in Nigeria, the outcomes provide policies promoting Girl-child education and increased in numbers of institutions supporting the realization of its goals in education (Okogie, 2011).

Conclusion

From what the research explored as regards to USAID-NEI and NGOs relationships or rather partnership for human development, it is apparent that the role played by civil societies make significant improvement in the life of individuals particularly in respect of their access to education and ability to bring innovative mechanisms to help education management as a whole with the support of USAID policy direction in Nigeria. This justify the use of civil society organization in promoting development provided that the goal is emancipating the poor from hardship and total denial of basic needs. So long as CSO are concern with human development and human security, then their functions as well as environment they operate became relevant for analysis.

References

- Abdelrahman, M. M. (2004). *Civil Society Exposed: The politics of NGOs in Egypt*, London, Tauria Academic Studies
- Adamou, T. M. (2010). *Challenges in Democracy Building and the Role of Civil Society*, *Democratization*, 17, 3, 514-544
- a Akunga, A. (2010). *Northern Nigeria: Approaches to Enrolling Girls in School and Providing Meaningful Education to Empower Change*, *Engendering Empowerment: Education and Equality*, *United Nations Girl Education Senegal*, Paper, 6, 17-20
- Initiatives, Bratton, M. (2007). *Civil Society and Political Transition in Africa*. In, Herbeson, J. W., Rofhild, D. & Chazan, *Civil Society and the State in Africa* (eds), London, Lnne Publishers

- Gallagher, T. M. (1994). *Civil Society, Democracy and Economic Change in Rienne Africa: Dissenting Opinion about Resurgent Societies*. In Herberson, J. A W., Rofhild, D. & Chazan, Civil Society and the State in Africa (eds), London, Lnne Rienne Publishers Goetze, C. (2008). *Whose Civil Society is it anyway?* In Yongian, Z. & Fewsmith, J., *China's Opening Society: The Non-state Sector and Governance*, London, Routledge Harberson, J. W. (1994). *Civil Society and Political Renaissance in Africa* In Herberson, J. W., Rofhild, D. & Chazan, N., *Civil Society and the State in Africa* (eds), London, Lnne Rienne Publishers Muhammed, H. (2007). *Civil Society Organizations and Democratization in Nigeria: The Politics of Struggles for Human Rights*, Ibadan, Kraft Books Limited Okojie, C. (2011). *Formative Evaluation of United Nations Girls' Education Initiative Country Report – Nigeria, Final Report United Nations Girls' Education Initiative (UNGEI)*
- Public Affairs Section, (2011). *Crossroads: USAID in Nigeria 50 Years of Partnership. A Newsletter of the U.S. Embassy in Nigeria, USAID at 50 Edition, 17, 3.*
- Routley, L. (2011). *NGOs and the Formation of the Public Grey Practice and Accountability, African Affairs, 111/332, 116-134*
- Shigetomi, S. (2002). *The State and the NGOs: Perspective from Asia, Singapore, Institute of Southeast Asian Studies*
- UNICEF, (2004). *Childhood under Threat: The State of the World's Children 2005, The United Nations Children's Fund (UNICEF)*, www.unicef.org
- UNICEF, (2007). *Girls' Education Nigeria Country Office Information Sheet*,
- Ziegler, C. E. (2010). *Civil Society, Political Stability, and State Power in Central Asia: Cooperation and Contestation, 7, 5, 705-825*

GUIDED PAPER ON DEVELOPMENTAL SUPERVISION: CRITICAL REVIEW

By Mulatu Dea, Addis Ababa University PhD candidate in the Department of Educational Planning and Management, Specializing in Education Policy and Leadership.

ABSTRACT

Currently, developmental models of supervision have dominated supervision thinking and research throughout the world. But its importance were not well known by the implementer like supervisors and teachers and school principals particularly in developing countries. Hence, this guided critical review paper give insight to understand the essence of developmental supervision. The review mainly focuses on basic concepts and rational of developmental supervision, its broad proposition, environment of developmental supervision, its orientations, criteria to choosing appropriate supervision orientations, the intersecting variables to establish criteria, supervisory roles and approaches, application of developmental supervision, its role in school improvement and enhancement of quality education. Researcher tried to see and compare the current trend of developmental supervision of Ethiopia.

KEY WORDS: DEVELOPMENTAL SUPERVISION, ORIENTATION, APPROACHES, SCHOOL IMPROVEMENT

INTRODUCTION

Developmental models of supervision have dominated supervision thinking and research since the 1980s. Underlying this model is the notion that we each are continuously growing, in fits and starts, in growth spurts and patterns.

Different theorists in this regard have contributed their own for its very essence. For instance Maslow (1970) discussed the developmental changes in life as a hierarchical Procession of satisfied needs. Motivation to act is derived from first, physiological need to satisfy hunger, to the need- for security and shelter, To the need for love and belongingness, to the need for recognition, and finally, to the -need to be truly oneself or to be "self-actualized." Erickson (1963), from a psychoanalytic perspective, on the other hand classified this progression of stages as the Overcoming-of conflicts of eight stages in life: (1) trust versus mistrust, (2) autonomy ,versus shame and doubt, (3) initiative versus guilt, (4) industry versus inferiority, (5) identity versus role confusion, (6) intimacy Versus isolation, (7;) generatively versus stagnation, (8) integrity versus despair. The research by Loevinger (1991, 1983, and 1976) has also more precisely identified adult changes in motivation and life crises. Loevinger integrated testable stages of adult ego development; Adult responses to periods of life break into the following progressive stages: amoral, fearful, dependent, opportunistic, conforming to persons, conforming to rules, and principled autonomy.

From the work of Maslow, Erikson, and Loevinger we can detect a consistent trend of movement from egocentric concern with-one's own case to finally act upon reasoned, universal principles, which transcend the group and interest of humanity. This progression of adult changes provides the basic framework for looking at career specific changes in teachers. Keep in mind that development is based on Identified stages, Stages that are hierarchical (built on each other) and Individual rates of movement through the stages.

Fuller (1969) and others have found that teacher development to parallel adult development in that adults first need to take care of their own needs before looking to the care of their immediate group members (students) before attempting to help others outside of their own work station/classroom or Immediate experience. The individual is first dependent on others before joining and being an active group member, before accepting and being recognized in a leadership role in the group, before making decisions and taking actions that transcend the interests of one's own group in the best of other all persons.

Thus employees also need to be supervised through various approaches while they are passing through different developmental stages. Having this fact, the following pages will specifically deals about the basic concept of developmental supervision with primary emphasis of educational organizational settings.

1. THE BASIC CONCEPT AND RATIONAL OF DEVELOPMENTAL SUPERVISION

A fundamental concept and assumption behind much of the recent work in professional competency is that the path toward proficiency is developmental and that employees' approaches for various levels of development should vary appropriately. In addition to general descriptions of professionals at each stage of development, the developmental supervision model proposed variations in the type of supervision environments that would most effectively enhance growth, moving from a high degree of structure or directive supervision toward less structured and nondirective supervision. Generally, developmental supervision is based on three broad propositions.

First proposition: because of varied personal backgrounds and experiences, teachers operate at different levels of professional development. They vary in the way they view and relate to themselves, students, and others. Teachers also differ in their ability to analyze instructional problems, to use a repertoire of problem solving strategies and to math appropriate strategies to particular situations. Furthermore, there are variations within the same teacher depending on the particular instructional topic or timing of life and work events.

Second proposition: because teachers operate at differing levels of thought, ability and effectiveness, they need to be supervised in different ways. Teachers at lower developmental levels needs more structure and direction, teachers at higher developmental levels need less structure and more active role in decision making.

Third proposition: the long-range goal of supervision should be to increase every teacher's and faculty ability to grow towards higher stages of thought. More reflective, self-directed teachers will be better able to solve their own instructional problems and meet their students' educational need. Further, if the goal of education in a democratic society is to produce responsibility learner and decision makers, then teachers who are themselves autonomous and independent will be better able to facilitate students' growth to ward such ideals. Put simply, thoughtful teachers promote thoughtful students.

2. DEVELOPMENTAL SUPERVISORY ENVIRONMENT

The supervisors are persons with responsibility for improving a workers performance. They might be a principals, subject matter specialists, assistant principals, department chair person, head teachers, or central office consultants particularly in educational institutions. There are two environments for these supervisors and supervisees in certain organization to interact with and work together. Clarification of these environments, with the abstraction and commitment level of employees, will be used to determine the appropriate supervisory orientation on certain group of workers.

Controlling environment: restrict individual choice, gain compliance and create resistance. The supervisors under the formal channel of communication provide the guideline and tell the worker what to do. There is no/little room for choosing actions according to the individual interest and curiosity.

Informational environment: expand individual choice, promote autonomy, and encourage commitment to improvement. It is the one in which the individuals considers alternative sources of feedback on their performance, think the consequence of their action, and choose according to their interest and curiosity. The premise of informational environment is that human are innately curious and desire to follow their inclination.

Controlling environment: restrict individual choice, gain compliance and create resistance. The supervisors under the formal channel of communication provide the guideline and tell the worker what to do. There is no/little room for choosing actions according to the individual interest and curiosity.

Informational environment: expand individual choice, promote autonomy, and encourage commitment to improvement. It is the one in which the individuals considers alternative sources of feedback on their performance, think the consequence of their action, and choose according to their interest and curiosity. The premise of informational environment is that human are innately curious and desire to follow their inclination.

3. ORIENTATIONS OF DEVELOPMENTAL SUPERVISION

Supervisors might have a pool of approaches to successfully discharge their duty and accomplish the desired result (Glickman, 1981). The followings are some of the orientations that they may use at different developmental stages of their down lines.

4.1 THE DIRECTIVE ORIENTATION TO SUPERVISION

A directive orientation to supervision would include the major behavior of clarifying, presenting, demonstrating, directing, standardizing and reinforcing. The final outcome would be an assignment for an employee to carry out over a specified period of time. A directive supervisor would believe that the employee needs definite, immediate and concrete help to get the job done.

Standard of performance need to be determined and time line of specific employee of action must be assigned. The supervisors' domain of behavior in this approach includes:

Clarifying the employees' problem and perhaps asking them for the confirmation or revision.

Presenting their own ideas on what information should be collected and how it will be collected.

Directing the employee after data collection and analysis on the actions that needs to be taken.

Demonstrating for the employee appropriate behavior or asking the employee to observe in another workstation.

Setting the standard for improvement based on the preliminary baseline information.

Reinforcing by using material or social incentives.

3.2 THE COLLABORATIVE ORIENTATION TO SUPERVISION

It would include the major behaviors of listening, presenting, problem-solving, and negotiating.

The end result would be a mutually agreed upon contract by supervisors and employees that would delineate the structure, process and criteria for subsequent work/instructional improvement. The collaborative might decide to speak casually with employee to see if help is desired or wait for her to initiate a conversation.

The collaborative orientation can be simplified along the supervisory behavior continuum. The final product is contract, agreed to by both and carried out as a joint responsibility:

- a. The supervisor encounters the employee with his or her perception of work area needing improvement (presenting)
- b. The supervisor asks for employee perceptions of working area (clarifying)
- c. The supervisor listen to employee perception (listening)
- d. The supervisors and employee propose alternative action for improvement (problem solving)
- e. supervisors and employees discuss and alter actions until a joint plan is agreed up on (negotiating)

4.3 THE NON-DIRECTIONAL APPROACH

The non-directional orientation to supervision rests on the major premise that employees are capable of analyzing and solving their own instructional problems. Only when the individual sees the need for change and takes major responsibility for it will instructional improvement be meaningful and lasting. Therefore, the supervisor wishes to act a facilitator for employees by imposing little formal structure of direction. This doesn't mean that the supervisor is passive and allows the employees complete autonomy. Instead s/he actively uses a behavior of listening, clarifying, encouraging and presenting to channel the teacher towards self-discovery. The supervisor leaves the discovery to the employee but takes initiative to see that it occurs. A nondirective supervisor more than collaborative or directive supervisor probably would not use such a standard format of supervision. Instead depending on the teachers need, the supervisor might simply observe the teacher without analyzing and interpreting, listen without making observations or arrange in-service and provide requested materials and resources.

The following table summarizes supervisory environments with different approaches of supervision.

Table 1: Supervisory environment and supervisory orientations

| Environments | Approaches | | |
|---------------|--|--|---|
| | Directive | Collaborative | Nondirective |
| Informational | Supervisor's information for teacher to consider | Share information for both to consider | Actively listening to teacher's information |
| Controlling | Supervisor telling teachers what to do | Type of involvement: make teacher believe s/he shared the decision | Manipulating teacher to think s/he is making own decision |

Thus the supervisor might choose one of the given approaches as per the environment that s/he work in.

4. CRITERIA'S FOR CHOOSING APPROPRIATE SUPERVISORY ORIENTATIONS

If all employees or teachers were alike it would be easy to determine the most effective supervisory orientation, however the research impact of various supervisory styles on the teachers perceptions and behaviors, to say the least is bewildering. In recent years, two critical elements of teacher effectiveness have been found: teacher's commitment and teacher's ability to think abstractly.

Both elements are developmental in that specific levels of growth can be assessed. It is in knowing the levels of commitment and abstraction an individual teacher possesses that a criteria for deciding upon appropriate supervisory behaviors emerges.

4.1 LEVEL OF COMMITMENT

Educators -Indicate that some teachers make; a tremendous. "Commitment" to teaching and some make little or no "commitment." Commitment is larger than concern because it includes time and effort. A teacher who has less commitment is really a person who is viewed as-caring only about himself or herself, simply going through the motions to keep one's job, not caring about improving or willing to give time and energy to look at possible ways of improving. Generally teachers can be viewed along a commitment continuum, moving from low to high.

Table 2: Commitment Continuum of Teachers

| Low commitment | High commitment |
|---|---|
| <ul style="list-style-type: none"> ⊙ Little time or energy expended ⊙ Little concern for students ⊙ Primary concern with keeping one's job | <ul style="list-style-type: none"> ⊙ Extra time or energy expended ⊙ High concern for students and other teachers ⊙ Primary concern with doing more for others |

One might readily identify teachers in a school or organization along this continuum, some teachers fall in the low end. Some at the high end and many fall somewhere in between, For example, a teacher of moderate commitment might work hard In single academic area and neglect others, or work diligently with in a particular group of students and spend less time with others. Most teachers anyways fail into the middle range.

4.2 LEVEL OF ABSTRACTION

It is the ability to form more orientations towards the environment and the interpersonal world. Moreover, abstract or symbolic thinking is the ability to move away from the visual, tactile identification of a property and the ability to "mediate" with the mind, to re-categorize, and to generalize. If one can categorize the issue of discipline in only one way, then the person is "blinded" to other ways of working with students. It is only when one can re-categorize or synthesize the characteristics of its problem that alternative actions can be identified and analyzed.

A teacher's ability to Stand back from his or her classroom to clarify his or her own instructional problems (management, discipline, record keeping. organization. student attitudes), determine alternative solutions to these problems and then to plan a course of action is an abstract process. It stands to reason that teachers who have skills for problem solving and who can judge consequences of alternative actions will be more effective in meeting the instructional needs of students. A teacher who does not have such abstract ability is limited in finding an appropriate course of action.

Teachers at high levels of cognitive development, where abstract symbolic thinking predominates, are able to function with greater flexibility and complexity in the classroom. Low level thinking about problems usually results in repeating one or two habitual responses to ongoing problems or in defining an incomplete plan of action. The supervisor might think of teachers along a continuum of abstract thinking.

Table 3: Levels of Abstract Thinking

| Level of Abstraction | | |
|---|---|---|
| Low | Moderate | High |
| Confused about the problem | Can define- the problem | Can think of the problem from many perspectives |
| Doesn't know what can be done | Can think of one or two possible responses to the problem | Can generate many alternative plans |
| Has one or two habitual responses to problems | Has trouble thinking through a comprehensive plan | Can choose a plan and think through each step |

Teachers with low abstract thinking ability are not sure if they have a classroom problem or, if they do, they are very confused about it. They don't know and need to be shown what can be done. They normally have a limited repertoire of one or two solutions such as regardless of whether the problem involves misbehavior, underachievement, or inappropriate textbooks.

Teachers with moderate abstract thinking ability can usually define the problem according to how they see it. They can think of one or two possible actions but have problems in coordinating an overall plan.

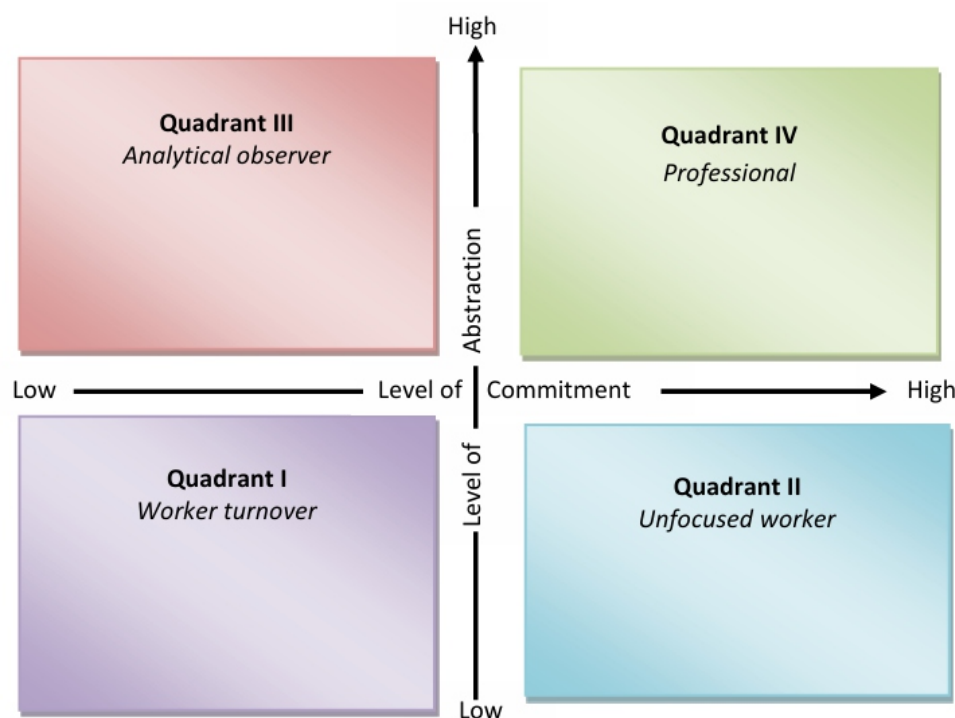
Teachers with high abstract thinking ability can view the problem from many perspectives. (One's own, students', parents', aides administration) and generates many alternative solution. They can think through the advantages and disadvantages of each plan and decide upon one. They are willing to change if the predicted consequences do not materialize. When planning, they can judge additional problems that might arise and systematically provide prevention.

5. INTERSECTING VARIABLES TO ESTABLISH CRITERIA

Using the two developmental variables, level of teacher commitment and level of abstraction, the supervisor can assess an individual teacher. The assessment can be accomplished with simple paradigm with two intersecting lines, one line of commitment going from low to high and one line of abstraction going from low to high. There are four quadrants or boxes that define types of teachers.

Quadrant I: This teacher has a low level of commitment and a low level of abstraction. They referred to as a worker/teacher dropout. They simply go through the minimum motions in order to keep their job. They have little motivation to improve their competencies, and furthermore, they can't think about what changes could be made is quite satisfied to keep the same routine day after day. The causes of any difficulties are blamed on others. In this teachers view it is the student or administration or community that need help, never the teacher. They come to work on time and leaves as soon as officially permissible.

Fig 1: Paradigm of teacher categories



Quadrant II: These employees have high level of commitment but low level of abstraction. They are enthusiastic, energetic and full of good intentions. They desire to become a better employee and make their work environment more exciting and relevant to others. They work very hard and usually leave schools staggering under materials to be worked on at home. They have lack of ability to think problems though and act fully and realistically. These employees are classified as an unfocused worker. They become involved in multiple project and activities but become easily confused, discouraged, and swamped by self-imposed and unrealistic tasks. As a result rarely does this employee complete any instructional improvement effort before undertaking a new one.

Quadrant III: these employees have low level of commitment but a high level of abstraction. They are the intelligent, highly verbal people who are always full of great ideas about what can be done in their own work station, in other work station and in the organization as a whole. They can discuss the issue clearly and think through the steps necessary for successful implementation. These employees are labeled the analytical observer because their ideas often don't result in any action. They know what need to be done but they are unwilling to commit time, energy and care necessary to carry out the plan.

Quadrant IV: these employees also have both high level of commitment and high level of abstraction. They are the true professional, committed to continually improve themselves, their followers and fellow faculty. They can think about the task at hand, consider alternatives, make rational choice and develop and carryout an appropriate plan of action. Not only can they do this for their work station but with the department as a whole. They are regarded as by others as informal leader, one to whom others go willingly for help. Not only do they provide ideas, activities and resources but such a person becomes actively involved in seeing and proposed plan to its completion. They are thinker and doer.

6. MATCHING THE STAGES WITH TEACHERS CHARACTERISTICS

By focusing on the two variables, level of commitment and level of abstraction, that are related to employees/teachers effectiveness, the supervisor can begin to think about individual teachers as developmentally different.

With such a scheme, the supervisor can determine a starting point for using supervisory orientations with individual teachers. The Teacher Dropout is matched with the directive orientation, the Analytical Observer is matched with the collaborative orientation with emphasis on negotiating, the Unfocused Worker is matched with the collaborative orientation with emphasis on presenting supervisor ideas, and the Professional is best matched with a nondirective orientation to supervision.

Having established four quadrants for assessing teachers, the supervisor can Judge the rang of practices that he or she needs to use. If the Staff is fairly uniform in the level of abstraction and the level of commitment then the number of orientation to be employed for effective supervision are at least for the moment reduced.

If the staff is composed of mostly teacher dropouts then the supervisor might emphasize a directive orientation by giving teacher assignment. If the staff is composed of well-intentioned unfocused workers or thoughtful analytical observer, then collaborative orientation of setting a frame work for choice would be suitable. If the composition of the staff is mostly professionals, then a nondirective orientation that releases the knowledge wisdom and effort of the teachers would be ideal. Supervisors would have an easier job if teachers were all on the same levels. However, we profess to live in a society that prizes individuality above conformity and heterogeneity above homogeneity and as a result, students and teachers tend to be quite dissimilar.

On the other hand, some caution need to be made here concerning the organization relationship between the individual providing supervision and the teacher or group receiving supervision. Meaning, the role that the supervisory play may also determine the approaches to be implemented in course of developmental supervision. The following table summarizes the approaches appropriate for particular supervisory roles.

Table 4: Supervisory Role and Approaches

| Supervisory Role | Approaches Appropriate for Particular Supervisory Roles | | | |
|-------------------|---|-------------------------|---------------|--------------|
| | Directive | Directive Informational | Collaborative | Nondirective |
| Line supervisor | X | X | X | X |
| Staff supervisor | | X | X | X |
| Lead teacher | | X | X | X |
| Designated mentor | | X | X | X |
| Peer coach | | | X | X |

Directive supervision is used by supervisors in line relationship with teachers (supervisors who have been given formal authority). Informational directive supervision should be used by the organizations which have special expertise and supervisors with line, staff, and lead and designated mentor role. Collaborative and nondirective orientation of supervision would be implemented by supervisors with all type of supervisory role.

7. APPLYING DEVELOPMENTAL SUPERVISION

There are three phases of developmental supervision while applying the model in practical working environments.

8.1 PHASE ONE: DIAGNOSTIC

The developmental supervision first task is to diagnose the level at which a teacher or group of teachers is functioning in regard to a particular instruction or curricular concern. The central determinant in the supervisor's diagnosis is the level of abstraction and commitment exhibited by the teacher or group. The supervisor makes this diagnosis by talking with and observing teachers in action and asking them questions such as "what do you see as areas to classroom instructional improvement?" The best way to determine teacher characteristics and supervisory approach is to combine observations of teachers in action with supervisory teacher discussions.

8.2 PHASE TWO: TACTICAL

The supervisor's next step is tactical, focusing on the immediate concern of helping teachers solve current instructional problems. The tactical phase initially involves matching supervisors to the level of teachers' abstraction and commitment. It is the functional dimensional of the model, concerned with the approach most likely to produce a satisfactory solution.

8.3 PHASE THREE: STRATEGIC

The real and more important developmental dimension of the model is the third phase. The strategic phase aimed at accelerating the development of teacher abstraction, helping teachers to think harder and smarter and stimulating their problem solving abilities. There are commonly two strategies, all long-term propositions, intended to promote growth in teacher abstraction.

Strategy one:

Gradually expose teachers to new ideas, ways of viewing students, and instruction, problem solving techniques and teaching methods. At first such new ideas should be related to concepts that teachers already understand and value.

Strategy two:

Gradually lessen teachers' dependence on the supervisor during decision-making conferences. This can be done by gradually decreasing the structure provided by the supervisor while simultaneously increasing the teacher's decision making role.

| Phases of Developmental Supervision | | | |
|---|------------------------------|--|--|
| Phase | Purpose | Goal | Supervisory technique |
| Strategic | Developmental | Increase teachers abstraction, commitment and self-direction | Gradual exposure to new ideas, incremental decrease in structure, increase in teacher responsibility; optimal mismatches with other teachers |
| Tactical | Functional | Meet instructional need/solve instructional problem | Match supervisory approach(direct supervision, collaborative or nondirective) to teacher level of abstraction and commitment (low, moderate or high) |
| Diagnostic | Functional and developmental | Determine current teacher level of abstraction and commitment (low, moderate and high) | Observe and interact with teacher compare teacher behavior to research on teacher abstraction. |
| <i>Strategic phase, once begun is ongoing. Diagnostic and tactical phases continuously repeat</i> | | | |
| Phases of Developmental Supervision | | | |
| Phase | Purpose | Goal | Supervisory technique |
| <i>during the strategic phase.</i> | | | |

8. GENERAL CONSIDERATIONS

As it has been mentioned earlier, the long-term goal of developmental supervision is teacher development to the level of capacity by which they will be able to assume full responsibility for instructional improvement. Teachers with higher developmental levels tend to use a wide variety of instructional behavior in relation to successful teaching. Besides teachers who have reached high level of cognitive, conceptual and moral and ego development are more likely to foster their students' growth in that area. Teachers at higher levels of expertise and commitment are more likely to participate in collective actions towards school improvement.

Laying the developmental supervision down in practical arena is not probably an easy task. The following two facts need to be taken into account while dealing with this model. Individual or group level of development, expertise and commitment may vary. As a general guideline, use controlling directive approach if most characteristics of an individual indicate extremely low decision making capacity. Informational directive supervision if most attributes point to a fairly low capacity, a collaborative approach if most characteristics indicate a moderate capacity, non-directive supervision if most attributes point to a higher capacity for decision making. When working with an individual or group with widely fluctuating characteristics, a collaborative approach with probably be most effective. Characteristics of teachers and groups might change in certain situation. The developmental supervisor sometimes must change supervisory behavior in order to adapt to a change in the teacher or groups situations.

A lot research endeavors have been carried out to diagnose the teachers preference for supervisory approaches. According to these studies, experienced teachers vary in their preference of supervisory behaviors between nondirective and collaborative. Between the two collaborative is preferred by majority of teachers. Directive forms of supervisory behavior are preferred by only a small minority experienced teachers. Students and beginning teachers initially prefer a directive informational approach or collaborative approach by their supervisee.

9. WHAT DEVELOPMENTAL SUPERVISION IS NOT

In describing teachers who fall into the quadrants of teachers' dropout, unfocused workers, analytical observer, and professional, it is crucial to note that development is not a function of age or years of service. They are older teachers who are in quadrant one (teacher dropout); they are teachers who are in quadrant four (professional); and there are teachers of all ages and levels of experience who are scattered throughout the quadrant. Neither age nor experience of the teacher is a crucial variable in determining the appropriate supervisory orientation to employee. The selection of appropriate supervisory orientation must follow the assessment of the variables of level of abstraction and level of commitment for each individual.

Developmental supervision is not contingency or situational theory. It is not a theory to label teachers into fixed categories it does not lend itself to algorithms of prescriptive actions. Rather it is a theory about understanding the aim of our work in relation to ourselves and others. A democracy such as ours aims at educating students to become thoughtful and independent citizens who ultimately will make decisions in the best interest of all.

10. THE ROLE OF DEVELOPMENTAL SUPERVISION IN SCHOOL IMPROVEMENT

In order to discharge one of the supervisors' responsibilities, school improvement, in a competent fashion, a supervisor in the modern school should be well prepared to perform the following major roles.

IO To aid the teacher and the principal in understanding students and others better.

IO To help the teacher develop and improve individually and as a co-operating member of the school staff. This is one of the big and difficult roles that the supervisor may be required to play.

IO To assist school personnel in making more interesting and effective use of materials of instruction.

IO To help the teacher to improve his method of teaching.

IO To make the specialized personnel in the school system of maximum assistance to the teacher.

IO To assist the teacher in making the best possible appraisal of the student.

IO To stimulate the teacher to evaluate his own planning, work, and progress.

IO To help the teacher achieve poise sense of security in his work and in the community.

IO To stimulate faculty groups to plan curriculum improvement and carry them out cooperatively, and to assume the major responsibility in coordinating this work and in improving teachers' education in service.

IO To acquaint the school administration, the teachers, the students and the public with the work and progress of the school.

o BIBLIOGRAPHY

Fuller, F. F. Concerns of teachers: a developmental conceptualization. *American Educational Research Journal*, 1969, 6, 207-226.

Glickman Carl D. (1981). *Developmental Supervision, Alternative Practices For Helping Teachers Improves Instruction* (Alexandria, VA. Association for Supervision and Curriculum Development, 1981) www.eric.gov.

Loevinger, J. (1976). *Ego development*. San Francisco: Jossey-Bass.

Loevinger, J. (1983). On ego development and the structure of personality. *Developmental Review*, 3, 339-350.

Loevinger, J. (1991). Personality structure and the trait-situation controversy: On the uses of low correlations. In W. M. Grove & D. Cicchetti (Eds.), *Thinking clearly about psychology*. Vol. 2:

Personality and psychopathology (pp. 36-53). Minneapolis: University of Minnesota Press.

Maslow, A.H. (1970). *Motivation and Personality*. New York: Haper and Row. 1970. 2nd ed.

Stephen P. Gordon *Developmental Supervision: An Exploratory Study of a Promising Model*, *Journal of Curriculum and Supervision*, Summer 1990 Vol.5 No.4 293-397

ESTIMATING THE CAPACITY OF THE SURFACE AREA OF JABI LAKE, ABUJA NIGERIA USING NORMALIZED DIFFERENCE WATER INDEX ALGORITHMS DERIVED FROM OPERATIONAL LAND IMAGER, ABUJA-NIGERIA

Yahaya Usman Badaru¹ + Yakubu Mohammed Nassir² Musa Yakubu³,
 1. Department of Geography, Federal University of Technology, Minna, Nigeria
 2. Director, DLN Consults and Partners, Abuja-Nigeria 3. Principal Consultant,
 Yamiza Limited, Suite A201, Garki mall, Abuja Investment Neighborhood Centre,
 Garki-2, Abuja, Nigeria

ABSTRACT

The Normalized difference water index (NDWI) with Ratio of vegetation index (RVI) is successfully used to extract the information of the lake reservoir capacity in the Month of May during the wet/rainy season and for the month of November during the dry/cold season using Landsat-8 Operational Land Imager (OLI) multispectral images. This study specifically uses spectral band-5/NIR (0.845-0.885), band-6/SWIR (1.560–1.660) and the spatial resolution of 30m for NDWI and RVI assessment. The results provided an opportunity to show the correlations of changes of which OLI NDWI/RVI algorithms achieve an overall level of accuracy/strength of 100% and a kappa coefficient of determination of 1.0000 (100%). The results showed a decreasing trend in the lake water surface area from the month of October/November, 2015 (cold/dry season) period, when the lake lost almost 0.42 km² (38.2%) of its surface area of water. It is evident that excessive ground water exploitation such as sinking/drilling of borehole and wells, and seasonal variation of rain water has all reduced the surface area of the Lake reservoir. The results illustrate the effectiveness of the NDWI and RVI approach for water measurement, especially in detecting the changes between two seasons simultaneously. Therefore, appropriate measures need to be taken to prevent further decline of the lake, so that the function postulates by the lake as the only medium for balancing heat transfer and corridor of recreational will not be defeated.

Keywords: NDWI, RVI, OLI, surface area, water reservoir

1. Introduction

The lake consists of a combination of natural and manmade features spanning to approximately 1.78 km from Jabi resettlement camp toward Kado. The lake serves the area as the only primary drainage receiver, fishing corridor, recreational and to balance heat transfer. It provides a window for extracting moisture or liquid water information changes more directly due to its cloudless appearances to outer-space sensors (Sun, et al. 2012). The water conditions have a complex hydraulic setting that is characterized by highly unsteady flows, the complexity leads to differential unique water information (Badaru, et al. 2014).

1.1. Study Area

Jabi Lake or reservoir is located in the Federal Capital City (FCC), Abuja; it has the geographic coordinates of latitudes 8°30'N and 9°20'N, longitudes 6°20'E and 7°33'E. The lake spans from jabi

resettlement camp to kado, which is about 1.78 km long and 0.55 km wide. The climate of the lake basin is characterized by temperate weather, being influenced by the surrounding conditions of the lake.

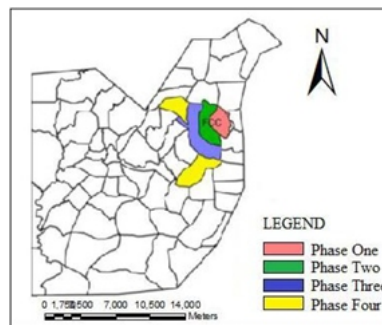


Figure 1: Map of the FCT, showing the location of the city of Abuja (AGIS, 2006)

1.2 Aim and Objectives

The aim of the study is to carry out the spatio-temporal variation analysis of changes in the lake reservoir using OLI classification algorithms in order to produce the best result. The Objectives of the study include:

- Detailed ground truthing of the site for effective examination of the study areas
- To carry out a comparative spatial analysis of the findings.
- To assess the accuracy of the changes.

2. The Normalized Difference Water Index related studies

Gao (1996), developed the Normalized Difference Water Index (NDWI) for determination of VWC based on physical principles. According to Gao (1995), the values of NDVI and NDWI are in the range between -1 and $+1$ can be computed for each pixel using the following equations (Gao, 1995):

$$NDVI = \frac{\rho(\text{band4}) - \rho(\text{band3})}{\rho(\text{band4}) + \rho(\text{band3})} \quad \text{And} \quad NDWI = \frac{\rho(\text{band4}) - \rho(\text{band5})}{\rho(\text{band4}) + \rho(\text{band5})}$$

Where band 4 is 0.86 and band 5 is 1.24, where ρ represents the radiance in reflectance units. Hardisky et al. (1983) developed the similar Normalized Difference Infrared Index for the Landsat Thematic Mapper of which this index is related to VWC. For Landsat TM/ETM+, RNIR and RSWIR correspond to bands 4 (0.78–0.90 μm) and 5 (1.55–1.75 μm), respectively. New satellite sensors (Gao, 1996) such as the Moderate Resolution Imaging Sensor (MODIS) on NASA's Terra and Aqua satellites now make such data routinely available. Gao further recommend the use of a SWIR band centered at 1.24 μm , now available on MODIS, for NDWI because this band has similar atmospheric transmittance as the NIR band.

3. Method to validate the NDWI

The Normalised Difference Water Index (NDWI) of landsat-8 Operational Land Imager (OLI) employs the near-infrared (NIR) band and a band in the short-wave infrared (SWIR). The NIR band 5 (0.845–0.885) and SWIR band 6 (1.560–1.660 micrometer) are used. The NDWI index is expressed with the following equation: $NDWI = \frac{NIR - SWIR}{NIR + SWIR}$, $NDWI = \frac{\text{Green} - NIR}{\text{Green} + NIR}$ (Mc-Feeters, 1996). Surface water change detection is usually conducted by extracting water features individually

from the multi-date satellite images, before making comparisons to detect their changes (Du, et al. 2012; Xu, H. 2006).

4. Results

4.1 NDWI of the month of May 2015

Figure 2 shows the relevant information extracted in the month of May of the 2015, during the period of wet/rainy season which is classified into their intensity values. The radiance reflectance presented in light-green indicates NDWI values of 0.438 and RVI level of 0.5, that shows the ultimate dimension of the reservoir at 0.76 km². In the same vein, The Figure 2 further demonstrate the reflectance in dark-red intensity indicating RVI level of 0.1 meaning that the water bodies in that section of the reservoir indicates the presence of bedrock saturated with shallow liquid-water. However, the light-green NDWI image represents the supersaturated and deepest part of the reservoir, whereas dark-red NDWI image represents the saturated and lowest or shallow part. As a result, it appears that Jabi lake give high NDWI values in the month of May that suggests the period of wet/rainy season are adequately saturated with water.

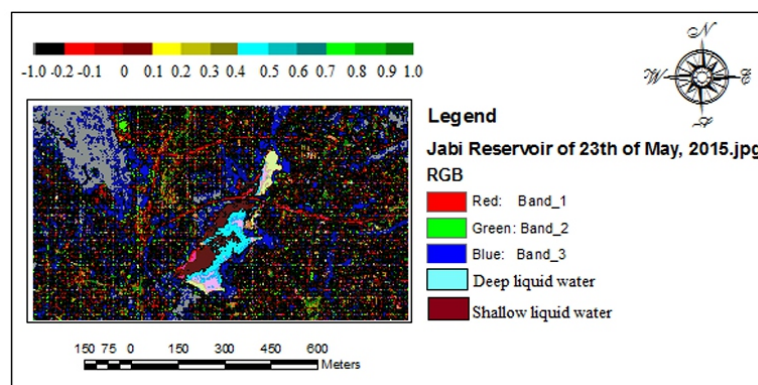


Figure 2: The NDWI for the month of May, 2015 (wet/rainy season)

4.2 NDWI of the month of November 2015

Figure 3 shows the analysis of the month of November of the 2015, during the period of cold/dry season. The reflectance in dark-green indicates NDWI values of 0.438 and RVI level of 1.0, of which the shallow water paradigm spans at the dimension of 0.34 km². Consequently, the lake is experiencing a tremendous decrease, since they do not receive any additional water in the cold/dry season.

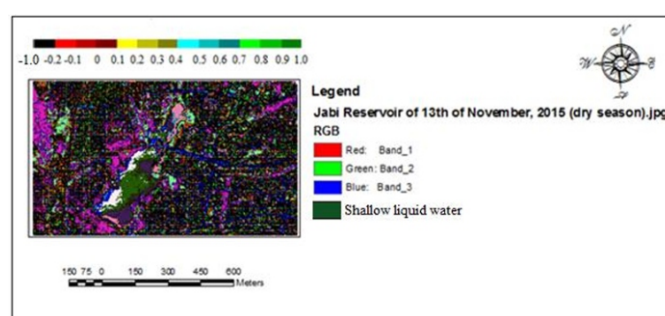


Figure 3: The NDWI for the month of November, 2015 (dry season)

4.3 Change detected

The Figure 4 shows the decreasing trend of the lake, accelerating at a slow movement as indicated in the pixel F1 corresponding to F8, and faster between the pixels D3-6 that corresponds to D9-12 as recorded in the month of May and November. The Figure also indicates that some reasonable reduction of the lake dimension occurred at A5, A6, B4, B6, C3, C6, D3, D7, E2, E5, F1, F3, G1, G2 in the wet/rainy period as against A12, B11, B12, C10, C13, D10, D12, E10, E11, F8, F10, G8 and G9 in the cold/dry period (Figure 4).

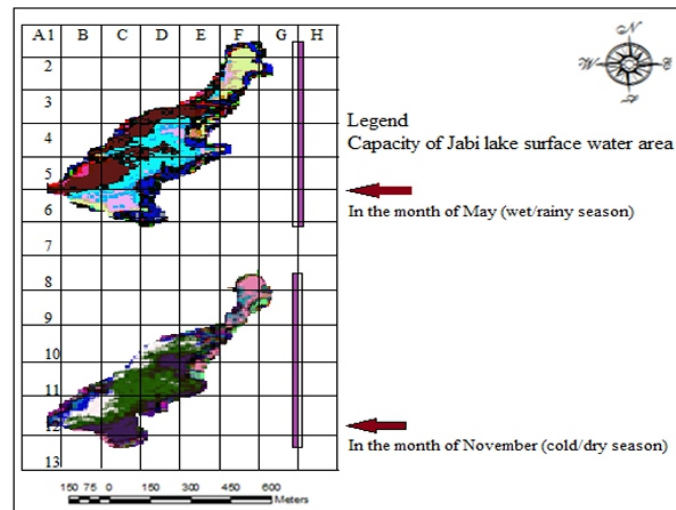


Figure 4: The paradigm of the change detected during the month of May and November, 2015

4.4 Regression Analysis

Figure 5 shows positive relationship to the decreasing trend in the capacity of water in the lake, particularly in the month of November 2015 as against the month of May when the lake water was saturated, of which the kappa coefficients of determination R^2 are 1.0000 (100%). These results show a high level of accuracy and strength in their relationship that are 100%. Therefore, the study concludes that both values are statistically significant.

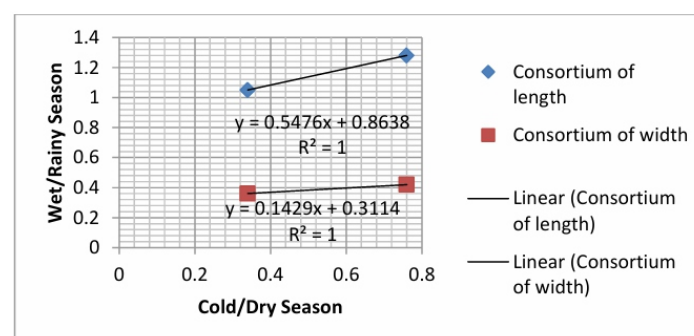


Figure 5: The statistical analysis of wet/rainy and cold/dry seasons for the month of May and November, 2015

4.5 Discussions

The Figures 2-5, indicate the paradigm of shrinkages of the capacity of water as recorded between the month of May (2015) and November (2015) during the wet/rainy season and cold/dry season. Tentatively, the capacity of the water in the lake shows a decrease of 0.42 km², and further indicates monthly average of 0.06 km² for the month of May, June, July, August, September, October and November have also recorded 14.29% shrinkage in 2015. Jabi Lake lost more than half of its water in the period of the cold/dry season with half of this decline occurring in the months of October and November, 2015. If this trend continues, it is very likely that the lake will lose all of its liquid water in the near future. This is very critical because the lake provides many benefits for the society and the people living in its surroundings. Therefore, appropriate measures need to be taken by policy makers to prevent further decline of the lake and to restore the lake to its original condition. It is evident that excessive ground water exploitation and absence of rain water have all reduced the capacity of the surface area or Lake Reservoir.

5.0 Conclusions

This study aimed to conceptualize the spatial temporal changes of the Lake of the period of wet/rainy and cold/dry seasons, in the month of May and November of 2015 respectively. The results shows intense decrease in the lake water in the mid part of October and November 2015 when the lake lost about 0.42 km² (38.2%) of its water. If such a decreasing trend in the Lake continues, it is very likely that the lake will lose its entire water surface in the near future.

Acknowledgments

The DLN and YAMIZA Limited are hereby acknowledged for providing the facilities utilized during this research work. The authors are also grateful to Salihu of the department of Geography, Federal University of Technology, Minna, Nigeria for providing the multi-temporal Landsat data.

References

- Badaru, Y.U., Onuh, S., Musa, Y., Ishiaku, I. & Nassir, Y.M. (2014). *Analysis of Sensor Imaging and Field-Validation for Future Flood along River Niger and Benue Confluence Ecology, Lokoja, Nigeria*. "Journal of Environment and Earth Science" Vol. 4, No.22 (2014), pp. 90-99
- Du, Z., Linghu, B., Ling, F., Li, W., Tian, W., Wang, H., Gui, Y., Sun, B. & Zhang, X. (2012). *Estimating surface water area changes using time-series Landsat data in the qingjiang river basin*, "China Journal of Application of Remote Sensing". 6, doi:10.1117/1.JRS.6.063609.
- Gao, B.C. (1995), *A normalized difference water index for remote sensing of vegetation liquid water from space*, in SPIE's 1995 Symposium on OE / Aerospace Sensing and Dual Use Photonics, Vol. 2480, Orlando, FL.
- Gao, B. C. & Goetz, A. F. H. (1995). *Retrieval of equivalent water thickness and information related to biochemical components of vegetation canopies from AVIRIS data*. "Remote Sensing of Environment", 52, 155 – 162.
- Hardisky, M. A., Klemas, V. & Smart, R. M. (1983). *The influences of soil salinity, growth form, and leaf moisture on the spectral reflectance of Spartina alterniflora canopies*. "Photogrammetric Engineering and Remote Sensing", 49, 77 – 83.

- Mcfeeters, S.K. (1996). The use of normalized difference water index (NDWI) in the delineation of open water features. "International Journal of Remote Sensing", 17, pp. 1425–1432.*
- Sun, F., Sun, W., Chen, J. & Gong, P. (2012). Comparison and improvement of methods for identifying water bodies in remotely sensed imagery. Gery. "International Journal Remote Sensing". 2012, 33, 6854–6875.*
- Xu, H. (2006). Modification of normalised difference water index (NDWI) to enhance open water features in remotely sensed imagery. "International Journal Remote Sensing". 27, 30253033.*

PERSECUTION AS A UNIQUE MARK OF HRISTIANITY: A COMPARATIVE STUDY OF THE EARLY CHURCH AND THE MODERN CHURCH

Adegbite, Deborah Doyinsola (PhD)

Bethel Institute of Theology and Biblical Research, An Affiliate of
Olabisi Onabanjo University, Jesusland, Akiriboto, Gbongan, Nigeria.

ABSTRACT

The Christians' persecution is not necessarily just killing. It is a firm attempt of a community or government to rebuke, subdue, or silence Christianity which in most cases results in Christian massacre, burning of churches and other forms of humiliations. It is noted in history that persecution is part of Jewish heritage. If part of Jewish heritage, then it must be part of what Christianity inherited from her Jewish background since Jesus never promised worldly peace for his followers. The understanding of this will be explored in a comparison with the modern church. The implication and application to the Nigerian context is also discussed. The methodology adopted consists of the critical historical analysis as well as exegesis of some biblical passages, using the Reader Response hermeneutical principle to investigate the contextual understanding of how persecution is a unique mark of Christianity from time immemorial and how it has remained the unique mark of Christianity up till now. The result shows that while the modern church prays against persecution; it seems they forget that it is part of Christian package and nothing can be done to stop persecutions in the real sense.

Key Words: Jewish heritage, Pagan Persecution, Official Persecution, Kingdom of God, Mark of the Church, Early etc.

Introduction

The verb 'persecute' is generally defined as threats especially because of religious or political devotion, J. D. Douglas and F. F. Bruce agree that it is "an encounter by Christians",¹ this was nothing new. It was part of their Jewish heritage. After Jesus Christ has been put to death, his followers, the church, suffered serious persecution in the Roman Empire but the more they were killed, the more they increased in number and strength. The persecution of Christians is surrounded by many reasons both in the early period and the modern times. Insults, mass murder, burning of churches and other forms of humiliations are not alien to the history of Christianity. In the early period, there were a lot of persecutions in the Roman Empire, under different emperors especially from the first to fourth century. Boer suggests that "the basic reason for the persecution of Christians in the Roman Empire was the refusal of the church to permit her members in emperor worship."² That is, the Christians refusal to worship or acknowledge the emperor as god is against the faith of the entire Roman Empire and the rule of the emperor. This reality is spelt out in one of Tertullian's famous apology where he wrote on behalf of the Christians appealing³ for their toleration. When he wrote to the Tribunal during the reign of Emperor Septimus Severus that "The blood of the Saints is the seed (that grows the Church)"; this was based on the writing that a large number of people were transformed and converted to the faith through witnessing the Christian martyrs and themselves becoming part of the Christian martyrs as a result.

Persecution as Jewish heritage

Christianity is an offshoot of the Judaism, that is, it is rooted in Judaism. It is asserted that persecution is part of Jewish heritage too. It is understood that before Christian era, the Bible records the Jews being persecuted in Egypt (Ex. 1-3), they were attacked by the Assyrians in 2 Kings 19, the Babylonians also sent a large numbers of them into exile in the 6th century BC (1 Chr. 9:1ff) where the Jews were "persecuted" as an indigenous ethnic group with a strong and sovereign attachment to their land. The Persians and the Greeks also persecuted the Jews in their own way. The Psalmist also speaks of the of the righteous who suffers persecution as a result of their faith in God, and who prayed to God for deliverance from such suffering (Ps.7;35;37;79;119:84-87). In the intertestamental period, people almost renounced their faith because of the persecution of the period. When Antiochus Epiphanes⁴ who, after capturing Jerusalem, stopped all religious activities in and outside the Temple, including male circumcision and the observance of Sabbath. He defiled the Jewish temple by sacrificing a pig to Zeus (the chief Greek god) of whom he believed he incarnated and turned Judaism into a forbidden religion and tried forcing them to worship the Greek gods.

Persecution of Christianity in the First Four Centuries A.D.

Persecution of the Christians mainly covers the first four centuries; that is, from the New Testament period to the "Great Persecution" of Diocleian in 284 – 305AD. Jesus, the Lord of Christianity was persecuted and finally killed by both religious and political officials (Mk.3:6; Lk.4:29; Jh.5:16; Acts 3:13-15). The persecution of this early period can be classified into two categories; the first category is concerned with the first and second century persecutions which are sporadically enforced but the second category, which comprises of the third and fourth century persecutions are the ones spoken of as "The Great Persecution". This was because they (especially Decian and Diocletian persecutions) were empire wide and they aimed at a complete and sudden wipe out of Christianity. Persecution of the Church in all the early period includes harassment or maltreatment, killing and deprivation of rights.

The persecutions were from both Jews and gentiles and the general reasons for the persecutions were for the name (Christian), Atheism, Religio illicit⁵, Cannibalism, Incest, Arson, threatening the state's safety, etc. It is necessary for this paper to explore each of the notable persecutors and analyse their reasons and implication for the persecution before explaining the response of the church to it. The persecutions of the Early Church are mainly in three parts, the Jews, Pagans and the Official persecutions.

The Persecution from the Jews

The Jews had always persecuted Jesus who was the Lord of the Church during his earthly ministry; he was arrested, killed directly or indirectly by them. They vouch to stop his followers (Mt. 2:23 cf. Acts 24:5) for so many reasons which can be understood in three ways - political, religious and natural. Acts of Apostles chapter 8 attest to Saul/Paul's hatred for Jesus' followers before he became one of them too. The reasons for Paul's persecution can be explained naturally because of the fact that he was a Benjamite and Jesus was from Davidic lineage which automatically opens an old wound for the family of Saul for David's descendant (e.g. 1 Sam.19:17; 20:30). It is also religious because Yahweh is King in Israel, the monotheistic idea of Judaism necessarily will fight against any threat to that, and a normal Jew will see Jesus' claims as claiming to become an illegal King of the Jew. The political aspect of the persecution is glaring in the actions of Herod in Acts chapter 12 who was trying to appease the Jews by arresting Peter after killing James. This was political because Herod ordered the arrest of Peter when he

realised that the Jews derived joy in James' death.

Eusebius attests to the Jewish persecution of Christians that "... Barcochba, the leader of the revolt of the Jews, gave orders that Christians alone should be led to cruel punishments, unless they would deny Jesus Christ ..."6 The reason for this is the fact that the Christians could not support the Messianic pretension of Barcochba.

The Pagan Persecution

The hatred from paganism is displayed in the Ephesians riot of Acts 19:21-24, apart from this fact, the reason for the persecution is also economical because verse 25 asserts that it was their means of livelihood.

The Official Persecution

The persecution by the government is what is known as the official persecution of the church and the persecutions from the Jews and Pagans are nothing to compare with it. Emperor Nero (54-68 AD.) was the first official Christian persecutor; from Foxe's view, he was the sixth Emperor of Rome7 he blamed Christians for the fire of July 19, A.D. 64 which swept across Rome. According to Tacitus8, Nero himself was responsible for the fire, tradition even declares that Nero wanted to erect new and modern buildings to replace old ones; when he was suspected for causing the fire; he blamed it on the Christian and used them as scape goats for his own offence. John Foxe asserts that the conflagration continued for nine days and in Foxe's own word: "In particular, he had some sewed up in skins of wild beasts, and then worried by dogs until they expired; and others dressed in shirts made stiff with wax, fixed to axletrees, and set on fire in his gardens, in order to illuminate them."9

The reason for Neroean persecution is more than Rome just being set ablaze because Christians did not do it, there was no evidence that they did it, yet, Nero still vowed to hunt them down and kill them. Tacitus seems to now highlight the clue for the reason for Neroean persecution by referring to them as "a class hated for their abominations"10 when reporting the fire incident. This persecution claimed the lives of two great Apostles, Peter and Paul yet the outcome of the persecution did not diminish Christianity, rather the spirit of Christianity increased.

Emperor Domitian (c. 90 - 96) was the second official persecutor of Christians and the seventh Roman Emperor. His persecution mainly centred in Rome and Asia Minor, his family is known for the willingness to destroy both the Jew and the Christians alike, he was the son of Emperor Vespasian and the brother of Emperor Titus, who is also known as Titus Flavius Domitianus. He was the first emperor to call himself by the title dominus et deus, meaning, "lord and master", and one of his reasons for persecution was atheism, because Christians refused to serve or see him as the 'lord' or 'master' of their lives by refusing to offer incense to the genius of the emperor so, he persecuted Christians for being atheist. Among other punishments during his persecution of Christians, his niece Flavia Domitila was banished, together with her husband, his cousin was killed for being a Christians and he also confiscated Christian properties. He was the one who sent Apostle John to the exile in island of Patmos. In the last three years of Domitian's reign, he also terrorized and executed many of the nobility as well because he felt they were not loyal to him; his wickedness was so intolerable that his wife Domitia ganged up with those who plotted against and assassinated him in 96AD.

Trajan (98-117 A.D.), the eighth emperor and the third persecutor was not even sure of why the emperors before him persecuted the Christians. He only persecuted the Christians for the mere name “Christian”. The fact is that by the time of Pliny/Trajan correspondence, the name “Christian” sounds like when someone shout something like, “help, help, thief, thief” in Lagos in those days when people will not even bother to ask, what did he steal before they start to burn the person alive with tyres, kerosene and matches. Many of the second century Apologists, especially Justin Martyr, Tertullian advocated then that those who are accused as Christians should be investigated because names do not deserve hatred¹¹. This is simply the situation found in the correspondence between Emperor Trajan and his senatorial governor of Bithynia, Pliny the Younger, who reported his dealings with those accused as Christians before him saying: “I do not know what is the crime usually punished or investigated, ... meantime, this is the course I have taken with those who were accused before me as Christians. I asked them whether they were Christians, and if they confessed, I asked them a second and a third time with threats of punishment. If they kept to it, I ordered them for execution.”¹² He was really not sure of why they were being persecuted; all he knew was that they should be punished even without unreasonable reason. Trajan, in his reply to Pliny the Younger agreed that he (Pliny) will not find anything incriminating the Christians in the examination of the cases who were accused before him as Christians. The fact is that: “... indeed nothing can be laid down as a general ruling involving something like a set for of procedure” and added that “they are not to be sought out but if they are accused and convicted, they must be punished.”¹³ To this statement, Tertullian, in his apologetic comment on Trajan’s reply to Pliny’s letter, where he asserts that nothing can be laid down as a general ruling, in Tertullian’s word, “What a decision, how inevitably entangled! He says they must not be sought out, implying they are innocent and he orders them to be punished, implying they are guilty. He spares them and rages against them, he pretends not to see and punishes”¹⁴. The outcome of this persecution is not far-fetched in the same Pliny/Trajan correspondence where Pliny noticed and pointed out the Christians’ stubbornness which deserves punishments. It is obvious here that even if Pliny was not sure of the crime that is attached to the mere name “Christian”, he was sure and accused Christians of “obstinacy and unbending perversity”¹⁵. This noted attitude as an outcome of the persecution shows that Christians are used to being persecuted.

Emperor Hadrian (117-138 AD.) was the fourth official persecutor of Christians. Being a trained soldier, he adhered strictly to the old religion but despite being described as someone with a loving and peaceful mind, yet, Christians were still persecuted during his regime for the violation of law and order but he insisted that those who are innocently or wrongly accused as Christians should be protected and added that those who brought the false accusations should be punished for doing so but he did not outlaw action against Christians. It was glaring that some non-Christians had been accused as Christians. According to John Foxe, about ten thousand Christians were martyred during his reign including the whole family of Eustachius¹⁶. This is because by his time, many people were falsely accused to be Christians. Hadrian died in c.138AD but before his death he appointed Antonius Pius as his successor. Antonius Pius was another Emperor, it was said that there was no persecution of Christians, well, this is probably because he read the apology of Aristides and Justin Martyr.’¹⁷

However, he followed the policies of Trajan and Hadrian of forbidding mob violence; punishing Christians only after regular legal processes. Due to this he was referred to as ‘a friend of Christianity’¹⁸ by some writers. Also it was stated that Christians suffered during his reign. It is argued that the great Polycarp of Smyrna died during his reign in c.155AD.

Marcus Aurelius (161 -180 AD) was considered the most cruel of all the persecutors of the early period simply because he was a Stoic philosopher. Stoicism¹⁹ was a philosophical school which was founded by Zeno of Citium (335-263BC). It proposed harmony between the Logos²⁰ and the world. The philosophy influenced many educated people and great men including Emperor Marcus Aurelius but he persecuted Christians on philosophical grounds and blamed them for every natural disaster. He ruled and hated Christians with passion. This was because he thought of Christians as undermining the structure of civilization which he was trying to maintain. During his persecution, John Foxe, asserts that his persecutions were so inhuman that many of those who watched them shuddered with horror, and were astonished at the courage of the sufferers.²¹

Septimus Severus (193-211), and Maximus the Trachian (164 -238) were a bridge to the “Great Persecution”. Septimus Severus’ rule was at first favourable towards Christians but later he blamed and punished them for every natural disaster. It was during his persecution that Origen’s father, Leonidus, Irenaeus (130-202) of Lyons and Pope Victor of Rome were martyred. During Maximus’ persecution, Christians were buried in fifty and sixty inside large pits²²

Emperor Decius (249 - 260) was the first to introduce the empire-wide persecution. He aimed at uniting the empire religiously as well as in other areas and he saw Christianity as threat to such unity; he therefore demanded that everyone should participate in the worship of the Emperor god and that they must get a certificate of worship (libilus) to show for it. His attempt caused division and schismatic movements in the early church; the Church was divided into at least five different groups as a result of his persecution. The first group were the confessors,²³ the second were the voluntary apostate,²⁴ they are called voluntary because they apostatised voluntarily, the third were those who apostatised after series of torture, and the fourth group were those who got the certificate through bribery while the fifth group ran away into exile. The Christian version of eremitic life which began in Egypt in the 3rd century AD was said to have been as a response to Decian persecution. During this persecution, Christians fled to the desert to pray and to maintain their faith.²⁵ This was also the origin of what led to the Novatian Schism²⁶. During this persecution, the butchered to make a Roman holiday was described in a tale of the Ancient Rome, foreworded by R. L. Roberts. It was noted that “the whole extent was covered with human beings of every class and every age ... more than one hundred thousand people were gathered ... animated by one common feeling, it was the thirst for blood which drew them hither”.²⁷ The outcome of the persecution led to the apostasy of many members but it did not wipe out Christianity.

Emperor Diocletian is considered the worst of all the persecutors of the Early Church. He aimed at destroying Christianity by reviving the traditional gods, rebuilding the old pagan temples and the introduction of the use of devices on coinage. During the most part of his reign he did not persecute Christians but because his vice, Galerius, who was a pagan, prompted him to do so for threatening the state safety; using the cases of Christians refusing to comply with military ceremonies. The document illustrating the history of the Church to AD 337 noted that it was on the 23rd February 303, that the Church in Nicomedia was destroyed with all the sacred books inside it. Needham also attests that Galerius in 303 persuaded Diocletian to take action against the Christians too.²⁸ Churches were destroyed and bibles were burned, the appointment of all Christians in the government and army were terminated. Immediately, arrests were made of all clergy and were instructed to make sacrifices to the gods in order to be free or else they are tortured and executed.²⁹ It was Diocletian persecution that tore into factions the Eastern Church because of the schismatic

Jesus Christ Prepared His followers for Persecution

The assertion that Jesus is the Prince of Peace and the originator of peace in the lives of his followers is true on one hand, but on the other hand, the concept of Jesus' idea of peace as presented in the Gospel of John 14:27 is contrary to the kind of peace that is preached in churches. It is glaring that most Christians do not see persecution as a package of their Christian lives but the fact remains that Jesus never promised such easy life Christianity. The Greek text is as follows:

*Ειρηνην αφήμι υμιν, ειρηνην την εμην διδομι υμιν ου καθ
ως ο κοσμος διδωσιν εγω διδομι υμιν. μη ταρασσεσθω
υμων η καρδια μηδε δειλιατω.*

“...Peace I leave with you; my peace I give unto you; not as the world gives do I give to you. Let not your hearts be troubled, neither let them be afraid.”³¹ (John 14:27).³²

is probably from a verb which by implication means prosperity, quietness, or rest; it is used for ordinary salutation and word of farewell in the East. The fact that the that is used in verse 25 of the same chapter suggests that Christ will be departing from among them soon; therefore, the of verse 27 is a parting word of peace to his disciples. According to the International Critical Commentary on John, it is asserted that is used by John only here and in 16:33; refers to spiritual peace which Christ gives except other places where it is used for salutation (20:19, 21, 26; 2Jn.3 and 3 Jn14). “Here conveys more than the usual ‘Go in peace.’”³³ Jesus intended to give a permanent Peace gift. He said: “I have told you all this so that you may have peace in me. Here on earth you will have many trials and sorrows. But take heart, because I have overcome the world” (Jh.16:33).

The chosen bible passage presents us with the Jesus' kind of ‘peace gift’, a rare kind, and it is not the kind that is given by the world. The promise was primarily and specifically made to those of his followers living in the Roman Empire, in a world where physical peace is difficult for the Christian community; it must then be understood that the peace here is a spiritual one. Despite the fact that the earliest Christian community had no access to the complete New Testament, all they had is the Old Testament and fragments of the New Testament yet they clearly understood what Jesus meant and their understanding of Jesus' peace gift is the background for the later Church fathers' theology of peace.

The main biblical words for “peace” are shalom in the Old Testament and in the New Testament both words mean completeness, soundness or wholeness (Gen. 29:6 and Luke 24:36). Apart from the fact that “peace” is a favourite biblical greeting, it is used for expressing cessation from war (Josh. 9:15); for companions between friendship (Gen. 26:29 and Num 25:12). Peace has a lot to do with health, prosperity, well-being, security, as well as quiet from war (Eccl. 3:8; Isa. 45:22). The prophet Isaiah pointed out repeatedly that there will be no peace for the wicked (Isa. 48:7; 57:21), even though many of the wicked continually seek to encourage themselves with a false peace as found in Jer. 6:14.

Again, peace is a condition of freedom from strife whether internal or external. Security from outward enemies (Isa. 26:12), as well as calm of heart for those trusting God (Job 22:21; Isa. 26:3), is included. Peace is so pleasing to the Lord to the extent that the godly are commanded to seek for it diligently (Ps.34:14; Zach. 8:16, 19). In the New Testament it is a characteristic of a believer as well as a

comprehensive and valued gifted from God, and the promised and climaxing blessing messianic times (Isa. 2:4; 9:6-7).

The theology of Jesus' peace is peace with God, the inner peace which automatically radiates in interpersonal relationships. This peace is to be experienced by the followers of Jesus as a taste of the reign of God here on earth, Peace is to be in the Presence of God and it is the parting gift of Jesus to his disciples. "Peace I leave with you or my peace I give to you" (John 14:27). While there is no doubt that peace is considered as a central value of the Christian life, it should be noted that this peace promise has a political background in that context. It is the message of 'The Gospel' (i.e. Jesus) versus 'a gospel' (Caesar), the Kingdom of Jesus within Caesar's kingdom. He told his followers that they will have problems with Caesar because they are not of the world; Caesar owns what they had in their pocket but God owns lives. Therefore, Christians should not return violence with violence "turn the other cheek" when slapped on one (Matthew 6:39); they should love their enemies (Matthew 5:44), love their neighbour as themselves (Matthew 22:39), are required to treat others as they would want to be treated (Luke 6:31). By being peacemakers they will be called children of God (Matthew 5:9).

| The Peace of Jesus | The Peace of the World | Comment |
|---|---|--|
| Peace with God which included being at peace with man. | Looking for Peace from man and surrounding which may or may not include giving it back. And it does not necessarily include having peace with God | Finding Peace with man is like finding a refuge in the desert. It is time we understand that there are people we cannot influence positively or negatively, no matter how hard we try, they will be what they will be and do (good or bad) what they will do. There are also things we cannot change because we have no power over them. |
| Jesus' peace is from within, no matter what happens outside the body; be it poverty, sickness, or the worst kind of persecution, etc. | The world's peace is without – it includes not being persecuted in any way, having money especially when it is needed, Living well, happy marriage, good health, good job, etc. | As far as Jesus is concern, it does not profit a man to gain all these and lose his soul. He was aware that his disciples may not achieve peace within Roman Empire so he warned |
| Jesus did not seem to care much about what we consider as peace and this is seen in the story he told of the rich man and Lazarus who has nothing but when he died, his funeral rites was done by angels (Lk. 16:19-31). This story reveals the fact that even if Lazarus lack physical peace yet he had the kind of peace that even the rich man in all his riches did not have. | | them of the impending possible problems. |

The “Kingdom of God” Promised by Jesus to His Followers

The Kingdom of God in Jesus’ teaching is the awkward kind that encouraged His followers to endure suffering and persecution instead of avoiding it. Jesus came to preach and teach Peace in relation to the Kingdom of God, which was the Reformed Old Testament Idea of the same. It is noted that Yahweh attempted the establishment of His Kingdom of peace in the Old Testament when he gave the law that is, the Ten Commandments (Ex.20):

1. You shall have no other gods before me.
2. You shall not make to yourselves any graven image ...
3. You shall not take the name of Jehovah your God in vain.
4. Remember the Sabbath day, to keep it holy.
5. Honour your father and your mother
6. You shall not kill.
7. You shall not commit adultery.
8. You shall not steal.
9. You shall not bear false witness against your neighbour.
10. You shall not covet your neighbour’s house.

The whole of this ten commandment is divided into two, the first four (1-4) is related to God and the remaining six (5-10) is related to our neighbour. Rabbi Simlai, a talmudic sage from Palestine in the 3rd century A.D. asserts that there are six hundred and thirteen (613) laws in the Torah.³⁴ These laws, whether ten (10) or six hundred and thirteen (613), David summarised them into eleven (Ps 15), Isaiah opts for six (33:15) while Micah says three (6:8), Deutro-Isaiah, prefers two (56:1) but for Habakkuk, it is just one law (2:4). Jesus’ summary of the O.T. laws is two like that of Deutro-Isaiah but while Deutro Isaiah interpreted the whole in terms of “keeping judgment and doing peace,” Jesus’ division of the laws are: “Loving God and Loving fellow human.” The whole six hundred and thirteen laws of Rabbi Simlai, eleven of David, six of Isaiah, the two of the Deutro-Isaiah and the only one of Habakkuk are what are summarized into two by Jesus. It is natural that the basis of showing love to anyone that is loved, either God or man is simply making or living in peace with them; thus Jesus’ method summarises every type of law that has to do with the Kingdom of God.

Persecution as Mark of the Church

Jesus said Christians do not belong to this world (Jh. 15:18-19). Apostle Peter mentioned it that the world will naturally expect us to be like them and since in reality we are not like the world, the world will hate us (1 Pt.4:3-4). Paul in 2 Timothy 3:12 warns that living a Christian life attracts persecution; even the Montanists³⁵ in the Early Church taught that Christians should not run away from persecution, they should go out of their ways to look for it. Christians should learn to recognise the value of persecution and even to rejoice in it.

A Comparative Study of the Early Church and Modern Church in Nigeria

| | |
|--|---|
| Many things have changed since the early period of the church and these changes include even reasons for persecution. For example, in the early church, the Holy Spirit was very active. The Apostles' sermons were Spirit filled sermons that are backed with signs and wonders | In the 21 st century, the Gospel preachers are jesters, comedians, entertainers and Spirit quenchers. |
| Ananias and Sapphira, with their lies, were not able to hide in the Early Church (Acts 5) | Many Ananias and Sapphira-like Christians are not only members but Church Workers, even Pastors in the 21 st century Church and no one is able to challenge them of their evil deeds. The Apostles prayed, reasoned, disagreed to agree and concluded with one heart and voice in many discussions, while the 21 st century Apostles are busy fighting, gossiping, discriminating and never agree on anything because their hearts and voices are never together. |
| Clement of Rome (c.30-c.100) ³⁶ , an Apostolic Father, was possibly the one mentioned in Phil.4:3. Like Apostle Paul, he took it upon himself to sort out the schismatic problems in the Church at Corinth on behalf of the Church at Rome. Some of their ministers are voted out of office and Clement became worried because of the wellbeing of the body of Christ Empire-wide. ³⁷ | In the 21 century Nigerian Church, many of the pastors will add directly or indirectly to the problem of another denomination only for egoistic and superiority reasons. |
| <p>Ignatius of Antioch (d. c.115?): he knew was going to die in Rome but on the way, he wrote letters to five churches in Asia, one to Polycarp of Smyrna from Troas and one to the church in Rome, seven letters in all are credited to his name. The letter that he wrote to Rome was a very touchy one. There, he informed the church in Rome of his coming and also warned them against any effort to save him from the impending death.</p> <p>May I have joy of the beasts that are prepared for me. I pray too that they may prove prompt with me. I will even entice them to devour me promptly, and not to refrain, as they have refrained from</p> | Many of today's Nigerian ministers are the persecutors of the saints and many so called Christians too see nothing good in being persecuted forgetting that Jesus already promised tribulations as part of the package of the peace he gave to his followers. "I have spoken these things to you so that you might have peace in me. In the world you shall have tribulation, but be of good cheer. I have overcome the world" (Jh.16:33). |

| | |
|--|--|
| <p>some, through fear. ... Now I am beginning to be a disciple.³⁸</p> <p>The importance of this letter shows the attitude of the Early Fathers to martyrdom, he as a person sees it as a great price to pay for following Christ regardless what others think about it, he, like most Christians of his time looked at bright side of the evil situation. He declared, similar to Apostle Paul, let there come fire and cross and conflicts with wild beasts, wrenching of bones, mangling of limbs, crushing of the whole body ... may I but attain to Jesus Christ.³⁹ (cf. Rom. 8:35). The Christians then read and understood that Christ did not promise bed of roses to those were his followers.</p> <p>Hermas, a contemporary of Clement of Rome, but an ordinary church member, was so concerned for the sinful lives and the moral decadence of the members of the Roman Church, this must have forced him to see the vision on the post baptismal sin that one can only be forgiven of sin once after baptism.</p> | <p>Many of the 21st century preachers never see anything wrong with the immorality that is going on in the church. Instead of addressing it, they call it many fanciful names, such as, “new wine”, “new revelation”, “new anointing”, etc.</p> |
|--|--|

In addition, Polycarp of Smyrna, a disciple of Apostle John who was the last link of the Apostolic Age, he did three important things that honour Christ and his position as a Church Father:

1. He has the opportunity of using a veto power on the Quatodeciman controversy but he preferred to consult Pope Anicetus of Rome who disagreed with him on the issue of the date of Easter; yet he holds no grudge against Anicetus it was an amicable disagreement. Most Nigerian pastor will hold more than grudge, they will curse such a junior or younger minister who dare disagree with them.
2. Secondly, Polycarp was a cautious man. When Marcion⁴⁰ began to teach heresy, at a time he met with Polycarp in Rome. As described by Irenaeus, when in excitement asked Polycarp: “Do you recognize me?” possibly thinking that Polycarp will embrace him, and commend him; instead, Polycarp answered and said: “I do recognize you, the first-born of Satan.”⁴¹ Polycarp did not condone evil practice or heretical teaching and he was not intimidated by Marcion’s wealth. On the other hand, the 21st century senior pastors would not mind serving the popular rich young minister and they cannot correct him for any wrong doing.
3. When Polycarp was to be martyred, the soldiers who were sent to arrest him, after so much persistent, saw him, “they wondered at his age and his constancy, and at there being so much haste about the arrest of such an old man.”⁴² He was encouraged and persuaded to curse Christ by saying ‘Caesar is Lord,’ but he answered and said: ‘Eighty-six years have I serve him, and he has done me no wrong: how then

I blaspheme my King who saved me?"⁴³ It should be noted that Polycarp at this age should be considered an old man, and for the fact that he claimed to have served Christ for eighty-six years may also mean either that he was a born Christian, which is unlikely or he started to serve Christ at a tender age (which should not be lesser than twelve years of age). Whichever the case may be, this man lived his long life in the service of Christ without a record of soiled image or accused of any dirt of immorality and Eusebius attests to the fact that Polycarp had been "treated with every honour even before his head was white."⁴⁴ Unlike most of our modern ministers of the Gospel who would dent the image of Christ in their lives and ministry before long. Someone asked whether there will be different compartment in heaven for people like the early fathers whose faith never shiver in the presence of death, sickness and ugly situations of life.

When they suffered, it was for Christ's sake and not because they offended the law

Conclusion

In conclusion, since it was Jesus, the Lord of Christianity, who confirms that his followers are blessed when they are insulted, persecuted, and falsely accused of all kinds of evil because of Him and that they should rejoice and be glad, because their rewards are great in heaven. He reminded them that they will be persecuted in the same way they persecuted the prophets who were before you." (Mt. 5:11); they are like sheep among wolves (Mt. 10:16).

He also warned them that they will be killed and whoever kills them will think that he is offering God service (Jh16:1-4), they will be hated by all nations for His name's sake (Mt.24:8-14), they will even be betrayed by members of their families (Mk. 13:11-13) and they are cursed when they are spoken well of (Lk. 6:26).

It is glaring that the world is more dangerous this days than it was in the past and there is no single evidence that it will be better, it can only get worse but as Apostle Paul says, I consider that the sufferings of this present time are not worthy to be compared with the glory which shall be revealed in us." (Rm.8:16-18) and warned Timothy and the Thessalonians that everyone who wants to live a godly life in Christ Jesus will suffer persecution" (2 Ti. 3:12; 1 Thes.3:4). For these reasons, the modern church should stop teaching fallacies and begin to teach the reality of what Christ taught, that persecution is not alien to Christian life and that it should be expected.

References

- 1 J.D. Douglas, et al, *The New Bible Dictionary*, London: Inter Varsity Fellowship, 1962, p, 968
- 2 H.R. Boer, *A Short History of the Early Church*, Michigan: Eerdmans Publishing Company, 1976, p. 45.
- 3 *Appealing here should not be misunderstood to mean pleading because Tertullian is considered and an Apologist without apology.*
- 4 *Known as Antiochus IV*
- 5 *Religio Illicit used for describing Unregistered or Unlawful Religion*
- 6 J. Stevenson, *A New Eusebius: Document Illustrating the History of the Church to A.D.337*, London: SPCK, 1998, p. 22.
- 7 J. Foxe, *Rewritten and Updated by H. J. Chadwick, The New Foxes Book of Martyrs 2001*, Benin City:

Bridge-Logos Pub. 2001, p.11.

8 It should be noted that Tacitus supported the killing of Christians but he affirms that they are not to be blamed for the fire. This is because he referred to them as a class, hated for their abomination. Eusebius p. 2.

9 J. Foxes, Foxes, *The New Foxes Book of Martyrs* 2001, p. 12

10 J. Stevenson, *A New Eusebius*, p. 2.

11 J. Stevenson, *A New Eusebius*, p.66

12 J. Stevenson, *A New Eusebius*, p.18

13 J. Stevenson, *A New Eusebius*, London, SPCK, 1957, p. 16.

14 J. Stevenson, *A New Eusebius*: p.p. 20-21

15 J. Stevenson, *A New Eusebius*: p.18

16 Eustachius was a successful and brave Roman commander, who refused to join in the Emperor worship as a celebration for his noble service to Rome. His wife, children and he were killed.

17 E.S. Moyer, *Who was Who In the Church History*, Chicago, Moody Press, 1962, p.16.

18 E.S. Moyer, *Who was Who In the Church*, p.16

19 Stoicism is a religious philosophy which is expected to be the kindest of all philosophical groups to the Christians. Unfortunately, Marcus Aurelius, who was an adherent, who is expected to lay good example was one of the cruellest persecutor against Christians.

20 Logos is believed to be the soul of the world and the one governs it.

21 J. Foxe, *Rewritten and Updated by H. J. Chadwick, The New Foxes Book of Martyrs* 2001, Benin City: Bridge-Logos Pub. 2001, p.61.

22 J. Foxe, *The New Foxes Book of Martyrs* 2001, p.21.

23 Confessor here does not referred to as the acknowledgement of one's sin, or how it is used in the sixteenth century to refer to the Lutheran Augsburg Confession (1530), and it is not confessor that is used in Christianity for a priest who hears confessions and sometimes acts as a spiritual adviser. During persecution in the Early Church, the word Confessor is used for describing the Christians who possibly must have been tortured for their faith but not executed. They are so called because they did not recant their faith during such persecutions, e.g. Origen.

24 Apostate is a term which refers to one who denies, or abandons his or her religious faith. This could be under pressure, or out of personal volition. Many Christians became apostates during the persecutions that occurred in the early Church centuries.

25 D. D. Adegbite, *A Concise Theological & Philosophical Dictionary*, Edited by C. O. Oshun, Gbongan: BIP, 2015.

26 Novatianism is named after Novatian, a presbyter at Rome. During Decian persecution. After the persecution most of the backsliders are willing to be admitted back into the Church, Novatians insisted that they should be permanently rejected no matter how deep their repentance may be.

27 Martyr of the Catacombs, Grand Rapids MI: Kregel Publication, n.d. p.9.

28 N. R. Needham, *2000 Years of Christ's Power: Part One: The Age of the Early Church Father*, London: Grace Publication, 2002, p. 150.

29 J. Stevenson, *A New Eusebius*, pp. 271-273.

30 Donatism is a schism that is named after Donatus. It is a movement in Roman North Africa in the fourth and fifth centuries, the movement developed a rigorous view of both the church and her sacraments. The problem of the Donatists somehow came to an end theoretically in the time of Augustine of Hippo.

31 RSV Bible

32 NKJV

33 J. H. Bernard, *A Critical And Exegetical Commentary on the Gospel According to St. John*, edited by A.H McNeile, Edinburgh, T & T Clark, 1928, p.554.

34 Torah, http://www.oceansidejc.org/rebmark/TORAH_TABLE_TALK/5769/TTYitro69.pdf (accessed 27th June, 2015)

35 Montanism was named after the Asia Minor teacher known as Montanus who was condemned by the Church as heretic in the 2nd century AD

36 Clement of Rome wrote 1 Clement to the Church of Corinth on behalf of the Church of Rome in c.96.

37 J. Stevenson, *A New Eusebius*, pp. 7-9.

38 J. Stevenson, *A New Eusebius*, pp. 12-13

39 J. Stevenson, *A New Eusebius*, p.13. cf. Rom 8:35

40 Marcion (c. 100-160), was probably a rich ship merchant and the son of the bishop of the city of Sinope who rejected the O.T. some parts of the N.T., including the accounts of the incarnation and the resurrection.

41 J. Stevenson, *A New Eusebius*, p. 116.

42 J. Stevenson, *A New Eusebius*, p. 24.

43 J. Stevenson, *A New Eusebius*, p. 25.

44 J. Stevenson, *A New Eusebius*, p. 26.

Instructions for Authors

Essentials for Publishing in this Journal

- 1 Submitted articles should not have been previously published or be currently under consideration for publication elsewhere.
- 2 Conference papers may only be submitted if the paper has been completely re-written (taken to mean more than 50%) and the author has cleared any necessary permission with the copyright owner if it has been previously copyrighted.
- 3 All our articles are refereed through a double-blind process.
- 4 All authors must declare they have read and agreed to the content of the submitted article and must sign a declaration correspond to the originality of the article.

Submission Process

All articles for this journal must be submitted using our online submissions system. <http://enrichedpub.com/> . Please use the Submit Your Article link in the Author Service area.

Manuscript Guidelines

The instructions to authors about the article preparation for publication in the Manuscripts are submitted online, through the e-Ur (Electronic editing) system, developed by **Enriched Publications Pvt. Ltd.** The article should contain the abstract with keywords, introduction, body, conclusion, references and the summary in English language (without heading and subheading enumeration). The article length should not exceed 16 pages of A4 paper format.

Title

The title should be informative. It is in both Journal's and author's best interest to use terms suitable. For indexing and word search. If there are no such terms in the title, the author is strongly advised to add a subtitle. The title should be given in English as well. The titles precede the abstract and the summary in an appropriate language.

Letterhead Title

The letterhead title is given at a top of each page for easier identification of article copies in an Electronic form in particular. It contains the author's surname and first name initial .article title, journal title and collation (year, volume, and issue, first and last page). The journal and article titles can be given in a shortened form.

Author's Name

Full name(s) of author(s) should be used. It is advisable to give the middle initial. Names are given in their original form.

Contact Details

The postal address or the e-mail address of the author (usually of the first one if there are more Authors) is given in the footnote at the bottom of the first page.

Type of Articles

Classification of articles is a duty of the editorial staff and is of special importance. Referees and the members of the editorial staff, or section editors, can propose a category, but the editor-in-chief has the sole responsibility for their classification. Journal articles are classified as follows:

Scientific articles:

1. Original scientific paper (giving the previously unpublished results of the author's own research based on management methods).
2. Survey paper (giving an original, detailed and critical view of a research problem or an area to which the author has made a contribution visible through his self-citation);
3. Short or preliminary communication (original management paper of full format but of a smaller extent or of a preliminary character);
4. Scientific critique or forum (discussion on a particular scientific topic, based exclusively on management argumentation) and commentaries. Exceptionally, in particular areas, a scientific paper in the Journal can be in a form of a monograph or a critical edition of scientific data (historical, archival, lexicographic, bibliographic, data survey, etc.) which were unknown or hardly accessible for scientific research.

Professional articles:

1. Professional paper (contribution offering experience useful for improvement of professional practice but not necessarily based on scientific methods);
2. Informative contribution (editorial, commentary, etc.);
3. Review (of a book, software, case study, scientific event, etc.)

Language

The article should be in English. The grammar and style of the article should be of good quality. The systematized text should be without abbreviations (except standard ones). All measurements must be in SI units. The sequence of formulae is denoted in Arabic numerals in parentheses on the right-hand side.

Abstract and Summary

An abstract is a concise informative presentation of the article content for fast and accurate Evaluation of its relevance. It is both in the Editorial Office's and the author's best interest for an abstract to contain terms often used for indexing and article search. The abstract describes the purpose of the study and the methods, outlines the findings and state the conclusions. A 100- to 250-Word abstract should be placed between the title and the keywords with the body text to follow. Besides an abstract are advised to have a summary in English, at the end of the article, after the Reference list. The summary should be structured and long up to 1/10 of the article length (it is more extensive than the abstract).

Keywords

Keywords are terms or phrases showing adequately the article content for indexing and search purposes. They should be allocated heaving in mind widely accepted international sources (index, dictionary or thesaurus), such as the Web of Science keyword list for science in general. The higher their usage frequency is the better. Up to 10 keywords immediately follow the abstract and the summary, in respective languages.

Acknowledgements

The name and the number of the project or programmed within which the article was realized is given in a separate note at the bottom of the first page together with the name of the institution which financially supported the project or programmed.

Tables and Illustrations

All the captions should be in the original language as well as in English, together with the texts in illustrations if possible. Tables are typed in the same style as the text and are denoted by numerals at the top. Photographs and drawings, placed appropriately in the text, should be clear, precise and suitable for reproduction. Drawings should be created in Word or Corel.

Citation in the Text

Citation in the text must be uniform. When citing references in the text, use the reference number set in square brackets from the Reference list at the end of the article.

Footnotes

Footnotes are given at the bottom of the page with the text they refer to. They can contain less relevant details, additional explanations or used sources (e.g. scientific material, manuals). They cannot replace the cited literature.

The article should be accompanied with a cover letter with the information about the author(s): surname, middle initial, first name, and citizen personal number, rank, title, e-mail address, and affiliation address, home address including municipality, phone number in the office and at home (or a mobile phone number). The cover letter should state the type of the article and tell which illustrations are original and which are not.

[illegible]