Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
ISSN Online: *2449-0679* ***ISSN Print:*** *2354-3981*

Retirement Education and Financial Security among Senior Citizens in Tertiary Institutions in Nigeria

Abiodun Olufemi OLAWUNI
olawuniabbey@gmail.com;olawuni.ao@unilorin.edu.ng
+2348034931516

Taiwo Toyin AMBALI
taiwotoyinambali@gmail.com;ambali.tt@unilorin.edu.ng
+23480285 12865

&

Tajudeen Oluwafemi NOIBI
tajunoibi@yahoo.co.uk; noibi.to@unilorin.edu.ng
+234 8037175825

[1,2&3]*Department of Adult & Primary Education,*
Faculty of Education,
University of Ilorin, Ilorin. Kwara State

Abstract

The study focused on retirement education and financial security among senior citizens in tertiary institutions in Nigeria. A descriptive survey design was used for the study. The population of the study comprises all senior citizens in tertiary institutions in Nigeria while the target populations were senior citizens aged 55years and above from which 100 respondents were randomly selected as samples for the study. The instrument was content validated by the experts. The overall reliability value of 0.76 was obtained using the Cronbach Alpha. Three research questions and one hypothesis were formulated to guide the study. The data collected were analyzed using mean and standard deviation to answer the research questions, while the one sampled t-test statistical technique was used to test the hypotheses. The findings of the study revealed that among senior citizens, retirement *education is not well embraced which resulted in financial insecurity. The aged people's financial security was in doubt after leaving active service due to unsuitable pension scheme and their welfare are not taken care of adequately. Based on the findings, the researcher recommended among others that there should be proper and adequate retirement education among senior citizens and that more awareness should be created to engender adequate financial security among senior citizens in tertiary institutions in Nigeria and beyond.*

Keywords: Education, retirement education, financial security, senior citizens.

Word Count: 213

Introduction

Many Nigerian workers are scared at the mention of the word retirement. This is because of the unpleasant experiences of the past retirees in terms of the delay and difficulties encountered in getting their retirement benefits, gratuity and pension. Unfortunately, some retirees have died out of frustration and in abject poverty while waiting to collect their benefits. Some counselling procedures were suggested particularly on proper preparation for retirement and some forms of pre-retirement education necessary for a more fruitful, tension-free, enjoyable and long-lasting retirement in Nigeria.

Akinade (1993), defines retirement as a final stage of life when one leaves an occupation that one had been involved in for a considerable length of one's working life. Retirement is an inevitable stage of ageing where the individual gradually disengages from the mainstream of active work. It is a very sensitive and complex stage in an individual's life. Retirement from work is the first life step that convincingly defines a person as old because it implies withdrawal from normal activities in business, industry or rendering of services. Retirement can be viewed as an act of withdrawing oneself from a particular regular working place. It is the final stage of an individual's working experience when he quits from his occupation, either voluntarily or compulsorily, which also signifies the transition to old age (Ode, 2005). Akonam (2002), stated that the age range of 55 to 60 years marks the period of transition from work to mandatory retirement. It is the official and formal ending of work life. Workers' retirement due to old age is based on some assumptions, which are not only peculiar to Nigeria, but to most other parts of the world. Some of these assumptions are that workers within the age bracket 55 to 60 years have lower productivity due to loss of effectiveness as a result of old age or ill-health. Also, the persons within the age bracket experience widespread difficulty with occupational mobility, because at that age, they feel less free to go on transfer or change jobs, because of immediate and extended family ties. There is an assumption also that these old workers need to give way so that the young unemployed people can get the job.

However, Goldfarb (1994) in Ode (2005) earlier stated that pre-retirement planning is one way to improve the chances of successfully adjusting to the new lifestyle. An individual adjusts to retirement either positively or negatively depending on how he/she perceives retirement. Consequently, an individual who perceives retirement in a positive manner would experience success in retirement while an individual who perceives retirement in a negative manner would have an unsuccessful experience. In essence, there is a probability that those who perceive retirement as a new beginning and continuity, would have positive retirement, while those who perceive retirement as transition and old agerest and imposed disruption would experience a negative adjustment in retirement. Retirement involves a lot of changes in values, monetary involvements, and social aspects of life. For some, it leads to the termination of a pattern of life and a transition to a new one. Some retirees attempt to adjust to their new life after retiring from their employment in various ways depending on how prepared they are psychologically, socially, and financially before the real event happens. Any form of retirement will certainly affect the level of adjustment of the retired individual (Goldfarb (1994) & Ode, (2005).

On the whole, a time definitely comes when the services of an individual may no longer be required. This according to Williams (2007) could be due to the rules of the job, poor health, family responsibilities etc. This position was earlier supported by Quadagno, (2002) who reported that several factors are responsible for people leaving their employment. According to her, these factors include old age, ill-health, inability to secure another employment after losing one, dissatisfaction with the condition of service and family responsibility. Hence, they go into retirement. On the whole, the concept of retirement is based on the general fact that both productivity and the pleasure to work diminish with old age.

However, retirement can be an exciting experience filled with new opportunities and challenges or a new painful transition that brings boredom, lack of purpose and discouragement depending on an individual's perception and planning. The retiree is under psychological pressure and mental cataclysm in trying to strike a compromise between an idealized and a realistic departure from the planet job market to planet retirement. The ending of vocational life is synonymous with departure from biological life especially if he is not successful in his career. On the other hand, if he was successful in his career, he sees his retirement as deprivation from his paradise. Also, some newly retired persons characterize retired life as a succession of surprises that put them under a perpetual stream of shocks. Others see it as a traumatic experience. Part of the discussion focused on how, in light of recent occurrences in Nigeria involving pensioners, some people view retirement as a bitter pill to swallow, even when adequate financial provisions have been made for this expected time. Individual loyalty and dependability begin to diminish throughout retirement. Retirement has been demonstrated to have an impact on residents' income, family structure or relationships, as well as retirees' economic viability, according to research. Furthermore, the mental health of retirees as they age is affected. It is believed that work has a therapeutic value and that without work, mental ailment ensues. It is also believed that retirement marks a decline in social relationships. This is because as a result of financial constraints, associating with friends, associates and family members may become increasingly difficult. Another school of thought however says that retirement gives some people more time for social interaction, leisure, games, reading and writing books. Therefore, compulsory retirement has a determining effect on health and in some cases, can lead to premature death. This may be due to physiological and emotional disorders like moodiness, erratic behaviour, hypertension, stomach, ulcers, heart disease and a pressing tendency to commit suicide. But for others, particularly those who retired voluntarily, retirement helps to remove the physical, mental and emotional pressures of a routine job (Olayiwola (2002); Nwalo (2005)& Jonathan (2009).

The accommodation challenge is another problem encountered by retirees. Some may have to quit official residences belonging to their former employers. The problem then arises when such persons have no buildings of their own and have to move into a rented apartment. This may lead to some emotional stress and low morale. The physical and social changes that come with retirement usually produce a reduction in abilities and responsibilities, which may, in turn, reduce feelings of adequacy and self-worth. Retirees are generally dissatisfied with the mode of getting their post-retirement benefits like gratuity and pension. The payment of these legal benefits is most times unnecessarily delayed and retirees may die due to stress in the process of travelling long distances and waiting in queues to process their retirement papers. One other problem facing retirees is that of isolated or solitary life. Retirement particularly the compulsory or forced one may lead to some psychological effects such as disbelief or denial, anger, anxiety disorder, depression, substance abuse and frustration (Akonam (2002), Denga (1992, 1996), Ode (2005).

There is a need for retirement and pre-retirement counselling education in Nigeria. Unless in exceptional cases, most workers that get retired or go into retirement are people that can be described as old adults, usually fifty-five (55) years and above. Whereas we have identified three main forms or types of retirement namely: voluntary or self-retirement; compulsory or forced retirement; and mandatory retirement. It is only in compulsory or forced retirement, the worker can claim not to have prepared for it. Voluntary retirement is at the instance of the worker. This implies that he has laid out his plans before seeking voluntary retirement. In the case of mandatory retirement, he/she must have long prepared for it since he knows when he will attain the statutory age or would have put in the required number of years in service. In the two latter cases, therefore, it is assumed that the workers would have planned adequately for their retirement.

But statistics from the Federal Ministry of Labour and Productivity (1993) showed that over 90% of retirees in the country looked miserable, confused and helpless. This was due to the fact that they did not plan ahead. The 10% that were found to be doing well in retirement were discovered to be those that adequately planned for their retirement. This shows the importance of planning or preparing well for one's retirement. Planning well involves putting one's priority right and also legitimately saving for the rainy day when one is gainfully employed (Mdaman, 2005). Research has confirmed the statistics stated above that adjustment to retirement is likely to be more successful when the person facing retirement plans ahead and makes decisions about when or whether to retire (Quick and Moen, 2008). Any person who fails to plan is vulnerable to boredom, marital conflict, social isolation, depression, substance abuse and economic stress. Furthermore, Mckinney (2003) asserted that financial security, which is often based on long-range planning, significantly influences the success or enjoyment of the retirement experience. Long-range retirement planning he says focuses on the accumulation of money and assets. The earlier a person starts planning for retirement, the more wealth he or she accumulates and the more he or she has a successful retirement experience.

Retirement education is not a new concept but it is a way of providing guiding counselling and coaching senior citizens entering the difficult process of transition into retirement. It is the idea of making the senior citizens be more conscious of their own strengths and competencies and continually develop and use their strengths as long as possible to develop themselves and the society where they live.

Retirement education is a method of teaching elderly individuals to identify life objectives and ways to attain the objectives in the years after their professional careers. Retirement education helps senior individuals perceive a higher quality of life in active ageing, which will aid in proper planning and preparing for life after active duty. The overarching goal of retirement education is to help seniors figure out who they are. What are they looking for? What will they do to get there? And how will they maintain it to receive feedback?

Retirement education need planning by senior citizens and this will help them to overcome some agitating questions that border them. Some of the agitating questions that border senior citizens include the following: When should I get started on my retirement planning? What are the barriers on my way to plan? Why do I continue to hear so much about financial planning for retirement and little else? Is the institution that I am working with is likely to assist me in my retirement planning? When and how did you get started on your retirement planning? These and many more questions will be settled with the help of adequate retirement education. The senior citizens only need to write their goals and plan along with them.

In addition to planning ahead for retirement, factors in determining the level of an individual's adjustment to retirement include the strength of marriage, health status, contacts with others and family responsibilities. Successful adjustment to retired life requires what successful adjustment to anything requires, that is accepting what one cannot change, taking responsibility for those things one cannot change and maintaining confidence in one's own integrity. In order to overcome the already identified problems of retirees, there is a need to assist them to plan ahead for their retirement. (Akinade (1993); Olayiwola (2002) & Nwalo (2005) opined that pre-retirement counselling is the provision of comprehensive guidance and information concerning the social, emotional, financial and other aspects of retirement. The essence of pre-retirement counselling is to help retirees imbibe the culture of perseverance and prepare for tomorrow, if need be, to develop an alternative vocation not only to avoid idleness on retirement but also to boost their financial status. Hence, he or she will continue to remain relevant within his or her immediate and extended family and social circle. The social and emotional problems and should get himself or herself ready to adjust accordingly. Interactions with colleagues at work will stop and the regular social outings will reduce either due to age, health or financial reasons. He may also find himself alone most of the time.

There are three components of financial planning: Retirement Annuity; Self-directed investments; and Social Security benefits. All these must be spelt well without any ambiguity. Any options that you make must be evaluated and if there is one recurring concern in retirement, it is paying for health care. Senior citizens must develop strategies to cover the expenses of their health care insurance until they start on Medicare. They need some form of Medicare supplemental health care insurance to cover those expenses that are not covered by Medicare. Senior citizens need to protect their assets as well. If they are married, they must ensure that all their properties are in joint ownership with their spouse.

Other precautions that senior citizens need to do include the following:

- Ensure that you state the name of beneficiaries on any retirement plan or life insurance policy so that life will be meaningful after your departure.
- Periodically, obtain and review your credit report. Always avoid on-line trading and companies that offer a free credit report or a free credit score service because they may not be real.
- Start paying down any mortgages, vehicle loans, credit cards to mention few because the sooner you are debt-free, the earlier you will be financially secure.
- Consider making any major purchases prior to your retirement so that you will not continue using your pension to pay it up.
- If you are involved in any self-directed investment fund such as a tax-sheltered annuity, evaluate each investment and forecast for the future.

- Make sure there are no liens against your home or other titled properties.
- Make sure you know and understand any life insurance policies you and your spouse may have beyond those provided by your employer.
- Consider making your funeral arrangements and pre-paying your funeral expenses. You can put any money on the "Payable on Death" (POD) account for that purpose.
- Do not overlook dormant benefits in a retirement plan or a pension fund from a previous employer. Go back over your employment history and search for any benefits that you may know and understand your Social Security benefits as well those that you are eligible to apply for.
- Adjust any contributions to self-directed investments to meet your financial goals.
- Protect your assets by reviewing your planning needs.
- Attending retirement workshops, seminars and training that will assist you for your retirement (Sulaiman (2006); Dike (2007) & Jonathan (2009).

Senior individuals might consider enrolling in continuing education classes in an area of interest and acquiring a new skill such as playing the piano, painting, or drawing. Senior citizens should think about starting a business, getting a second job, mentoring, or conducting voluntary work. They must make a plan for their leisure activities, such as travel, golf, and bicycling, and they must remember to keep their physical health and fitness in mind.

The retirees should be counselled to invest in shares and other forms of business that could start yielding dividends (profit) during retirement. He may even float a non-Governmental organisation (NGO), aimed at identified needs of the community, such as sex education, sanitation, food production and handling the same appropriately. According to Ezeani and Ebosele (2001) in the works of Adeniji et al (2017), during retirement, a retiree public officer usually receives certain benefits in the form of gratuity and pension. Gratuity is the sum total lump paid to a worker on existing from the service either through withdrawal or retirement, while pension is the sum of annuity paid periodically, usually monthly to a public servant who disengages from service after attaining a specified age limit usually 60 years or 35 years of active service. In other words, gratuity and pension are post-employment benefits. These benefits are designed to prevent a sudden sharp drop in the financial capacity and living standard of the worker as would happen with the stoppage of his monthly salary and allowances after disengagement. The lump sum or gratuity he is paid is meant to enable the retiree to finance any post-retirement endeavour of his choice while the pension replaces the monthly salary the retiree gets while he was still in active service (Ndaman (2005) & Williams (2007).

The issue of welfare of retirees is of great concern to the government of any country and it is believed that this is dependent on the efficient management of their retirement benefits by their Pension Fund Managers. In Nigeria, before the inception of the Contributory Pension Scheme, the Defined Benefit (Non-Contributory) Pension Scheme was in operation but it was beset with a lot of problems such as irregular/non-payment of pensions and gratuity, mismanagement of pension funds, lack of regulatory and supervisory agency, no accountability, no transparency and large-scale corruption. Thus, retirees suffered untold hardship which led to the enactment of the Pension Reform Act, 2004, and 2014 which brought on board the Contributory Pension Scheme. However, it is a known fact that under this scheme, retirees suffered untold hardship due to non-payment or delay in payment of their pensions and gratuity. These and other reasons led to the introduction of the Contributory Pension Scheme (CPS) by the Federal Government of Nigeria in 2004, and with this, the hopes of retirees and would–be-retirees were rekindled. (Akonam (2002) & Ritzer (2008).

According to World Bank (1991), it is said that the principal challenge of development is how to improve the welfare of the people. The Federal Government of Nigeria stated that one way of achieving improvement in the well-being of the citizens of a society is to ensure that due reward is given to retirees regularly. (FGN, 2004). This will enable retirees to meet their basic needs of food, clothing, housing, health services, thus living their lives with the expected self-esteem. And a functional pension scheme is the needed apparatus to achieve this. In Nigeria, when the Defined Benefit Scheme, that is, the Non-Contributory Pension Scheme was fully in operation in the Public Service, it was bedeviled with a lot of problems such as the inability of retirees to access their funds early, thus some of them died without even earning any gratuity or pension. The process of accessing the fund was cumbersome to the extent that some retirees collapsed while queuing up for verification. There was also large-scale corruption in the system and public servants working in Pensions Department fraudulently enriched themselves.

Statement of the Problem

It is certain that the income of civil servants is rarely adequate to enable them to fend for themselves in the pre-retirement era. Uncertainties associated with retirement are usually tortuous. The deplorable social conditions of retirees tend to generate pre-retirement anxieties among civil servants. While retirement remains a luxury in developed countries, in Nigeria, workers are always afraid of financial insecurity after retirement. The social insecurity associated with retirement in Nigeria makes retirement unattractive to workers (Jonathan 2009). The establishment of the 2004 contributory pension scheme in Nigeria became inevitable in order to overcome these challenges. This opened a new chapter in the management of pension funds in Nigeria. Pension is one of the structures designed by the society to weather the storms of old age especially on retirement from active service. The non-contributory pension scheme established in Nigeria by Act 102 in 1979 face enormous challenges like nonpayment of pensions on time, embezzlement of pension funds and too many screening exercises that is usually stressful on retirees. In this study, civil servants who are future retirees express their feelings over the non-contributory pension scheme and the challenges retirees face in the administration of the scheme. It is against this backdrop that the researcher wishes to investigate retirement education and financial security among senior citizen in tertiary institutions in Nigeria.

Aim and Objectives of the Study

The aim of the study is to access the retirement education and financial security of the senior citizens while the specific objectives include to:

1. identify the level of retirement education of senior citizens.
2. find out the extent of senior citizens' financial security.
3. examine the extent to which government provisions toward financial security is made available to senior citizens.
4. determine the relationship between retirement education and financial security of senior citizens in universities.

Research Questions

1. What is the level of retirement education of senior citizens?
2. To what extent are the financial security of senior citizens?
3. What is the extent to which the government provisions towards financial security is available to senior citizens?

Hypothesis

There will be no significant relationship between retirement education and financial security of senior citizens in universities.

Methodology

This research adopted a descriptive survey design. The population of the study was university employee while the target population were senior citizens aged fifty-five and above. The statistics of this population was obtained from the establishment department of the university from which respondents were sampled using the purposive and systematic sampling technique. The instrument for this study was a researcher-developed questionnaire titled "Pre-retirement Education and Financial Security" (PEFS) with four sections. The items were on a four-point scale of measurement Very true of me, True of Not true of me and Not very true of me. The instrument was face and content validated by educational measurement experts while its reliability was established using the Cronbach's Alpha method for determining the internal consistency of the instrument. An overall reliability coefficient of 0.91 was obtained. The collated data was analysed using descriptive statistics mean and standard deviation for answering the research questions and correlation statistics for testing the generated hypothesis at 0.05 level of significance.

Demographic Characteristics of the Respondents

The socio-economic features of the respondents are; gender, age, education, marital status, occupation and ethnicity group as presented in Table 1.

Table 1: **Demographic Characteristics of the Respondents**

	Characteristics	Frequency	Percent
Gender	Male	96	76.2
	Female	30	23.8
	Total	**126**	**100.0**
Age	55-60 years	111	88.1
	61-65 years	15	11.9
	66yrs and above	0	0
	Total	**126**	**100.0**
Staff Status	Teaching	93	50.6
	Non-teaching	33	13.1
	Total	**126**	**100.0**

As shown in Table 1, 96(76.2%) of the respondents were males while 30(23.8%) were females. This shows that more male participated in the study than female senior citizens. On age distribution of respondents, Table 1 also revealed that 111(88.1%) of the respondents were aged between fifty-five and sixty years, 15(11.9%) were aged between sixty-one and sixty-five years, while none of the respondents was sixty-six years and above. This shows that most of the respondents were aged between fifty-five and sixty years.

Answering Research Questions

Research Questions One: What is the level of pre-retirement education of senior citizens?

To answer research question one, responses were analyzed using descriptive statistics of frequency and percentages as shown in Table 2.

Table 2: Level of retirement education of senior citizens

	Frequency	Percent
Low	72	57.1
Moderate	48	38.1
High	6	4.8
Total	**126**	**100.0**

As shown in Table 2, 72(57.1%) of the respondents had a low level of retirement education, 48(38.1%) had a moderate level of retirement education while 6(4.8%) had a high level of retirement education. This shows that the level of retirement education of most senior citizens was low.

Research Questions Two: What is the extent of senior citizens' financial security?

To answer research question two, responses were analyzed, using descriptive statistics of frequency and percentages as shown in Table 3.
Table 3: Extent of financial security of senior citizens.

	Frequency	Percent
Low	108	85.7
Moderate	15	11.9
High	3	2.4
Total	**126**	**100.0**

As shown on Table 3, 108(85.7%) of the respondents had a low extent of financial security, 15(11.9%) had a moderate extent of financial security while 3(2.4%) had a high extent of financial security. This shows that the extent of financial security of most of the senior citizens was low.

Research Questions Three: What are government provisions for financial security is available to senior citizens?

To answer research question three, responses were analyzed using descriptive statistics of mean and standard deviation. With a minimum and maximum of 1 and 4, a mean of 2.5 and above indicated government provisions as shown on Table 4.

Table 4: Level of government provision toward senior citizens' financial security

Items	Mean	SD
The pension schemes are favourable to senior citizens due to government intervention	1.8095	.88285
Pension operations are transparent and unreliable to senior citizens	2.0476	.72506
The government used to monitor the operations of pension schemes	2.3810	.90206
Any pension schemes that fail were being sanctioned by the government	2.3571	.95049
Senior citizens are always dissatisfied with their post-retirement benefits like gratuity and pension	1.6905	.63830
Management of pension scheme makes retirement attractive	1.9762	.91620

As shown in Table 4, with a mean response of below 2.5, respondents indicated that the pension schemes are not favourable to senior citizens due to government intervention; pension operations are not transparent and unreliable to senior citizens, government do not monitor the operations of pension schemes, failed pension schemes were not sanctioned by the government, senior citizens were dissatisfied with their post-retirement benefits like gratuity and pension and management of pension scheme makes retirement unattractive.

Hypothesis Testing

H_{01}: There will be no significant impact of retirement education and financial security of senior citizens in universities.

The data collected from the study were analyzed using Pearson's Product Moment Correlation (PPMC) statistics as shown in Table 5.

Table 5: PPMC summary of impact of retirement education and financial security

Variables	N	Mean	SD	Cal. r-value	p-value	Decision
Retirement Education	126	19.36	3.72980			
				.739	.00	**H_{01} Rejected**
Financial Security	126	22.07	5.06940			

P<0. 05

As shown in Table 5; with a Pearson's Correlation value of 0.739, and a P<0.05, the decision is to reject H_{01}. This means that there is a significant impact of community education and financial security of senior citizens in the university. It therefore implies that the more senior citizens are educated on retirement, the more financially secured they are.

Discussion of the Findings

Base on the findings of the project, it shows that most of the respondents were aged between fifty-five and sixty years and that is why they were refer to as senior citizens. And based on the research question one, the level of pre-retirement education of senior citizens was low. This was in line with (Olayiwola (2002) & Nwalo (2005) that opined that pre-retirement education is essential and all senior citizens need it in order to assist and help them to plan ahead. Also, the extent of senior citizen's financial security was low. Many senior citizens did not have trust in the employers and government as well. All the intention of the employers and government is to use them and sustain them for the work they were doing. There is no plan for their retirement. Government has no tangible provision for senior citizens apart from their pension scheme. The pension schemes are not favourable to senior citizens due to government intervention. Pension operations are not transparent and reliable to senior citizens and government did not monitor their operations. The senior citizens suffered untold hardship due to non-payment and delay in payment of their pensions and gratuity. And the reason of establishing contributory pension scheme was forfeited because there is no sincerity in their operation and the financial security is not there for senior citizens to have access to their pension contribution at the end of their retirement. In essence, there is a significant impact of pre-retirement education and financial security of senior citizens in the universities. It is therefore implying that the more senior citizens are educated on retirement, the more financial secured they are.

Conclusion

Finally, there is a need to organise pre-retirement seminars and workshops for those who want to retire soon. However, the question that immediately arises is to what degree they have been effective in meeting the requirements of this group of people. This question arises since it appears that the majority of the participants leave empty-handed, only to return to their tiredness blues later. According to this study, the non-contributory pension scheme has a significant impact on civil officials' pre-retirement lives in Nigeria. Respondents (civil servants) expressed concern about the non-contributory pension scheme's provisions.

Recommendations

The researcher concludes and recommended that:

i. Pre-retirement education should be seen as a necessity by all organizations, government and non-governmental organizations to prepare their intending retirees adequately for life after work or service.

ii. Facilitators or resource persons for seminars or workshops for intending retirees, must of necessity include guidance counsellors or counselling psychologists, who will handle the emotional aspect of the programme, other than skills acquisition and financial management that will be handled by other experts.
iii. Retirees should be assisted financially through the granting of soft loans with low-interest rates and no collateral by government agencies and other interested organizations. This will enable them to set up outfits to practice the skills or vocations they would have learnt during the pre-retirement seminars.
iv. Government and all employers of labour should re-examine and structure the process through which their retired employees get their gratuity and pension benefits. This should be with the aim of removing all the stress, frustration and delay associated with getting such benefits at present.
v. The establishment of a civil service pension board by Federal and State government to put in place a permanent structure for the management of pension cases in the state.

References

Adunwoke, P (2010). Pain and the pensions. The Guardian, Sunday July 4th, page 4.

Akonam, A. M. (2002). Attitude of Public Servants in Onitsha Urban, Anambra State towards Retirement: Counselling Implications. *The Counsellor.* pp. 159 – 164.

Dike, C (2007). Understanding the Nigerian pension reform, Enugu: Providence Press Nigeria Ltd.

Egong, A. I, Akpama, E.G, & Usani, M. O. (2005). Counselling for Retirement from Service: Problems and Solutions; *The Counsellor*, pp.24 – 33.

Ekoja, C & Tor-Anyiin, S. A. (2005). Psychological Effects of Retirement on Retirees: Implication for Pre-Retirement Counselling in Nigeria, *The Counsellor.* pp.146 – 155.

Federal Republic of Nigeria (2004). "Qualitative analysis of circumstances and consequences in Thailand", Population Studies.

Mdaman, I. A. (2005). Planning for Retirement through Counselling: *The Counsellor*. pp. 12 – 23.

Musari A. (2012). 'How task force exposed N1.1billoin monthly fraud in police pension office' in the Guardian newspaper, vol. 29, No 12, 149, April 2nd, pages 1 and 2.

Nsirimobi, O.S. & Ajuwede, I. M. (2005). Effectiveness of group counselling and Bible therapy on Workers Pre-retirement Adjustment in Port Harcourt Local Government of Rivers State: *The Counsellor*, PP 136 – 145.

Nwalo, N. B. (2007). Pension administration in Nigeria, problems and prospects, Abakaliki: Willyrose and Appleseed Publishing Co.

Ode, T. A. (2005). Counselling for Retirement Adjustment: Conference Proceedings for the 28th Annual Conference of the Counselling Association of Nigeria, PP.3 – 11.

Olayiwola, K. (2002). Pension schemes' administration in Nigeria: prospects, problems and policy options, Ibadan: Development Policy Centre.

Oviomo, E.E. (2007). Retirement and associated problems in Nigeria: the way forward, Ibadan: Cardinal Publishers Pension Reform Act 2004.

Pension Act 102 of 1979 of the Federal Republic of Nigeria Pension Reform Act 2004,

Riboud, M. and Chu, H. (1997). Pension reform, growth and the Labour Market in Ukraine, Policy research working paper No.1731 February, 1997.

Ritzer, G. (2008). Sociological theories seventh edition, New York: McGraw-Hill.

Settoon, R.P, Benneth N & Liden, R. C. (1996). Social Exchange in Organizations: Perceived Organizational Support, leader member exchange, and employee reciprocity: Journal of Applied Psychology 81(3), 219-227.

Soyimbo, F. (2010). The Plight of pensioners, The Guardian, Sunday July 4th.

Sulaiman, A. A. (2006). Retirement and Adjustment: A case study of Retirees in Lagos State: *The Counsellor*, PP 213 – 221.

Transparency International (2008). Country report. *International Journal of Humanities and Social Science.* Vol. 6, No. 3; March 2016, 134

Williams, A. (2007). Attitude towards retirement and strategy for counselling retirees for possible political participation: *The Counsellor*, PP.148 – 156.

World Bank (1994: Averting the Old Age Crisis Policies to Protect the Old and Promote Growth: Oxford University Press.

Jonathan, G. (2009): Nigeria: The fear of Retirement. Daily Trust. On line available atshttp://allafrica.com/stories/200910050548.htm 1. Retrieved 20/9/10.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
ISSN Online: *2449-0679* ***ISSN Print:*** *2354-3981*

Pre-service Teachers' Assessment of Open Educational Resources for Learning and Research in Universities in Kwara State

M. R. ABDULRAHMAN[1]; A. H. AJANI[1]; C. ASIYANBOLA[1]; K. K. OLADOSU;[1]& M. O. ABANIKANNDA[2]
[1]Department of Educational Technology
University of Ilorin, Ilorin, Kwara State, Nigeria.
[2]Department of Science, Technology and Mathematics Education. Osun State University, Osogbo, Osun State, Nigeria.
Corresponding Author: ajaniadedejihammad@gmail.com

Abstract
Open pedagogy or Open Educational Resources (OER) aims to democratize knowledge. Thereby, providing free access to users to become knowledge co-creators and learn by exploring educational resources according to their own interests. Having a platform to explore is not as important as having the required resources to explore the platform. Aside from this, evidence in the literature showed that students in developed countries are avoiding the use of OER despite the availability of required resources to use OER. The question is what will be the situation among developing countries undergraduates who have access to limited resources to utilise OER? This can only be imagined. Thus, this study examined pre-service teachers' assessment of OER for learning and research in universities in Kwara State. Two main research questions were answered descriptively using frequency, percentage, mean and rank ordering. A two-stage sampling technique was employed in selecting 313 pre-service teachers across two universities in Kwara state. A validated researcher-designed questionnaire with a reliability value of 0.83 was employed in collecting data in this study. The outcome of this study indicated that pre-service teachers have access to minimum required resources to access OER and they positively assessed the use of OER for learning and research. In line with this, this study concluded

that OER provides avenue for knowledge democratization. This study thus, recommends that pre-service teachers need to be motivated to keep using OER for learning and research purpose, as this will serve as an enabler in building a greater knowledge-based society.

Keywords: Open Educational Resources; Open Pedagogy; Pre-service Teachers; Research; Learning.

Word Count: 145

Introduction

Across the world, priorities have shifted to providing a common education agenda as entrenched in the Sustainable Development Goal 4 (SDG4) which is to ensure equitable and inclusive quality education and lifelong learning for all by 2030. It is expected that by the end of 2030, the educational gap would have been bridged, inequalities in education would have reduced drastically, and remote learning would have become accessible to every student. In achieving these objectives, it is evident that SDG4 is primarily hinged on been driven by Information and Communication Technology (ICT) majorly. In this regard, ICT can be described as a collection of technological resources that facilitate ease of information access, acquisition, and dissemination.

With the permeation of ICT in virtually all educational endeavours, democratisation of knowledge and information becomes implementable. The early information democratization started with the Open Course Ware (OCW) initiative of Massachusetts Institutes of Technology (MIT) in 2001 who made all her courses available for use by anyone at no cost via the Internet (Agbu, *et al.,* 2016). This form of knowledge democratization is termed Open Education Resources (OER) by the United Nations Educational and Scientific and Cultural Organisation (UNESCO), because it underlined the enormous potential to propagate its 'Education for All' ambition. Other term ascribed to this knowledge democratization is open pedagogy. Either OER or open pedagogy, what is most important is the creation of avenues for informal classroom where learners can be trusted to co-create and learn by exploring according to their own interests, instead of being bored, demeaned, and alienated (Krelja, 2016).

There is no doubt that the traditional approach to information sourcing and research has shifted through the evolvement of ICT and OER. Both play an essential role in acquiring research materials in the digital era. ICT now complements, enrich and transform education for the better. OER is simply described as the educational resources or learning materials that are available online at zero cost to everybody. The Organization for Economic Cooperation and Development (OECD) described OER as digital learning resources offered online freely and openly to knowledge seekers: teachers, educators, students, and independent learners in order to be used, shared, combined, adapted, and expanded in teaching, learning and research (Orr, et al., 2015). In another description, Fitzgerald (2007) described OER as educational materials that are licensed in a manner that will provide users with rights to use them in different ways at no cost.

Machado, *et al.,* (2016) asserted that OER refers to digitalized learning materials offered freely to educators, educational institutions and self-educated students who can use and reuse them to learn and research. Thus, making OER one of the enabling elements of educational innovation. Mortera, et al., (2013) claimed that the use of OERs in learning institutions offer various benefits. These include cost, educational process enrichment, technology appropriation competencies development, educational quality improvement and efficiency, reduction of time needed to source for learning material, and a host of others. OERs are also tools that can boost learning and research. The positive impact of OER on learning and researching is interactive exploration and student collaboration (Bonilla, *et al.,* 2010). The use of OER as a didactic expository strategy presently has a greater acceptance among students in regards to comprehensive reading and information sourcing for their project (Pérez, 2017). This situation coincides with the results from Mortera *et al.* (2013) investigation where 76 % of teachers agreed to using OER to support their teaching.

In another study by Chib, and Wardoyo (2018), the researchers asserted that OER is increasingly playing a pivotal role in distance learning systems in many parts of the world. Distance learning being characterised with flexible learning opportunities, allowing minimization of constraints in terms of access, time and place, pace, and method of study. This means that distance learning, facilitated by the OER available offers enhanced access to individuals who are constrained from attending traditional institutions. Open educational resources (OER) can be (re) used, revised, remixed, redistributed, and retained (Wiley, 2014). This sharing tenet is facilitated by the legal use of open licenses that work with copyright to give users certain automatic rights.

In this current study, the argument is that the impact of OER on educational opportunities is evident. However, If the impact of OER is measured across an entire sample of students, then it is necessary for researchers to consider other available opportunities prior to implementation of OER. Past research reveals some insights as to what other avenues do students access to source for research resources. In a survey conducted on over 22,000 Florida students enrolled in public universities and colleges found that close to 66.5% of students reported not using OER at some point in their research exploration (Grimaldi et al., 2019). While this statistic is concerning, the data are limited in that they do not indicate what the access rates are in any given classroom. Just because a student avoided using OER once, does not mean they will repeat the behaviour for all of their other learning endeavours. And the case is equally vice versa. Another concern of this study was that if students in developing countries with lots of resources are avoiding the use of OER, what will be the situation among developing countries undergraduates who have access to limited resources to utilise OER? This can only be imagined. Thus, the main purpose of this study was to examine pre-service teachers' assessment of OER for learning and research in universities in Kwara State.

Research Questions

In line with the purpose of this study, the major research questions were that:

1. Do pre-service teachers have the required resources to access to OER for learning and research?
2. What is the assessment of pre-service teachers on the use of OER for learning and research?

Methodology

This study adopted a quantitative research design of a survey type, while targeting pre-service teachers in universities in Kwara State. Two-stage sample techniques was employed in selecting the sample size. First stage included a stratified sampling technique to select 2 public universities in Kwara State. The school was selected on the basis of the federal and state ownership; and the second stage employed a simple random sampling technique to select 313final year pre-service teachers for the study. The research instrument for the study was a researcher-designed questionnaire with 3 sections. Section A of the instrument solicited for the demographic data of the respondents; Section B was interested in respondents' access to resources in accessing OER for learning and research; and Section C elicited information on respondents' assessment of pre-service teachers on the use of OER for learning and research. Sections B was rated on a Boolean scale of Accessible and Not Accessible, while Section C was rated on a modified Likert Mode Scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) with weighted value of 4 to 1 in terms of scoring.

In ascertaining the reliability coefficient of the instrument, Cronbach Alpha Coefficient was used to determine the internal consistency reliability of the instrument revealing a value of 0.82. The data collected were analysed using descriptive and inferential statistics with the use of Statistical Package for Social Sciences (SPSS) software version 23.0. Frequency distribution and mean were used to answer the research questions. With considerations for the ethical concerns of participants in this study, the researchers sought consent of the respondents and subsequently informed them about the study procedure and the importance of the study. The respondents were not compelled to respond to the instrument. All the respondents were given a sense of autonomy, and anonymity, confidentiality and privacy of the respondents were maintained and considered. Data collected were treated with utmost confidentiality and anonymity.

Results

Administration of Instrument and Demographic Information

Table 1: Presentation of Demographic Data Based on School Ownership.

Ownership	Frequency	Administered Percentage	Returned Frequency
Federal	203	64.9	199
State	110	35.1	108
Total	**313**	**100**	**307 (98.1)**

Table 1 revealed the proportion of respondents that participated in the study according to their school. A total of 313 questionnaires were administered, only 307 were returned valid, amounting to 98.1% response rate. Indicatively, most of the pre-service teachers were from federal-owned university (64.9%) compare to those form state-owned university (35.1%) Indicating that more federal-owned pre-service teachers participated in the study.

Research Question One: Do pre-service teachers have the required resources to access to OER for learning and research?

Table 2: Accessibility to Resources to Access OER for learning and Research

›sources	Accessible		Not Accessible	
	Frequency	Percentage	Frequency	Percentage
Personal Computer	199	64.8	108	35.2
Digital Mobile Devices	307	100%	0	0.0
Internet Access (Personal/ Institutional Wi-Fi Services)	269	87.6	38	12.4
Institutional email service	301	98.0	6	2.0
open creative commons websites	205	66.8	102	33.2
Cumulative Total	**1281**	**83.5**	**254**	**16.5**

In examining the pre-service teachers access to minimum required resources to access OER, statistical frequency and percentage was employed. As shown in Table 2, all the participants had access to digital mobile devices. The table also showed that majority of the participants had access to institutional email services (98.0%); internet access (87.6%); access to open creative commons websites (66.8%); and personal computer (64.8%). In conclusion, a cumulative total of 83.5% indicated that pre-service teachers have access to required resources to access to OER for learning and research. These resources include digital mobile devices, institutional email services, Internet access, access to open creative commons websites, and personal computer.

Research Question Two: What is the assessment of pre-service teachers on the use of OER for learning and research?

Table 2: Pre-service Teachers' Assessment of OER Use for learning and Research

S/N	Item	Mean	Rank Ordering
1.	Using OER for learning helps in generating learning resources that are physically unavailable.	3.91	1st
2.	The use of OER for learning helps me in easily generating current and diverse information for my research	3.52	5th
3.	With OER, getting resources for my research is easier than consulting hardcopies of books.	3.77	3rd
4.	Using OER provides free and low-cost research and learning resources for my study	3.69	4th
5.	OER use provides ease of resource sharing and collaboration with my colleagues.	3.84	2nd
Grand Mean		**3.75**	

Table 3 revealed pre-service teachers' assessment of the use of OER for learning and research. Table 3 indicated that all the items have a mean score higher than the benchmark of 2.50. Indicatively, pre-service teachers claimed that OER: helps in generating learning resources that are physically unavailable; provides ease of resource sharing and collaboration with colleagues; getting resources for research is easier than consulting hardcopies of books; provides free and low-cost research and learning resources for their study; and helps them in easily generating current and diverse information for their research. Cumulatively, the grand mean of **3.75>2.50** indicated that pre-service teachers have a positive assessment of the use of OER for learning and research.

Discussion

This study examined pre-service teachers' assessment of OER for learning and research in universities in Kwara State. The outcome of this study depicted that pre-service teachers have access to minimum required resources to access OER for learning and research. These resources include digital mobile devices, institutional email services, Internet access, access to open creative commons websites, and personal computer. This is in line with the study of Machado, *et al.,* (2016), who claimed that the availability of OER to students do not mean they have access to it, talk more of exploring OER gainfully for their learning. As regards this, the researchers concluded that OER is a collection of digitalized learning materials offered freely to self-educated students who can use and reuse them to learn and research provided they have access to the required resources to access them.

Also, this study found that pre-service teachers have a positive assessment of the use of OER for learning and research. The benefit highlighted by pre-service teachers in using OER include the generation of learning and research resources that are physically unavailable; ease of resource sharing and collaboration with their colleagues; ease of getting resources for research than consulting hardcopies of books; provision of free and low-cost research and learning resources for their study; and easy generation of current and diverse information for their research. As regards this outcome, the study of Mortera, et al., (2013) claimed that the use of OERs in learning institutions offer various benefits. These include cost, educational process enrichment, technology appropriation competencies development, educational quality improvement and efficiency, reduction of time needed to source for learning material, and a host of others, thereby, serving as a tool for boosting learning and research.

Conclusion

Based on the findings of this study, it can be concluded that the OER provides avenue for knowledge democratization thereby embracing open pedagogy. With OER, both educators and learners can become knowledge co-creators, have access to expanded resources that are customarily unavailable, distribute and share resources with no or little cost, and augment physically available resources to their own interests. Importantly, there is no doubt that the traditional approach to information sourcing and research has shifted. Thus, the future of free information sourcing has started. OER need to be explored maximally among students, especially pre-service teachers, since this is a lifetime opportunity to explore resources at almost zero cost to everybody.

Recommendation

In line with the conclusion of this study, this study recommends that pre-service teachers need to be motivated to keep using OER for learning and research purpose as this will serve as an enabler in building a greater knowledge-based society. School administrators and managers should provide resources and policies that will encourage the full utilisation of OER for learning and research in tertiary institutions, as this will interpret to greater academic achievement and equally ease the achievement of Nigeria national educational goals.

References

Agbu, J.F. O.; Fred Mulder F.; de Vries, F.; Tenebe, V; & Caine, A., (2016). The best of two open worlds at the National Open University of Nigeria. *Open Praxis*, 8(2). pp. 111–121 (ISSN 2304-070X)

Bonilla M, García F, &González L. (2010). Incorporation of OER as a means to promote meaningful learning at the university level: a case study. In: Ramírez MS, Burgos JV (eds) Open educational resources in technology-enriched environments: innovation in educational practice. *ITESM,* Mexico, pp 28–50.

Chib, A. & Wardoyo, R.J. (2018). Differential OER impacts of formal and informal ICTs: Employability of female migrant workers. *The International Review of Research in Open and Distributed Learning*, 19(3), 94-113. https://dx.doi.org/10.19173/irrodl.v19i3.3538

Fitzgerald, B. (2007). *Open content licencing (OCL) for open educational resources*. Paper presented at the OECD Expert Meeting on Open Educational Resources, Malmo, Sweden. http://eprints.qut.edu.au/3621/

Grimaldi PJ, Basu Mallick D, Waters AE, & Baraniuk RG (2019) Do open educational resources improve student learning? Implications of the access hypothesis. *PLoS ONE* 14(3): e0212508. https://doi.org/10.1371/journal.pone.0212508

Krelja K., E. (2016). Advantages and limitations of usage of open educational resources in small countries. *International Journal of Research in Education and Science (IJRES),* 2(1), 136-142.

Machado, M.S., Tenorio Sepúlveda, G.C. & Ramirez Montoya, M.S. (2016). Educational innovation and digital competencies: the case of OER in a private Venezuelan university. *International Journal of Educational Technology in Higher Education*. 13(10). Pp. 43-52https://doi.org/10.1186/s41239-016-0006-1

Mortera F, Salazar A, Rodríguez F (2013) Development of a search and implementation methodology of (OA) and (REA) for the identification of best academic practices. *Educational Research of the Graduate School in Education* 2 (4): 19–28.

Orr, D., Rimini, M., &Van Damme, D. (2015). *Open Educational Resources: A Catalyst for Innovation, Educational Research and Innovation*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264247543-en

Perez J. E. (2017) Images and the Open Educational Resources(OER) Movement, The Reference Librarian, 58:4, 229-237, https://doi.org/10.1080/02763877.2017.1346495

Wiley, D. (2014). The Access Compromise and the 5th R. Iterating toward openness. Retrieved from http://opencontent.org/blog/archives/3221

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Digital Technology Use: A Requirement for Nursery and Primary School Effectiveness

[1]Oluseyi Khadijat RAHEEM
oluseyiraheem@gmail.com
+234 806552 1715
&
[2]Afolakemi O. OREDEIN
orcid.org/0000-0003-2051-4730
opefolake1@yahoo.com;a.oredein@lcu.edu.ng
+234 805 514 5060

[1&2]Department of Educational Management
Faculty of Arts & Education, Lead City University, Ibadan
Oyo State, Nigeria

Abstract

The study explores digital technology use, an essential tool for achieving nursery and primary school effectiveness. The stated goals and objectives of nursery and primary education necessitate a tool called digital technology use which could be harnessed to make teaching and learning more engaging and interesting to pupils. To curb ineffectiveness in the nursery and primary school, the study employs diffusion of innovation theory to examine digital technology use for effective instructional delivery. The study is hinged on Diffusion of Theory (DOT). The review highlights the critics of using digital technologies at the foundation level and suggests the way forward such as pupils should be monitored both at home and in the school as to the number of hours allowed for digital technology use, as this will help curb the lack of social interaction that too much dependent on technology use cause since this will enable self-assimilation and confidence in the nursery and primary school.

Keywords: Nursery and Primary Education, School Effectiveness, Digital Technology Use, Diffusion of Innovation Theory.

Word Count: 171

Introduction

There is increasing awareness of the importance of education to the development of individuals and society. This has awakened people and nations and created a conscious effort to provide and acquire qualitative education. Nursery and primary education are very fundamental in the provision of functional knowledge, skills, thought, feelings, and actions which are considered necessary for all citizens, regardless of social status, vocation, or sex (Aguh & Olutola, 2023). Given this, the broad aims of nursery education within the overall objectives include inculcating social norms, the spirit of enquiry and creativity, through the exploration of nature, the environment, art, music and playing with toys, among others in the child and while the aim of primary education is giving the child opportunities for developing manipulative skills that will enable him to function effectively in the society within the limits of his capacity (Federal republic of Nigeria, 2013). To achieve these broad aims and objectives of nursery and primary education, digital technology use could be a veritable tool since most kids are already used to one form of technology or the other from home. This makes it more interesting and engaging when used in nursery and primary schools. However, making these kids develop digital literacy skills that will be needed to achieve school effectiveness at both levels of education.

Nursery and Primary Education

Nursery and primary education are the basic level of education that a child must pass through to acquire relevant knowledge and skills needed to survive in society. Also, nursery and primary education is a necessary type of education needed to be absorbed into secondary school. Pre-primary education is also another name for Nursery education in Nigeria (Federal Republic of Nigeria, 2013). The pre-primary and primary education in Nigeria is part of the government's efforts to uphold its commitments to the provision of fundamental education for everyone. It is at this early stage of learning that children are developed for higher academic exercises. The foundation of education of the child is preschool education which forms an integral part of his or her early education which may be formal or informal, usually given in an educational institution to children aged 0 to 5+ prior to their entering primary school. This educational level of the child provides for the physical, motor, health, nutritional, intellectual, aesthetic, emotional and social development of the preschool child (Oniwon, 2015). If child education can provide these vital necessities which are essential in human life, it is therefore, could have an important and strong relationship with the school's effectiveness and pupils' performance at the primary level and perhaps at the secondary level (Ogenna, 2021). If a child gets a particular step wrong or did not even get it at all, it becomes a very big problem for such a child. This makes nursery education very essential for the overall development of the education sub-sector (Ogenna, 2021).

After nursery or pre-primary education, a child transits to primary education. This primary education is available for children from 6 to 11 years plus. It can also be perceived as the type of education provided for children to acquire fundamental knowledge, skills, thought, feelings and actions which are considered necessary for all citizens, regardless of social status, vocation or sex (Aguh & Olutola, 2023). The National Policy of Education stresses that primary education is the foundation upon which the rest of the education system is built, and it represents the first tier of the 6-3-3-4 system of education in Nigeria, which is designed to run for duration of six years. It represents the key to the success or failure of the entire national educational system (Federal Republic of Nigeria, 2013).

The goals of primary education are in seven folds including inculcating permanent literacy and numeracy, the ability to communicate effectively; laying a sound basis for scientific and reflective thinking; giving citizenship education as a basis for effective participation and contribution to the life of the society; moulding the character and develop sound attitude and morals in the child; developing in the child the ability to adopt to his changing environment; giving the child opportunities for developing manipulative skills that will enable him to function effectively in the society within the limits of his capacity; and also to provide the child with basic tools for further educational advancement including preparation for trade and crafts of the locality (Federal Republic of Nigeria, 2013).

Therefore, a successful nursery and primary school is made up of a variety of people who collaborate to accomplish the educational objectives of the institution, including pupils, caregivers/teachers, parents, and head teachers. It appears that the nursery and primary schools are not living up to expectations in the provision of qualitative education to the citizenry (Ajayi & Ekundayo, 2011).

School Effectiveness

Nursery and Primary school effectiveness in the context of this study refers to the ability of nursery and primary schools to achieve their predetermined goals and objectives (Ajayi & Ekundayo, 2011). However, a school must be very effective to achieve the general educational objectives therefore school effectiveness refers to the result of an institution using all school resources both material and human to achieve goals and meet shared objectives. School effectiveness is basically concerned with the proper functioning of schools and how this affects students' value formation and orientation together with outcomes and overall achievement (Reyolds, 2010). School effectiveness has been identified as one of the factors that aims toward the achievement of goals and objectives of the school be it nursery or primary education. It is also an educational environment that is comfortable and conducive to development and responsible to all stakeholders (Gunal & Demirtash, 2016). Effective schools serve as a major contribution to the immediate and lifetime success of students, thereby fostering student academic achievement and social development. Studies have shown that school factors matter a lot and contribute immensely to students' learning irrespective of their socioeconomic status or family background. An effective school is expected to add value to students' outcomes.

Factors Influencing School Effectiveness in Nursery and Primary Education

Many factors are extensively combined to make each school achieve its preset goals and objectives. The combined factors that could determine school effectiveness are a clear and positive philosophy, broad and balanced curriculum, strong school framework, meaningful assessment and reporting on student progress, school context and culture, conducive learning environment, parent and community involvement and student welfare system all factors that could contribute toward achieving school effectiveness both at nursery and primary level (IGNOU, 2007). Well clear, articulated and positive philosophy encompasses the defined goals and policies set out in school documents to guide the running activities of the whole school which should be consistently and frequently followed to align the operation of the school accordingly. This aim to help develop the full potential of each pupil intellectually, emotionally, socially, and physically. Also, curriculum provides a wide range of learning experiences within and beyond the school activities which could help the social and physical development of the pupils as well as their academic development (IGNOU, 2007). A school environment that is conducive, healthy and safe is very germane to effective teaching and learning and overall school effectiveness (Ihekoronye, 2020).

Personal visits by the researcher to some schools have shown that the learning environment has not been in good shape. In some cases, students sit on the ground to receive lessons. Many of the classrooms, laboratories, halls, libraries and office furniture are in a terrible state and in need of repairs. The learning environment seems to be very unconducive for teaching-learning activities. The availability of school physical facilities and the conduciveness of the school learning environment have also been said to be potent factors influencing school effectiveness (Owoeye, 2000). The quality and quantity of school facilities such as classrooms, offices, library, laboratories and the like enhance the quality of teaching and learning (Owoeye, 2000). Studies have also shown that parent and community presence in the school activities and participation in committee events and other school activities all has positive effects on school effectiveness (Sammons *et al.*, 1995; Ajayi, 1999). An earlier survey on conducive school environment was conducted to know the effects of noise from building mechanical systems on elementary school student's achievement and the results showed that for the elementary school system tested, lower students reading comprehension scores were significantly related to higher background noise levels from building mechanical systems (Lauren & Wang, 2009).It was also demonstrated that school noise affects students' performance negatively. Meanwhile, findings further indicated that well-ventilated classrooms with air conditioning and decoration of classrooms did not enhance students' understanding, retention and sense of comfort. Based on the findings, it was recommended that teachers should ensure that their classes are well-lit to assist students' vision and ability to copy notes, and always make the classroom very conducive for students to feel relaxed, comfortable and participate more actively in the teaching-learning process. This can now be combination of teacher's effort and conduciveness of the classroom to enhance student's understanding and retention (Ihekoronye, 2020). Parent and community participation in nursery and primary education have been discovered to include individual, group, and civil organization participation in educational quality implementation and control (Mas, 2011). Research has shown that parent and community participation in nursery and primary school development encompasses support given by the school committee to school programs through participation in school development planning, controlling the course of the programs until evaluating the results, and cooperating to support the improvement of learning quality. The representation of community participation in education is made through the school committee (Sulistyorini, 2011).

Digital Technology Use

Digital technologies can be described as electronic tools, systems, devices and resources that generate, store, or process data. They are electronic devices designed to supplement classroom instruction. Development in information and communication technologies has brought about new digital tools that can be adopted and used in education. Digital transformation has become a prevailing trend in education in the contemporary period. This trend is not only prevalent in the tertiary system of education but also in secondary and early childhood education which includes nursery and primary education.

The introduction of new technology-assisted tools such as mobile devices, interactive whiteboard/ smart boards, Massive Open Online Courses (MOOCs), tablets, laptops, simulations, dynamic visualisations, hardware and software, digital cameras, programmable toys and virtual laboratories have altered education in schools and institutions..

Digital Technology Use in Nursery and Primary School Effectiveness

Children in nursery and primary schools are already being familiar with digital technology even before they are introduced to books (Brody, 2015). Both caregivers and pupils in the nursery and primary schools have been interacting with different forms of digital technology to facilitate teaching and learning process. The introduction of new technology-assisted learning tools such as mobile devices, smart boards, and MOOCs (tablets, laptops, simulations, dynamic visualisations, and virtual laboratories have altered education in pre-primary and primary schools (Egbule, 2010).

The introduction of new technology-assisted learning tools such as mobile devices, interactive whiteboard/ smart boards, Massive Open Online Courses (MOOCs), tablets, laptops, simulations, dynamic visualisations, hardware and software, digital cameras, programmable toys and virtual laboratories have altered education in schools. Different types of Information and Communication Technology (ICT) in education have been continuously linked to higher efficiency, higher productivity, and higher educational outcomes, including quality of cognitive, creative and innovative thinking (Kumari & Dubey, 2020).

With today's technological growth, caregivers must learn to utilize various gadgets, such as smartphones, tablets, computers, or educational videos, and also harness all available online resources to ensure that their materials are alive, engaging, and up to date to achieve school effectiveness. Technology is more than just playing video games and viewing animated films. The advantages are determined by how students and teachers use technology to improve education. When technology is used effectively for instructional reasons, the educational experience improves, and student's horizons widen and also become interested (Haleem *et al.,* 2022).

Nations' sustainable development 2030 agenda is to ensure inclusive and equitable quality education for all, in which digital technologies have emerged as indispensable tools to realise this goal which is school effectiveness. The recent global pandemic has further increased the adoption of digital technologies in education including pre-primary and primary education, thereby causing a paradigm shift in the entire education system. The application of digital technologies in elementary education has simplified teaching and learning for both teachers and students (Haleem, 2022).

Teaching needs the understanding of the use of relevant media and, most recently, the use of digital technologies. My personal experience about digital technology usage in learning by my two toddlers is wholesome. No matter this nonchalant attitude exhibited by my two toddlers, they always seem excited doing their homework so far technology usage is involved especially storytelling, the displays of their characters and the rhythms makes it interesting and engaging than just reading orally. Digital technology use in teaching and learning sort of create curiosity in pupils which makes them want to know and learn more which can invariably help to achieve school effectiveness especially in nursery and primary schools.

Benefits of Digital Technology Use in Nursery and Primary School

There are a lot of benefits that are inherent in the use of digital technologies for nursery and primary school effectiveness. Some of these benefits are identified as follows:

- encourages children to become independent learners more quickly and explore topics that interest them both at home and in school.
- support children's cognitive and emotional development, and the development of social and co-operative skills thereby making teaching at nursery and primary level innovative and interesting.
- assist in the emergence of early literacy and mathematical thinking for children such as using online academic apps to buttress teaching and learning done in the classroom.
- help the possibility that they can begin to develop digital technology capability and literacy as part of their early childhood education experiences.

Critics of using Digital Technology Use in Nursery and Primary School

Some of the critics of using digital technology for nursery and primary school effectiveness include;

- It lowers attention span of children since they are used to getting things fast and quickly as they can have their programmable toys and robots do things for them, they don't get bored because they always have something to entertain them. Technology moves fast, instant responses and instant gratification are impacting attention spans for young children and teenagers alike.
- It also leads to falling grades as kids and teenage spend more time on technology, playing games, watching cartoons as so on thereby neglecting their homework.
- It could also affect their social interaction as more time is spent in texting and writing than face to face interaction. Even when

children spend time together, they may spend more time texting or on their phones than actually being together.

Diffusion of Innovation Theory

The Diffusion of Innovation theory (DoI) was developed by Roger in 2003. The theory is a well-established empirical framework that conceptualises the process of innovation diffusion and can likewise be applied to the process of innovation adoption, specifically, to the adoption of digital technologies used in nursery and primary education (Jwaifell & Al- Mothana, 2013). It is worth noting that although various theoretical frameworks address the use of innovation, they all conceptualise the factors that affect the use or acceptance of the innovation. Rogers' Diffusion of Innovation Theory is adopted because it addresses not only the factors that affect the use of digital technologies but also the entire process, which is described in terms of five consecutive stages namely: Knowledge Stage; persuasion Stage; Decision Stage; Implementation Stage and Confirmation Stage.

(1) The Knowledge Stage involves the acquisition of cognitive knowledge, during which the caregivers are exposed to the new technology, becomes aware of it, and seeks information about ways to use the technology efficiently to improve teaching and learning. The caregivers must possess a reasonable level of how-to knowledge before attempting to use the innovation independently.

(2) The Persuasion Stage is emotion-focused, as it is at this phase that attitudes about the new technology are formed. At this stage, the caregiver experiences uncertainty and, as a result, may be influenced by social encouragement to use the innovative tool, as well as by peer-group members' favourable subjective assessments of the instrument.

(3) The Decision Stage is when the caregiver decides whether to use or reject the use of the innovation, whereby the likelihood of choosing to use the digital technology increases with the number of prior opportunities to try it out. Majorly, the decision is affected

by three types of motives: personal desire, peer pressure, and/or pressure from an authority figure.

(4) The Implementation Stage is when the caregiver uses the innovation and examines the outcomes. As a result, at this stage, users must receive feedback, as well as assistance and support, from those leading the transition, as this will help decrease uncertainty among the new users.

(5) In the Confirmation Stage, the users of the technology reflectively examine the process and its outcomes, seeking confirmation for their decision as they consolidate their final attitudes.

Relevance of the Theory to the Study

The Diffusion of Innovation theory is especially appropriate and relevant to this study because it has proved successful in providing tools for revealing how why, and how fast an innovation like digital technology achieves its purposeful goals, especially in elementary education which is nursery and primary schools and educational policy (Dingfelder & Mandell, 2011). Also, the theory's underlying assumption that innovation is accepted through communication over time because of stakeholders' values and beliefs is relevant. Most recently, the theory was applied to examine the adoption and use of online proctored examinations during the COVID-19 pandemic and to the adoption of experiential learning via live-in-labs.

Conclusion

Nursery and primary education are a fundamental education which create a solid background for all other levels of education where knowledge, skills and habits are inculcated, evidences from several educational researches have suggested that it is a foundational level that inhibits cognitive, affective, academic and social skills which fosters school effectiveness as well as contributing in children confidence and esteem**.** Digital technology use could be a vibrant means and befitting guide to raising and educating children in nursery and primary schools because of its interesting and engaging nature which arouses curiosity and interest to explore more in children.

Way Forward

Having identified digital technology use in nursery and primary school effectiveness and the inherent challenges that could affect the pupils, it is therefore recommended that;

- Children should be monitored both at home and in school as to the number of hours allowed for digital technology use, this will curb obesity and lack of sleep and also curb the lack of social interaction that too much dependent on technology use causes.
- It is also recommended that children should only be allowed when academic and social skills works are to be done on their tablets or phones.
- Children should not be allowed to technology use always in order to inculcate the habit of waiting and patience, this will curb the low attention span that most children develop with digital technology use.

References

Ajayi, I. A. & Haastrup, T. E. (2011).Factors Determining the Effectiveness of Secondary Schools in Nigeria. *Anthropologist,* 13(1): 33-38

Aguilera-Hermida, A. P., Quiroga-Garza, A.,& Gómez-Mendoza, S. (2021) Comparison of students' use and acceptance of emergency online learning due to COVID-19 in the USA, Mexico, Peru, and Turkey. *EducInf Technol* 26, 6823–6845. https://doi.org/10.1007/s10639-021-10473-8

Al-Rahmi, A. M., Al-Rahmi, W. M. & Alturki, U. (2022).Acceptance of mobile technologies and M-learning by university students: An empirical investigation in higher education. *Education and Information Technologies*, 1–22.https://doi.org/10.1007/s10639-022-10934-8

Brody, J. (2015). *Screen Addiction Is Taking a Toll on Children* - The New York Times,https://well.blogs.nytimes.com/2015/07/06/screen-addiction-is-taking-a-toll-on-children/?_r=0.

Dingfelder, H. E. & Mandell, D. S. (2011). Bridging the research-to-practice gap in autism intervention: An application of diffusion of innovation theory. *Journal of autism and developmental disorders* 41, 5, 597-609.

Evelyn Oniwon, H.O. (2015). An Examination of the Role of Nursery Education on Primary School Pupils in Nigeria. *Journal of Education and Practice*. Vol. 6, 21

Federal Republic of Nigeria, (2013). *National policy on education*. NERDC, 2013.

Godwins E.O, (2021).Problems of Classroom Management on Early Childhood Education in Enugu North Local Government Area of Enugu State Nigeria. *IDOSR Journal of Experimental Sciences* 6(1), 71-78.

Gunal, Y. & Demirtash, R. N. (2016). A pathway to educational accountability: The relationship between effective school characteristics and student achievement. *Universal Journal of Educational Research*, 4(9), 2049-2054.

Haleem, A., Javaid, M., Qadri, M. A. & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers* 3.

IGNOU, (2007). *BLOCK 2 The learner, MES-013: Learning, Learner and development*. New Delhi: IGNOU.

Justina, C. A, & Adekunle T. O. (2023). Examining the Challenges of Early Childhood Education in Nigeria *Indonesian Journal of Educational Research and Technology* 3(2), 91-96.

Lauren, M. R. & Wang, M. L. (2009). *Effects of noise from building mechanical systems on elementary school students' achievement*. Lincoln: University of Nebraska Press.

Lee, Y., Hsieh, Y. C. & Hsu, C. N. (2011). Adding innovation diffusion theory to the technology acceptance model: Supporting employees' intentions to use e-learning systems. *Journal of Educational Technology & Society* 14, no. 4,124-137.

Mas, S. R. (2011). Partisipasi Masyarakatdan Orang Tuadalam Penyelenggaraan Pendidikan. *Jurnal Manajemen Pendidikan*, 23(3), 298 -304.

Owoeye J.S. (2000). The Effect of Interaction of Location, Facilities and Class Size on Academic Achievement of Secondary School Students in Ekiti State, Nigeria. *Ph.D. Thesis, Unpublished. Ibadan*: University of Ibadan.

Reynolds, D. (2010). School Effectiveness in Developed Societies. *The International Encyclopaedia of Education*. 269-273.

Sammons, P., Hillman J., Mortimore P. (1995). *Key Characteristics of Effective Schools: A Review of School Effectiveness Research*. London: Institute of Education.

Sulistyorini. S. (2011). Peran Serta Masyarakatdalam Pengambangan Sekolah Dasar. *Jurnal Pendidikandan Pembelajaran,* 19(2), 180-187.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679* ***ISSN Print:** 2354-3981*

Social, Cultural and Geographical Considerations as Determinants of Governmental Power Equation in Fourth Republic of Nigeria

Sunday T. AFANGIDEH
sunday.afangideh@uniport.edu.ng
07037815073

Dennis NUMOUPEIDE
numoupeided@gmail.com
08032922944I

Christopher O. EWHRUDJAKPO
chrisjakpo@gmail.com
08037439690
Department of Educational Management
Faculty of Education

Alubabari D. NBETE
alubabari.nbete@uniport.edu.ng
08037468333
Department of Philosophy
Faculty of Humanities
University of Port Harcourt

Abstract
The study examined the social, cultural and geographical considerations as determinants of governmental power equation Fourth Republic Nigeria. Three (3) research questions and three hypotheses were answered and tested in the study, respectively. The design of the study was correlational, with the population as the 774 Local Government Areas in Nigeria. These Local Government Areas have 774 Chairmen and Chairmen of Caretaker Committees, from which 387 (50%) were selected as sample using the

simple random sampling technique. Respondents of the study responded to 2 sets of instruments. These were the 21-item Social, Cultural and Geographical Considerations Scale (SCGS) and the 8-item Governmental Power Equation Inventory (GPAI), designed by the researchers in the modified 4-point Likert scale model, with reliability indices of 0.84 and 0.89, respectively. Simple regression was used in answering the research questions while z-test associated with simple regression was used in testing the hypotheses at a 0.05 level of significance. The findings of the study show that social, cultural and geographical considerations determine governmental power equation in Fourth Republic Nigeria and that there is a significant determination of social, cultural and geographical consideration of governmental power equation in Fourth Republic Nigeria. Consequently, the study concluded that social, cultural and geographical variables play strong roles in determining governmental power equation in Fourth Republic Nigeria. Recommendations made are that stake holders should come out with appropriate parameters when using these variables in determining governmental pendulum.

Keywords: Social, Cultural, Geographical, Consideration, Governmental, Power Equation.

Word Count: 178

Introduction

Most countries in Africa are generally and characteristically multi-ethnic and therefore made up of multiplicities of ethnic nationalities, who were brought together by colonial powers or came together as accidents of history by virtue of language, proximity, types of occupation and other social affinities. Countries like Ghana, Liberia, Tanzania, Sudan, Libya, Nigeria, among others, are largely ethnic. In the case of Nigeria, Nnoli (1980) has confirmed Nigeria to be an ethnic oriented enclave by virtue of her being an amalgamation of more than 250 ethnic groups with the large one, being Hausa, Yoruba, Igbo, Ibibio and the Edos, among others. Each of these groups have their social, cultural and geographical peculiarities, but have come together as one nation by colonial proclamation and name, Nigeria.

As a country, which gained independence from British Authorities in 1960 and attained the republican status in 1963, Nigeria has remained a single nation albeit some agitations, one of which resulted in the Nigerian-Biafran War, fought between 1967 and 1970 and presently the struggle for recognition as separate countries by some cultural and ethnic contraceptions. It has gone through four republics; First (1960-1966), Second (1979-1983), Third (1992-1993) and presently the Fourth Republic, which began in 1999, with former Nigerian military Head of State, General Olusegun Obasanjo as President.

In these different republics, guided by political zonings and permutations, political leaders have handled statecrafts with perfections, though with some acrimonies, which are seen to be normal in national political administration. These leaders make sure that, they share political positions, giving considerations to social attributes, cultural characteristics and geographical affiliations and in some instances, considerations are given to professional callings of the appointees to fit the appropriate office to be assigned to the appointees.

On the foregoing, renowned professor of Political Science, U. Ikpe (Personal Communication, August 10, 2005) hold that, when political offices are shared to appointees or people are elected from contain zones, using certain agreed criteria which may not be constitutional, it brings about governmental power equation. In quite a different entry, S.B Nwideeduh (Personal Communication, January 10, 2022) prefers to refer to such as attempts at balance of state power.

According to Claude (1962), balance of power is one of the oldest concepts of international relations. For the scholar, this could be explained in the fact that, it can provide an answer to the problem of war and peace in international history and is regarded as the universal law of political behaviour, basic principle of every state, foreign policy for ages and describes a significant pattern of political action in the international field. Summarily, scholars among them Thompson and Morgenthau (1950), Morgenthau (1967), Palmer and Perkins (1970) and Dickinson (1926) as cited in Political Science View.com (2022) present, the meanings and usages of balance of power to include a balancing system, establishing and distribution of powers amongst state, equality or equilibrium of power among state, distribution of power, a policy aimed at a certain state of affairs, an actual state of affairs, an approximate equal distribution of power and at any distribution of power. Though given international colouration, balanced of power can be internal, national, state and local government politics where peace is envisioned.

So far, presentations in the previous paragraphs have centered on the nature of African nations and the concept of balance of power. However, it is important to note that, through balance of power has international colouration, it can be used internally in national, state, local government, clan and village and even larger family administration, where offices are shared to different spheres of interest in order to strike a balance.

In doing this, certain criteria are adopted and utilized. These criteria include social, cultural and geographical characteristics. Social criteria or determinants of balance of power or equation refer to those social characteristics of individual that can be considered for them to hold contain political offices in any group or community. In underdeveloped, developing and developed nations, these criteria accommodate physical strength, wealth, level of education, professional calling, fame, acceptable, gender, religion, values and relationships.

On the cultural front, cultural determinants represent features by which basic differentiation of culture is possible and use in determining the possibility or not of somebody getting placed in society (Spring, 2008). In the position of some scholars, among them Eboh, Akpabio and Udoukpong (1987), Eboh and Ukpong (1993) and others, culture is a way of life. These characteristics include size, strength, geography, history, religion language, religious beliefs, social grouping and other cultural attributes (Evypanda, 2020; Mortazari, Rezakhani & Mohagheghmia, 2018).

One other group for consideration in national power balance is the question of geography. Geography, literary relates to the issues connecting the physical environments of man and the conditions which it presents. Schlovin (2016) argues that, geographical conditions constitute a set of opportunities and constraints, are a set of structure that are independent of agencies. Little wonder, Lisbdnet.com (2021) adds that, these components make geography a key component in many political decision and actions. Information gathered from the forgoing academic sources list the geographical factors to include the burden of community, location of natural resources, access to ports and the designation of voting districts. Others include the topography of the land, its fertility, climates, location, and mode of transport, disease burden and agricultural production.

From the literatures presented, three larger critical for consideration in power balancing or power equation have been probed into. However, they are mainly theoretical contributions, which require investigation. This gave the researchers from the diverse disciplines the natural propensity to propose the study.

,

Statement of the Problem

Social, cultural and geographical considerations are lauded as best, when zonings political offices in most countries that is multi-ethnic or multi-cultural in composition. This proposition has informed the ways and manners political leaders handle pre and post-election activities, to ensure that, considerations are given to all conditionalities. Despite these, it appears that successive governments since Fourth Republic Nigeria began in 1999 do not find it easy, making choices as there seems to be all sorts of actions and inactions, among them public fights in legislature, attempts to impeach and impeachments and other attempts at destabilizing the polity. These actions bring to question the conditionalities usually considered in sharing political offices and bothered the researchers, who decided on finding empirical solutions to social, cultural and geographical considerations as they may act as determinants of governmental power equation in Fourth Republic Nigeria.

Aim and Objectives of the Study

The study examined the extent to which social, cultural and geographical considerations determine governmental power equation in Fourth Republic Nigeria. Specifically, the study sought to:

i) ascertain the extent to which social considerations determine governmental power equation in Fourth Republic Nigeria.
ii) establish the extent to which cultural considerations determine governmental power equation in Fourth Republic Nigeria.
iii) find out the extent to which geographical factors determine governmental power equation in Fourth Republic Nigeria.

Research Questions

The following research questions were answered in the study:

i) To what extent do social considerations determine governmental power equation in Fourth Republic Nigeria?
ii) To what extent do cultural considerations determine governmental power equation in Fourth Republic Nigeria?
iii) To what extent do geographical considerations determine governmental power equation in Fourth Republic Nigeria?

Hypotheses

The following hypotheses were tested in the study:

Ho1: There is no significant determination of social considerations on governmental power equations in Fourth Republic Nigeria.
Ho2: There is no significant determination of cultural considerations on governmental power equation in Fourth Republic Nigeria?
Ho3: There is no significant determination of geographical considerations on governmental power equation in Fourth Republic Nigeria?

Methodology

The design for the study was correlational, with the population as the 774 Local Government Areas in Nigeria. These Local Government Areas have 774 Chairmen or Chairmen of Caretaker Committees, from which 387 (50%) was selected as sample, using the simple random sampling technique. Respondents of the study responded to 2 sets of instruments. These were the validated 21 item Social, Cultural and Geographical Consideration Scale (SCGCS) and the 8-item Governmental Power Equation Inventory ((GPEI), designed by the researchers in the modified 4-points Likert Scale model with reliability indices of 0.84 and 0.89, respectively. Simple Regression was used to answer the research questions while z-test associated with simple regression was employed in the testing of the hypotheses at a 0.05 level of significance.

Results

The results of the study came from the answers to the research questions and tests of hypotheses, thus;

Research Question 1: To what extent do social considerations determine governmental power equation in Fourth Republic Nigeria?

Table 1: Simple Regressions Analysis on the Extent Social Considerations Determine Governmental Power Equation in Fourth Republic Nigeria?

Model	R.	R. Square	Adjusted R-Square	Standard Error of the Estimate
1	.899[a]	.809	.808	.37182

a Determinants: (constant) Social considerations

b Dependent Variable: Governmental Power Equation

Data on Table 1 shows that, there is a strong determination of social consideration on governmental power equation in Fourth Republic Nigeria, with a positive correlation coefficient (R) of 0.823 with an adjusted squared regression of (R^2) of 0.677; it implies that social considerations determine governmental power equation by 67.7% as evident in the coefficient of determinism. This suggests that the remaining 32.3% could be accounted for by other factors not known, here.

Research Question 2: To what extent do cultural considerations determine governmental power equation in Fourth Republic Nigeria?

Tables 2: Simple Regression Analysis on the Extent Cultural Consideration Determine Governmental Power Equation in Fourth Republic of Nigeria

Model	R.	R. Square	Adjusted R-Square	Standard Error of the Estimate
I	.85[a]	.725	.724	.48277

a. Determinants: (constant) cultural consideration.

b. Dependent Variable: Government Power Equation.

Date on Table 2 shows that, there is a strong determination of cultural factors on governmental power equation in Fourth Republic Nigeria, with a positive correlation co-efficient (R) of 0.851 with an adjusted squared Regression (R^2) of 6.725, it implies that, cultural considerations determine governmental power equation by 72% as exemplified in the co-efficient of determinism. This result is suggestive of the fact that, the remaining 27.6% could be accounted for by factors not investigated, here.

Research Question 3: To what extent do geographical considerations determine governmental power equation in Fourth Republic of Nigeria?

Table 3: Simple Regression Analysis on the Extent Geographical Considerations Determine Governmental Power Equation in Fourth Republic of Nigeria

Model	R.	R. Square	Adjusted R-Square	Standard Error of the Estimate
1	.899[a]	.809	.808	.37182

a Determinants (constantly Geographical Consideration
b Dependent Variable: Governmental power equation

Date on Table 3 show that. There is a strong determination of cultural factors on governmental power equation in Fourth Republic Nigeria with a positive correlation co-efficient (R) of 0.899. With an Adjusted Squared Regression (R^2) of 0.809, it implies that, geographical considerations determine governmental power equation by 0.81%, as exemplified in the co-efficient of determinism. This result suggests that, the remaining 19.2% could be accounted for by other factors that have not been investigated, here.

$H_0 1$: There is no significant determination of social considerations on governmental power equation in Fourth Republic Nigeria.

Table 4: t-test Associated with Simple Regression on the Determination of Social Considerations on Governmental Power Equation in Fourth Republic of Nigeria

Model	Unstandardized B	Co-efficient Standard Error	Standardized Co-efficient	t	Sig
Constant	.276	.106	.	2.597	.010
1 social consideration	.899	.032	.823	27.686	000

a Dependent variable: Governmental Power Equation y= 0.276+ 0.899x

Data on Table 4 show that, the standardized beta co-efficient is 0.823 indicating the determination of governmental power equation. The regression equation on the table shows that, an increase in the value of social consideration may possibly results in an increase in governmental power equation. The value of 27.686 associated with simple regression is significant at 0.000 when subjected to statistical test of Alpha level of 0.05.

This shows that, there is a significant determination of social consideration on governmental power equation in Fourth Republic Nigeria. Therefore the hall hypothesis stands rejected.

$H0_2$: There is no significant determination of cultural considerations on governmental power equation in Fourth Republic Nigeria.

Table 5: t-test Association with Simple Regression on the Determination of Cultural Considerations on Governmental Power Equation in Fourth Republic Nigeria

Model	Unstandardised Co-efficient		Standardised Co-efficient	t	Sig
	B	Standard Error			
Constant	.616	.084	Beta	7.299	.000
1. Cultural Consideration	.838	.027	.051	30.997	.000

Date on Table 5 shows that, the standardized beta co-efficient is 0.851 (indicating the determination of governmental power equation). The regression equation on the table shows that, an increase in the value of cultural considerations may possibly results in an increase in governmental power equation. The value of 30.997 associated with simple regression is significant at 0.000, when subjected to t-statistical test at the alpha level of 0.05. This shows that, there is a significant determination of cultural considerations on governmental power equation on Fourth Republic Nigeria. Therefore, the null hypothesis stands rejected.

$H0_3$: There is no significant determination of geographical considerations on governmental power equation in Fourth Republic Nigeria.

Table 6: t-test Associated with Simple Regression on the Determination of Geographical Considerations on Governmental Power Equation in Fourth Republic Nigeria

Model	Unstandardized Co-efficient		Standardized Co-efficient	T	Sig
	B	Standard Error			
Constant	.179	0.78		2.312	0.21
1 Geographical consideration	.967	0.25	.099	39.275	000

a Dependent Variable : Governmental Power Equation
$Y=0.179+0.967x$

Date on Table 6 shows that, the standardized beta co-efficient is 0.899(indicating the determinations of governmental power equation). The regression equation on the table shows that, an increase in the value of geographical consideration may possibly results in an increase in governmental power equation. The value of 39.275 associated with simple regression is significant at 0.000 when subjected to t-statistical test at the alpha level of 0.05. This shows that, there is a significant determination of geographical considerations on governmental power equation in Fourth Republic Nigeria. Therefore, the null hypothesis stands rejected.

Discussions of Findings/Implications Social Consideration as Determinants of Governmental Power Structure in Fourth Republic of Nigeria

The first finding of the study is that social considerations determine governmental power equation in Fourth Republic Nigeria by 67.7%. Also, a corresponding finding from hypothesis testing establishes that, there is a significant determination of social considerations on governmental power equation in Fourth Republic Nigeria. These findings are confirmatory of Ekong (1990) and Afangideh (1995). A possible explanation for the trend in the findings may be in the fact that, since 1999, when the Fourth Republic started, all political leaders at the local, state and federal levels, be it in the Legislature, Executive and Judicial arms and Forth estate have been people of good social standing in terms of educational background professional applications, general acceptability, among others. These findings imply that, in societies, where there is equitable power sharing on the basis of social standing, there is bound to be peace in state administration when cultural considerations are determinants of governmental power equation.

Cultural Considerations as Determinants of Governmental Power Equation in Fourth Republic of Nigeria

The second finding of the study in that, cultural considerations determine governmental power equation in Fourth Republic Nigeria by 72%. Also, a corresponding finding from test of hypothesis establishes that, there is a significant determination of culture considerations on governmental power equation in Fourth Republic Nigeria. These findings are in tandem with EvyPanda (2020), Monazavi; Rasakhani and Mohaghegharia (2018). These scholars and academic outfits, have in their presentations establishes that, cultural considerations or factors among them size, strength, geography, history, religion, language, religious beliefs, social grouping and other cultural attributes are taken into consideration, during power sharing. This may be explained in the fact that, since Fourth Republic Nigeria began in 1999, considerations have been given to culture characteristics when zoning political offices and positions. These findings are suggestive of the fact that, governmental power equation can be carefully determined when considerations are given to cultural characteristics.

Geographical Consideration as Determinants of Governmental Power Equation in Fourth Republic of Nigeria

The third finding of the study is that geographical considerations determine governmental power equation in Fourth Republic Nigeria by 81%. Also, a corresponding finding from hypothesis testing establishes that, there is a significant determination of geographical considerations on governmental power equation in Fourth Republic Nigeria. These findings agree with Schlovin (2016) and Lisbdnet.com (2021). These scholar and outfit have in their scholarly contributions, list geographical consideration, among them borders of the community, location of sources, access to ports and the designation of voting centeres or districts, topography of the land, land fertility, climate, location, and mode of transportation, disease burden and agricultural production. A possible explanation for this may be in the fact that, zoning of political offices since 1999 have been on the basis of geography, taking region (North or South) into account the South East, South South, South West, North West, North Central, and North East geopolitical zones. These results suggest that governmental power equations are significantly influenced by regional factors.

Conclusion

Based on the findings of the study, it is concluded that, social, cultural, and geographical variables play strong roles in determining governmental power equations in Fourth Republic Nigeria.

Recommendations

Based on the findings of the study, the discussions on them, the implications of the findings and the conclusion drawn, and the following recommendations are offered.

1) Stakeholders in state administration should continue to use social consideration in determining governmental power equation and also set the appropriate social criteria for use at each moment.
2) Participants in state administration should continue to use cultural underpinnings in determining governmental power equation and also the appropriate cultural indices at each time.

3) Stakeholders in statecraft should continuously use geographical considerations in determining power equation and also ensure that the required geographical factors are properly identified.

References

Claude, I. L. (1962). *Power an international relations*. Sage

Ebong, S., Akpabio, A. J & Udoukpong, B.E. (1987). *Social studies for schools and colleges*. Paico

Eboh, S. & Ukpong, D.E. (1993). *Social studies education for Nigerian universities*. Whyte and Whyte.

Ivypanda (2020). *Power and culture: Relationship and effect reports*. Education Technologies LLC.

Lisdnet.com (2021). *How geography can influence political organization*. Lisbdnet.com

Mortazvi, G, Rezakhani, J. & Mohagheshruci, H. (2018). Role of culture power and its influence on global developments. *Journal of History Culture and Art Research* 7(1), 2

Nnodi, O. (1988). *Ethnic politics in Nigeria.* Fourth Dimension

Political Scienceview.com (2022). *Balance of power*. Political scienceview.com

Schlovin, S. (2016). Geographical condition and political onteones. *Politics and International Relation Journal,* 274-283.

Springer, D. (2008). Cultural determinants. In W. Krich (Ed). Encyclopedia of public health. https//doi.org/10.1007/978-1-4020-5614 629

School Yards (2022). Culture and international business. http://schoolss.yrdsb.ca

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679* ***ISSN Print:** 2354-3981*

Quality Assurance and Teacher's Productivity in Public Secondary Schools in Lagos State, Nigeria

Oniyide Olawale IDRIS
Department of Educational Management
Faculty of Education, Lagos State University, Ojo
Email: oniyideolawale1@gmail.com
Phone: +234 809 158 7639

Abstract
This paper presented a comprehensive analysis of the interplay between quality assurance (QA) practices and teacher productivity in the context of public secondary schools in Lagos State, Nigeria. Drawing upon an extensive literature review, this study explored the existing body of knowledge surrounding QA initiatives and their impact on the performance and effectiveness of teachers, thereby influencing the overall quality of education in Lagos State. Through a systematic review of literature, this paper identifies common themes, key challenges, and best practices related to QA implementation and its effects on teacher performance. The findings from the literature review underscore the pivotal role of QA in enhancing teacher productivity and fostering an optimal learning environment for students. It revealed that well-designed QA mechanisms, such as teacher training programs, mentoring, and ongoing professional development, significantly contribute to teachers' effectiveness and job satisfaction. Conversely, the absence of robust QA systems can lead to a decline in teacher morale, instructional quality, and ultimately, student achievement. Furthermore, this paper highlights the barriers and limitations that hinder the successful implementation of QA practices in public secondary schools in Lagos State. Factors such as inadequate funding, bureaucratic challenges, and a lack of clear policy guidelines have been identified as impediments to effective QA implementation. Based on the findings from the literature review, this paper provides practical recommendations which included the establishment of a coherent QA framework, targeted investment in professional development

opportunities, and the adoption of innovative teaching methods to meet the diverse needs of students.

Keywords: Quality Assurance, Teacher's Productivity, Secondary Schools

Word Count: 248

Introduction

Every nation desire to have quality education hence quality education has become one of the central issues accorded priority in the recent educational reforms going on worldwide (Nwagwu, 2021). Arguably, it is believed and agreed by academics that Education is the bedrock of national development as such every nation's spent substantial amount of money to improve the state of education system. In Nigeria the education system overtime has generated serious issues; the education stakeholders are yet to find a lasting solution to propel the system in achieving the stated goals across the level of education in Nigeria. In the secondary level the standard of education in Nigeria poses serious challenge to principals, teachers, and students who constitute the primary focus of the stakeholders. Hence to ensure standard education system the government established education Ministry Lagos State Office of Education Quality Assurance through an executive order on September 13th, 2013 and became operational on 2nd of March, 2015 (Office of Education Quality Assurance, 2016).

To enhance quality standard in educational institutions below tertiary level, setting clearly defined learning outcomes through holistic evaluation and ensuring that teachers are productive (Office of Education Quality Assurance, 2016). The notion of quality varies from that of providing a distinctive, special or even exclusive product or service, to meeting or conforming to predetermined specifications or standard. According to Whitely (as cited in Nwagwu, 2021) quality assurance in education has become an all-embracing concept that includes all policies, processes and actions through which the quality of education provided is developed and maintained. Nwagwu, (2021) posits that quality assurance is enforced due to the consideration that quality education is a sine qua non for socio-economic, political and cultural transformation and development of any nation.

Teachers are seen as the direct interpreter and executor of the curriculum as such it is belief that teachers play pivotal role producing quality education although the government and the societies members are not excluded in this regard (Abdul, 2011). Therefore, adequate training/seminars and progressive supervisions by the quality assurance are pertinent to harness the ability of the teacher towards productivity. The preparation of such important function of teachers ought to get the highest priority, which is training of the trainees. Unfortunately, the professional education of teachers has been completely neglected in the post-independence period- the Educationists, policymakers, and parents in Nigeria also hold the view that good teachers produce good students (Ugwokeet al, 2012). Teachers are expected to be the mechanism through which the goals of education in any nation can be realized. Thus, teachers are expected to be at their best in order to produce the required efficiency in the education sector. "Teaching is the bedrock of knowledge and the quality of teaching among other things depends teachers' productivity. For example, most teachers are now either contractors, that is, supplying goods and services to schools or engage in commercial business within and outside the school at the detriment of the academic calling and purpose. Some argue that they have had to resort to this "moonlighting" to augment their salaries which are meager. We are faced daily with reports of teachers who prefer commercial business to their primary assignment, Nwagwu, (2021)".

Although the introduction of Office of Education Quality Assurance in Lagos state somewhat improved teachers productivity but much as to be done in the areas of intervention programme for school leaders and teachers to identify schools/districts intervention needs, poor supervision due to incompetent supervisor, poor external quality control, monitoring of teachers and inspection of teachers productivity and most importantly the recruitment process for new teachers should be base on merits in order to employed competent and qualified teachers. Hence, the general objective of the study is to examine the quality assurance service on teacher's productivity in public secondary school education district five, Lagos state, Nigeria and the specific objectives is to examine the roles and functions of quality assurance and the influence of quality assurance supervision on teachers' productivity in public secondary school education district five, Lagos state, Nigeria.

Concept of Quality and Quality Assurance

According to Oxford dictionary Quality mean the standard of something as measured against other things of a similar kind; the degree of excellence of something. According to Market Business News (MBN) (2023), quality refers to how good something is compared to other similar things in other words, its degree of excellence. While quality assurance is an institution designed to improve the existing system towards achieving the stated goals. As stated by Babalola *et. al.,* (2022), "quality assurance is a planned and systematic review process of an institution or programme to determine that acceptable standard of education, scholarship, teaching, and administration are being maintained and enhanced". Okebukola, (2010) posits that quality assurance is all encompassing – it involves activities designed to promote the input and process system. He further states that the major thrust of quality assurance covers activities an institution engages in "to assure itself that it is on course to fulfilling its vision and mission in terms of quality of input, process and output"

In the education sector, quality assurance is an institution designed to improve the existing education system towards achieving the stated educational goals. Kalusi (2013) shared a similar but a slightest difference in the definition of Quality assurance, he posits that in the education system-it implies all the activities that are conducted in order to achieve or maintain a certain quality level in every participant. According Ugwoke *et al.,* (2012) quality assurance is the process of ensuring effective resource input, control, refining the process and raising the standard of output in order to meet the set goals and satisfy public accountability, preventing quality problems and ensures that the products of the system conform to the expected standards.

The inadequate preparation of teachers has an impact on student achievement outcomes, teaching effectiveness, teacher attrition rate and school collegiality. Owing to these observations by the researcher, Quality Assurance (QA) in teacher education is highly recommended. Quality assurance in education, encompass the need for quality learners, quality teachers, quality context, quality teaching, quality learning environment and quality outcomes, (Adegbile & Adeyemi, 2008).

Concept of Teacher's Productivity

The concept of teacher's productivity involves the interplay of various elements in the school. According to Oyedepo there are three categories of personnel that determine educational achievement; these are the teachers, the learners and the educational administrators. Of all the three, teachers appear to be the chief determinant of educational attainment, (Oyedepo, 2011). It was based on this that the Federal Republic of Nigeria (2004) in the National Policy on Education stated that "no quality of education can rise above the quality of the teacher". P.39.

Orunbon and Isaac-Philips, (2020) noted that when the teachers' productivity declines, it has a correlation to the standard of education in schools both in the short and the long term. Teachers exert a great influence on the students, and the children look up to them for guidance, support and protection. Children are supposed to learn from them informally by observing their attitude, mannerism, conduct and general behaviours and formally through their teaching in the classrooms (Adu, 2015). To achieve a high productivity, all efforts must be made to ensure that the teachers are secured, retained, developed and most importantly teachers. According to Babalola as cited in (Emunemu & Isuku, 2012) the general belief is that productivity can be increased by increasing the labour supply, increasing the hour worked and increasing wages. However, greater productivity does not come from spending more or from working harder, but smarter (Ashenden, 1990). The bottom line therefore is that productivity is concerned mainly with the maximization of output. The question therefore relates to how many students have we been able to influence positively as teachers? Although these concepts and definitions are not exhaustive, the focus of productivity in education is centered mainly on the output of the teachers in terms of their ability to increase the learning achievement of students through an effective classroom interaction and management, (Emunemu & Isuku, (2012).

Office of Education Quality Assurance Lagos State

The office of education district quality assurance was established through an executive order on September 13th, 2013 and became operational on 2nd of March, 2015. The mission and vision of the office is to strive for education excellence and enhance quality standard in educational institutions and setting clearly defined learning outcomes through holistic evaluation at pre-tertiary education level respectively.

Goal of Quality Assurance in Lagos State

a) The quest for sustained improvement of learner's achievement, particularly external examination.
b) The need of strengthen government's control and regulation of school below tertiary level.
c) The desire of redefine of criteria of delivery of Quantity Education in the state.
d) The growing number of public and private schools as well as vocational institutions in the state which require more analytic and evaluative supervision.

Quality Assurance Administrative and Human Resources Department in Lagos State

There are five (5) divisions in Admin and Human Resource Department that makes up the office of education quality assurance;

1. Learning and Development: the function of the department is to ensure that the employee productivity is increase by exposing

them to training that would increase ability/skills of an employee and knowledge in a particular subject.

2. Employee Relations: To achieve the stated goals in any organization settings employer-employee relationship is important because employee are the cornerstone of any organization as such mutual relationship must be promoted in the system. Hence the department works together through the school authority to get feedback from the teachers in regarding the communication effectiveness and employee working environment, overseeing health and safety procedure for teachers to healthy and balanced relation between the employee and the employer.
3. Human Resources and Accountability: Accountability at work is important to a business's success as a whole. Hence, the department is saddle with the responsibilities of ensuring that the employees complete the assigned tasks, to perform the duties required by their job the goals of the organization.
4. Workforce Recruitment: the department is saddle with the responsibility of recruiting through captivating screening and selecting potential and qualified candidates based on objective criteria for a particular job. The idea is to encourage and enthrone merit process in recruiting educationist's most especially competent teachers that are motivated and qualified for the position.
5. General Administration: This department focuses on the generally activities of all other departments.

Quality Assurance Planning, Research and Statistics Department

The planning, research and statistics department are responsible to carry out the following functions-Planning intervention programme for school leaders, Collation of data on WSE, WASSCE and BESE to identify schools/districts intervention needs, Itinerary for OEQA activities for the year, organizing Stakeholders meeting on annual school calendar for schools below tertiary institutions, formulating instruments for types and modalities for intervention, keeping an update on education policies and disseminating same to the Districts, ensuring improved monitoring of curriculum implantation in public and private schools below tertiary level, setting up of library in all the 26 offices and the headquarters, collation of data on WSE and analyze, collate WASSCE and BECE analysis of all to determine the progression level of schools, organizing annual education stakeholders' forum and any other duties assigned by the DG.

Monitoring and Investigation Department

The department ensures that schools compliance to government guidelines, coordinates monitoring of internal examinations in public schools, developing policies on safeguarding and child protection, monitoring of external examinations in government and private schools below tertiary level and investigating of all matter affecting learners and staff of educational institutions.

Quality Assurance and Teacher's Productivity

Ugwoke et al, (2012) states that Quality assurance no doubt is vital to ensure the continuous improvement of the content delivery and development of initial teacher preparation in National Institute of Education (NIE). The key initial teacher preparation programmes are the Bachelor of Arts/Science (Education), Postgraduate Diploma in Education (PGDE) and Diploma in Education (Dip Ed). The objective of these programmes is to prepare and develop student teachers with values, skills and knowledge required to teach competently in the primary and secondary schools, (Ugwoke et. al, 2012) but the work of quality assurance is to further enhance teachers' knowledge through series of programmes. Stamoulas (2006) buttress that the basic objective of quality assurance is to safeguard and uphold the standards of higher education by publicly providing verified qualitative and quantitative information on the programmes.

According to Orunbon & Isaac-Philips (2020) "Quality assurance agents are groups of individuals assigned with the responsibility of positive execution of government educational policies and programmes, implementation and evaluation for the purpose of continuous quality assurance and maintenance for the production of relevant and employable graduates for the society". The agents are saddle with the responsibilities of ensuring quality in the following; teaching and learning, students' assessment, staff development, curriculum/courses and physical resources, (Orunbon & Isaac-Philips, 2020). According to Ayeni, (2012) Quality assurance in education is the efficient management, monitoring, evaluation and reviews of the resource inputs and transformation process (teaching and learning) to produce a quality output (students) that meets set standards and expectations of the society. Ugwoke et. al, (2012) put forward that quality assurance is the process of ensuring effective resource input, control, refining the process and raising the standard of output in order to meet the set goals and satisfy public accountability. Furthermore, quality assurance in education aims at preventing quality problems and ensures that the products of the system conform to the expected standards. Thus, the quality of teacher education is the degree of excellence of the input by teachers which is basically achieved through effective funding and provision of in-service training of teachers for quality assurance to be ascertained in teacher education, (Ugwoke et. al, 2012).

The quality assurance with diverse techniques such as quality monitoring, evaluation, supervision, inspection, quality control, access and equality will enhance teacher's productivity. For instance, some teachers have been found wanted in discharging their duties, some preferred to engage with other economics activities that would fetch them huge amount of money at the expense of teaching the students are the appropriate time so in other to cover up with the scheme of work they gave out notes to students to write without given them explicit explanation to the note given. This type of attitude among teachers can be penalized if there is quality supervision and inspection by the agents of quality assurance.

Importance of Quality Assurance in Nigerian Secondary Schools

The need for quality assurance in secondary schools is to ensure quality education delivery. It is the bedrock for efficiency and effectiveness in the education sector - the need for productivity in the education sector is the need for quality assurance. Fadokun, (2005) states that quality assurance enhances efficiency in meeting educational goals, very relevant to human and environmental conditions and needs, and promotes the exploration of new ideas, pursuit of excellence and encouragement of creativity in educational system. Quality assurance in secondary schools in Nigeria is crucial for ensuring the delivery of effective education and promoting overall development among students. Here are five key importance of quality assurance in secondary schools as put forward by Ademola *et. al,* (2021)

i. Academic Excellence: Quality assurance measures help maintain and improve the standard of education provided in secondary schools. By setting clear learning objectives, designing effective teaching methods, and monitoring student performance, schools can strive for academic excellence and ensure that students receive a high-quality education.
ii. Student Achievement: A robust quality assurance system focuses on identifying and addressing individual student needs. This leads to improved learning outcomes and increased student achievement. By implementing tailored teaching strategies and providing necessary support, students are more likely to reach their full potential.
iii. Teacher Development: Quality assurance also emphasizes the professional growth of teachers. Continuous teacher training and development workshops enable educators to enhance their teaching skills and keep up-to-date with best practices, which ultimately benefits the students.
iv. Accountability: Implementing quality assurance measures introduces accountability into the educational system. By assessing the effectiveness of teaching methods and learning

outcomes, stakeholders can identify areas for improvement and take corrective actions.

v. Stakeholder Confidence: When secondary schools have a robust quality assurance system, it instills confidence in various stakeholders, including parents, students, and the community. Parents are more likely to trust the school's commitment to their children's education, and students feel supported in their learning journey.

In summary, quality assurance in secondary schools in Nigeria plays a vital role in maintaining academic excellence, improving student achievement, fostering teacher development, promoting accountability, building stakeholder confidence, and obtaining official recognition and accreditation. It is an integral part of ensuring the overall growth and success of the education system in the country.

Challenges of Quality Assurance in the Secondary Schools

The following are the highlighted problems of quality assurance in the secondary schools

1. Problem poof funding to execute the stated programmes that would enhance teacher's productivity. According to Ademola et al, (2021)many of these secondary schools are characterized with poor facilities and overcrowded classrooms which has recently degenerated to students learning under a tree. Introduction of free education programme by many of the states of the federation has also aggravated the state of secondary schools, with many parents believe that, secondary education has been declared free by the government, and hence government alone should bear all the financial burdens.
2. Another striking problem is the process of recruiting new teachers into the system. The process is more of political offer and ethnicity problems – the concept of who you know has replace merit process. Hence, the problem of unqualified and competent teachers cannot be ruled out the education system of secondary school.

3. The issue of poor teaching and learning environment cannot be overlook although the government is trying in this aspect but more work still needs to be done. The existing infrastructures in some secondary schools are fast dilapidating, some schools don't have modern library settings, some students are still learning under trees due to lack of classrooms… this calls for serious concern. If all these are not put in place then there is need for quality assurance inspection and supervisions.
4. Unqualified Quality Assurance Personnel is another problem. Most of the quality assurance agents saddle with the responsibilities of inspecting and supervising the teachers are found to be unqualified as such they are not capable to do quality work that would propel the teachers' productivity.
5. Unprofessionalism among the quality assurance agents. Most of the agents prefer to collect money at the expense of quality supervisions and inspection. This is highest level of gross misconduct.

Conclusion

The Quality assurance in education, encompass the need for quality learners, quality teachers, quality context, quality teaching, quality learning environment and quality outcomes, (Adegbile & Adeyemi, 2008). Hence, Lagos State government must work collectively with other stakeholders to promote the secondary school education. The quality assurance agents in Lagos State should work to improve teacher's skills and knowledge, the teachers in return ensure that the students benefit by impacting right knowledge that would make them fit socially, morally and academically sound so as to function well in the society – which is the best outcome of education goal describe as teachers' productivity.

Recommendations

To establish quality and standard are to be assured in secondary school all stakeholders of secondary education must join hands together in moving the secondary education to high standard.

1. The government must ensure that proper funding of the secondary school education since the government have introduced free education at the level.
2. The educational institutions like quality assurance must discharge their work with high level of transparency and accountability. Any teachers found lackadaisical in discharging his/her duties should be brought to book. The quality assurance must organized special trainings and seminars to improve teacher's skills.
3. The parents must be ready to play their role since they are the first agent of socialization; this would also help the teacher productivity.
4. The teachers who are the curriculum executor must develop themselves overtime by attending training and seminars, workshops and conferences to broaden their horizon.
5. On the recruitment process, employers in the school system should make sure appointment is properly done by employing qualified teachers into the subject area.

Reference

Abdul, A. W. (2011). Total teachers' quality assurance. Journal of Teacher Education 63(5) 318–334 http://www.sagepub.com/journalsPermissions.nav

Adegbile, J. A., & Adeyemi, B. A. (2008). Enhancing quality assurance through teachers' effectiveness. *Educational Research and Reviews*, *3*(2), 061-065.

Ademola, I. A., Okebukola, P. A., Oladejo, A. I., Onowugbeda, F. U., Gbeleyi, O. A., & Agbanimu, D. O. (2021). Teachers' Qualifications and Teaching Experience: Impact on Quality Assurance in Nigeria Secondary Education. NOUN Journal of Management and International Development, 6(1), 260-272.

Adu, E. O. (2015). Institutional personal and reward system factors as determinant of teachers' productivity in public secondary schools in Oyo State, Nigeria. *Journal of Social Sciences (JSS), 45(1)*; 1-2

Ashenden, D. (1990). Award restructure and productivity in the future of schooling 1990 Frank Tate Memorial Lecture. Victorian Institute of Educational Research. Melbourne.

Ayeni, A.J. (2012). Assessment of principals' supervisory roles for quality assurance in secondary schools in Ondo State, Nigeria. *World Journal of Education, 2(1),* 62-69.

Babalola, Y. A., Tiamiyu, R., & Adewole, E. G. (2022). Quality Assurance in Teaching and Learning of Business Education Programme in Colleges of Education In Nigeria. Kwasu Journal of the Business of Education, 3(1), 88-99.

Cole, G.A. (1996). Management theory and practice. London: DP Publication

Emunemu, B.O., & Isuku, E. J. (2012). Improving teacher productivity and performance for better learning outcomes in Nigerian public secondary schools. *Journal of Pedagogical Thought*, *5*, 53-71.

Fadokun, T. (2005). Educational assessment and quality assurance implication for principal instructional leadership roles. Paper presented at the 31st annual conference of International Association for Educational Assessment.

Kalusi, J.I (2013), Quality assurance mechanisms in colleges of Education: Challenges and strategies for implementation. *Contemporary Journal of Educational Research 3(1).*

Market Business News (MBN) (2023). What is quality? Definition and examples**.** Retrieved from https://marketbusinessnews.com/financial-glossary/quality.

Nwagwu, N. E. (2021). Quality Assurance Practices for Teacher's Productivity in Public Secondary Schools in Anambra State, Nigeria. *Journal of Educational Research & Development*, *4*(2).

Office of Education Quality Assurance, (2016). Office of Education Quality Assurance. Retrieved from https://oeqa.lagosstate.gov.ng/

Okebukola, P. (2010). Fifty years of higher education in Nigeria: Trends in quality assurance. A paper presented at the international conference on the contributions of Nigerian universities to the 50th independence Anniversary of Nigeria 27-29 September.

Olayemi J. Abiodun-Oyebanji, (2015). Coping with Quality Assurance Challenges in Nigerian Secondary Schools. P(57).

Orunbon, N. O., & Isaac-Philips, M. M. (2020). Impact of Quality Assurance on Teachers' Productivity in Lagos State Senior Secondary Schools Education District V, Nigeria.

Oyedepo, M. B. (2011). Enhancing Nigerian Teachers' productivity Through Effective Personnel Appraisal System. *African Journal of Studies in Education Vol.*, *8*(1).

Stamoulas, A. (2006) Greece before the Bologna process: confronting or embracing quality assurance in higher education? "*Higher Education Policy, 19*(4) pp.433–445.

Ugwoke, S. C., Ofoegbu, C. A., & Ugwuanyi, F. N. (2012). Quality Assurance in Teacher Education for Teachers' Productivity in Anambra State. *Bassey Andah Journal Vol. 5*.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679* ***ISSN Print:** 2354-3981*

Psychological Factors and Sports Participation among Public Secondary School Students in Oluyole Local Government Area, Oyo State

Dr Esther Mojisola OLADEJO[1]
oladejo.esther@lcu.edu.ng
08025959694

&

Afolabi Johnson SALAKO[2]
jafo735@gmail.com
08137113531

[1,2]*Department of Kinesiology, Sports Science & Health Education*
Faculty of Education, Lead City University, Ibadan

Abstract

Sports participation offers several benefits to secondary school students because it is favorably associated with social, psychological, physical and cognitive health indicators. Given the various benefits of sports participation, it would be expected that most secondary school students would engage in sports. This, however, is not the case due to several factors, including psychological factors. Therefore, this study investigated psychological factors and sports participation among public secondary school students in Oluyole Local Government Area (LGA), Oyo State. Descriptive survey research design was employed. Population was all students of public secondary schools in Oluyole LGA. A sample of 1,133 male and female; simple random sampling technique was used to select the respondents. Structured and validated questionnaire as research instrument for the study. Descriptive and inferential statistics were used to analyse the data. Results of the study indicated that there was a significant positive correlation between self-efficacy (r=0.067, p<0.05), self-esteem

($r=0.129$, $p<0.05$) and sports participation; while body image ($r=0.015$, $p>0.05$) did not. There was also a significant gender difference in sports participation ($t=2.211$, $df=1131$, $p<0.05$) with male ($\bar{x}=26.02$) participating than their female (24.89) counterparts. It was concluded that psychological factors influence sports participation among public secondary school students in Oluyole Local Government Area (LGA), Oyo State. There was also a significant gender difference in sports participation among the students. It was recommended among others, that more female students should be encouraged to participate in sports.

Keywords: Sports participation, body image, self-efficacy, self-esteem, students

Word Count: 234

Introduction

Sports participation can be defined as a mental and physical involvement in recreational or competitive sports for excellence in fitness and healthy mind. Sports participation can also be viewed as taking part in sports at different levels for various reasons by the people who engaged in it. It is when an individual participates in any type of sports such as football, handball, hockey, table-tennis, basketball, tennis, badminton, swimming, cycling, athletics, boxing and wrestling among others. A student could be participating in sporting activities in school or out of school; it may be through clubs or teams. Participation can also be in team or individual sports. Different people participate in sports for different reasons, which include to have fun, recreation, competitions, socializing, skills development and much more (Oladejo, 2017).

Secondary school students are in their transitional period (adolescence). This period can be challenging for most male and female adolescents and as a result, they may experience low self-esteem; particularly in terms of athletic competence, physical appearance and academic competence (Ike, 2020). Students' participation in sports enriches their developmental experiences through the provision of the avenue to learn and engage in physical activity, which is an avenue that helps maintain and sustain healthy lifestyles right from adolescence until adulthood (Poulsen, Biering, & Andersen, 2016). Whereas, low participation in physical activities such as sports during adolescence is a risk factor for poor mental and physical health in adulthood (Appelqvist-Schmidlechner, Vaara, Häkkinen, Vasankari, Mäkinen, Mäntysaari, & Kyröläinen, 2018).

According to (Dev & Uthaman, 2020) the effect of sports on the psychological aspects of students' lives has been recognised by psychologist. It has a positive influence on an individual's physical and emotional development because it is easier for them to adapt to their physical environment and communicate if they take part in sporting activities (Dinc, 2011). Secondary school students' participation in sports accords them numerous benefits because sports participation is positively associated with social, psychological, physical and cognitive health indicators. It would be expected that most secondary school students would participate in sports because of the various benefits of sporting activities. This is, however, is not the case due to many factors, which include social, economic, physical and psychological factors. According to (Adeoya, Adeleye & Egawa, 2021) psychological factors that could influence sports participation of students include self-confidence, value, task familiarity and perceived success. Other psychological factors are perceived competence, self-efficacy, attitude, enjoyment, body image, self-esteem, beliefs have been found to influence students' sports participation (Bang, Won & Park, 2020).Nevertheless, this study focused on psychological factors of body image, self-efficacy and self-esteem. It also examined the moderating factor of gender and its influence on sports participation among public secondary school students in Oluyole LGA, Oyo State.

Body image refers to the image formed by an individual of their own body, which is the objective cognition and subjective evaluation of their physical characteristics (Shang, Xie & Yang, 2021).It is a multiple dimensions construct composed of appearance, body shape, physical fitness and health (Wang, Xie, Chen & Lei, 2017). These aspects affect a person's emotions and health behaviour, such as weight control, personal satisfaction and adaptation, psychological stress, self-development and interpersonal relationships (Soulliard, Kauffman, Fitterman-harris, Perry, & Ross, 2018).Positive body image refers to the love, acceptance and respect that individuals have for their bodies; it also includes accepting and admiring one's body despite how it relates to societal ideals and appreciating the functions it can perform (TeVelde, Lankhorst, Zwinkels, Verschuren, Takken & Groot, 2018). Whereas, negative body image, refers to an unrealistic view of how someone sees their body which may affect their eating style leading to eating disorders (Gillen, 2015).

Previous studies have shown that a positive body image is more likely to be associated with engagement of the individuals in physical activity (Women and Equalities Committee, 2021). The level of personal satisfaction with body image has a strong correlation with the degree of sports participation; that is, the more positive the body image is, the higher the degree of sports participation (Foley Davelaar, 2021; Ouyang, Wang, Zhang, Peng, Song & Luo, 2020). Contrarily, those who are dissatisfied with their body images or have a negative perception of their body images and this have an inhibitory effect on sports participation (Soulliard, Kauffman, Fitterman-harris, Perry, & Ross, 2018). Also low body image correlated positively with physical activity but when the girls with low body image were criticized for their weight, their participation decreased (Rodgers, Simone, Franko, Eisenberg, Loth & Neumark-Sztainer, 2021). The study of Sattar, Khan & Iqbal (2020) on impact of self-esteem and body image on sports participation of female athletes found that self-esteem and body image had a significant effect on sports participation of female athletes.

Self-efficacy is another factor that might influence sports participation. It can be described as the subjective prediction of one's ability to complete a specific task, coupled with the individual's tendentious judgment, as well as feeling on whether one's attitude can achieve a specified goal. It also implies that the expectation of accomplishing a specified goal comes before the task. When confronted with difficulties, individuals with higher self-efficacy can complete the original sports participation plan. Self-efficacy, because of its multidimensional nature, is identified as a viable criterion for evaluating the impact of adolescent sports participation. Research findings support that sports participation correlates with self-efficacy. For instance, Participation of youth in sports correlates positively with various dimensions of perceived self-efficacy, including social competencies, overcoming challenges and doubt and setting goals (Gillen, 2015).

The results of a study found that self-efficacy has a significant positive effect on athletic performance based on the beta coefficient of athletic self-efficacy, which the changes in athletic performance (Çakiroğlu, 2021). Also the research findings on professional ski jumpers concluded that self-efficacy has a significant impact on the performance of professional ski jumpers (Vegard, Håvard, & Hermundur, 2018). The results of another study showed that self-efficacy has an influence on the athletic performance of football players and concluded that self-efficacy is one of the most important characteristics of a successful athlete (Sivrikaya, 2019). In addition, a positive and significant correlation was found between self-efficacy and the components of athletic performance and success in football players (Mouloud & Elkader, 2016). However, the study of (Rasmusen, 2016) concluded that there is no relationship between self-efficacy and athletic performance.

Another psychological factor that influences students' sports participation is self-esteem.

Self-esteem, according to (Benoit, Smith, Jansson, Magnus, Flagg & Maurice, 2018) can be defined as the appraisal of one's own personal value, including both emotional components (self-worth and cognitive components (self-efficacy). Self-esteem can be overly high, high and low self-esteem. An individual experiences different forms of self-esteem, which could be positive or negative, high or low. High self-esteem could lead to a tendency to engage in and be attached to sports, whereas low self-esteem results in denial and alienation from sports (Ouyang, Wang, Zhang, Peng, Song & Luo, 2020). Higher self-esteem and happiness have been linked in studies on the effects of sports engagement (Shang, Xie & Yang, 2021). People with low self-esteem think of themselves as below average. Self-esteem can also be at the general or domain-specific levels. Global self-esteem is an appraisal of one's value as a whole, whereas domain-specific self-evaluations are self-assessments within more narrowly defined areas, such as academic, social or physical self-esteem (Eklund, Sabiston & Kühnen, 2023). A positive association has been found between sports participation and self-esteem. A study found that self-esteem had a significant influence on sports participation of the respondents (Oladejo, 2017). Researchers investigated the relationship between youth sports engagement and self-esteem using a longitudinal methodology, findings revealed that elevated emotions of self-worth were caused by perceived sports competence (Jekauc, Mnich, Niessner, Wunsch, Nigg, Krell-Roesch & Woll, 2019).

It is also imperative to reflect on gender views on sports participation in secondary school students. Gender is a social construct that is used to assign a set of appropriate behaviours to either the female or male. Fadoju (2019), refers gender to be the social roles and expectations that are associated with being male or female which largely influence their lives. Generally, girls are said to have low participation in sports than boys. One reason for the gender difference in sports participation may be the different societal expectations that have existed for males and females. Traditionally, the sports was perceived as a male domain, providing young men with an opportunity to display their strength, skill and physical attributes. Women and girls have historically been and continue to be underrepresented in both sports participation and non-playing roles such as coaching, officiating senior administrators and board members (Spaaij, Farquharson & Marjoribanks, 2015; Strandbu, Bakken & Sletten, 2017). Females, though, are increasingly receiving support for sports participation, research continues to indicate that males are more likely to receive financial and logistical support than females (Borgers, Vanreusel, Lefevre & Scheerder, 2018). Gender differences was noticed in adolescent participation in sports and physical activities, with adolescent girls participating in organised sports at a lower rate than boys (Keathley, Himelein & Srigley, 2013). Consequently, coaches, game masters and other stakeholders need to understand how body image, self-efficacy and self-esteem can influence secondary school students' sports participation. Therefore, this study investigates psychological factors (body image, self-efficacy and self-esteem) and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State with moderating factor of gender.

Statement of the Problem

Sports participation has many benefits to secondary school students, including psychological benefits. In spite many benefits of sports participation, it has been observed that there is a decline in sports participation among secondary school adolescents, which could be related to boys and girls having an identity and self-concept problems. Secondary school students need to participate in sports and other physical activities because lack of physical activities could lead to increased physical and psychological ailments (Pratt & Brody, 2014). Also remaining active throughout one's life, particularly in sports, will not only improve health but help offset declining self-esteem and increasing depression that often accompanies aging. Preliminary investigation showed that not many studies in Oluyole Local Government Area, Oyo State have explored the influence of psychological factors such as body image, self-efficacy and self-esteem in relation to sports participation. Therefore, this study examined psychological factors and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State. In addition, it looked into the moderating influence of gender on sports participation among public secondary school students in the Local Government.

Aim and Objectives of the Study

This study investigates psychological factors and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.

The objectives are to:

i. examine the relationship between psychological factors (body image, self-efficacy and self-esteem) and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.
ii. assess joint influence of psychological factors on sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.
iii. ascertain gender difference in sports participation among public secondary school students in Oluyole Local Government Area, Oyo state.

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance.

1. There will be no significant relationship between psychological factors and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.
2. There will be no significant joint influence of body image, self-efficacy and self-esteem on sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.
3. There will be no significant gender difference in sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.

Methodology

The study employed descriptive survey research design. The population consisted all public secondary school students in Oluyole Local Government Area, Oyo state. The sample size was one thousand, one hundred and thirty-three (1,133) male and female students, selected from both junior and senior classes. They were selected through simple random sampling technique. Structured questionnaires (self-developed and modified) structured in line with the variable of the study were used to collect data. The instruments were the Offer Scale of Body Image-OSBI (Davies & Furnham, 1986), General Self-efficacy Scale-GSES

(Schwarzer & Jerusalem, 1995) and Rosenberg Self-esteem Scale-RSES (Rosenberg, 1963). The self-developed questionnaire was tagged Sports Participation Scale (SPS). Cronbach Alpha method was used to determine the internal consistency of the instruments. The reliability coefficient for each included (OSBI 0.95, GSES 0.83, RSES 0.92 and SPS 0.92) respectively. Each item has a 4-point Likert-scale. Descriptive statistics of frequency counts and percentages were used to analyze the demographic data and the research question. Inferential statistics of Pearson moment correlation coefficient (PPMC) was used to test hypothesis one, regression was used to test hypotheses two and three, while independent t-test was used to test hypothesis four. All the hypotheses were tested at 0.05 level of significance.

Results

Table 1: Demographic Characteristics of the Respondents

S/n	Variable		Frequency	Percentage
1	Sex	Male	754	67.0%
		Female	379	33.%
		Total	**1,133**	**100.0%**
2	**Age**	13-15 Years	627	55.0%
		16-18 Years	506	45.0%
		Total	**1,133**	**100.0%**

Table 1 showed that most of the respondents (67.0%) were male, while 33.0% were female. It further showed that most of the respondents (55.0%) were in the age range of 13-15 years, while 45.0% were between 16-18 years.

Table 2: Distribution of the Respondents by Type of Sports

Type of Sports	Frequency	Percentage
Athletics (track and field)	150	13.2
Badminton	38	3.4
Basketball	408	36.0
Football	427	37.7
Table tennis	106	9.4
Volleyball	4	0.3
Total	**1133**	**100.0**

Table 2 revealed that 150(13.2%) respondents engaged in athletics, 38(3.4%) involved badminton, while 408(36.0%) engaged in basketball. Moreover, 427(37.7%) played football, 106 (9.4%) involved in table tennis, while 4(0.4%) engaged in volleyball. This means that most of the respondents engaged in football.

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance:
1. There will be no significant relationship between psychological factors (body image, self-efficacy and self-esteem) and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.

Table 3: Correlation Analysis on Relationship between Psychological Factors and Sports Participation

Variables	Mean	Std. Dev.	Sports participation	Body image	Self-efficacy	Self-esteem
Sports participation	24.97	0.91	1			
Body image	48.92	1.72	0.015	1		
Self-efficacy	22.95	2.97	0.067*	-0.712**	1	
Self-esteem	25.88	0.72	0.129**	-0.054	-0.136	1

N=1133
Sig. (2 tail):
Body image=0.613
Self-efficacy=0.024
Self-esteem=0.000

Correlation is significant at 0.05 alpha level ($p<0.05$)

Table 3 showed that there was a significant correlation between self-efficacy ($r=0.067$, $p<0.05$), self-esteem ($r=0.129$, $p<0.05$) and sports participation among public secondary school students in Oluyole

Local Government Area, Oyo State; while body image ($r=0.015$, $p>0.05$) did not. The table also revealed that the direction of the relationship of self-efficacy and self-esteem with sports participation was positive. In addition, the correlation coefficient's magnitude of self-efficacy, self-esteem and body image was weak. This means that there was a significant relationship between each of psychological factors of self-efficacy, self-esteem and sports participation among public secondary school students in Oluyole Local Government Area, while body image did not.

2. There will be no significant joint influence of psychological factors (body image, self-efficacy and self-esteem) and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.

Table 4: Regression Analysis of Joint Influence of Psychological Factors on Sports Participation

$R=0.140$ $R^2=0.020$ Adj. $R^2=0.017$ Std. Error=0.9045						
Model	Sum of Squares	Df	Mean Square	F	Sig. (*p* value)	Remark
Regression	18.463	3	6.154	7.530	.000	Significant
Residual	922.743		.817			
Total	941.206	1129				
		1132				

As shown in Table 4, it was found that the linear combination of psychological factors (body image, self-efficacy and self-esteem) was tested significant on public secondary school students' sports participation in Oluyole Local Government Area ($F_{(3,1129)}=7.530$, $p<0.05$). The result yielded a coefficient of multiple regression of R=0.140 and multiple R-square of 0.020. The result also reveals that adjusted $R^2=0.017$; indicating that about 1.7% of variance was accounted for by the independent variables. This means that, psychological factors of body image, self-efficacy and self-esteem had significant joint influence on sports participation among public secondary school students in Oluyole Local Government Area.

3. There will be no significant gender difference in sports participation among public secondary school students in Oluyole Local Government Area, Oyo State.

Table 5: t-test Analysis of Gender Difference in Sports Participation among Public Secondary School Students

	Gender	N	Mean	Std. Dev.	Df	t value	Sig. (p value)	Remark
Sports participation	Male	754	26.02	1.02	1131	2.211	0.027	Significant
	Female	379	24.89	0.65				

Table 5 revealed that gender was tested significant on students' sports participation in Oluyole Local Government Area ($t=2.211$, $df=1131$, $p<0.05$). This implied that, there was a significant gender difference in public secondary school students' sports participation in Oluyole Local Government Area of Oyo State. Hence, the null hypothesis was therefore rejected. Then, it was further revealed that, male respondents had a higher mean score ($\bar{x}=26.02$) than their female counterparts with a mean score of 24.89. This means that, male students in Oluyole Local Government Area performed better than their female counterparts.

Discussion of Findings

The findings of this study on relationship between psychological factors (self-esteem, self-efficacy and body image) and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State revealed that self-esteem, independently tested significant on sports participation. Likewise, self-efficacy independently tested significant on sports participation among public secondary school students while body image did not. The outcomes of this study on relationship between self-esteem and sports participation was in line with a previous study which showed that there was a positive relationship between self-esteem and sports participation among public secondary school adolescent in Ibadan North Local Government Area, Oyo State (Oladejo, 2017).

Furthermore, the results of this study on relationship between self-efficacy and sports participation, which found self-efficacy to be significant on sports participation was in line with a previous study which found that self-efficacy has a significant positive effect on athletic performance based on the beta coefficient of athletic self-efficacy, which the changes in athletic performance (Çakiroğlu, 2021). It is also corroborated the research findings on professional ski jumpers which concluded that self-efficacy has a significant impact on the athletic performance of professional ski jumpers (Vegard, Håvard, & Hermundur, 2018). In addition, the result of this study is consistent with the research which showed that self-efficacy has an influence on the athletic performance of football players (Sivrikaya, 2019). Besides, it is in agreement with the report of Mouloud and Elkader (2016) which found a positive and significant correlation between self-efficacy and the components of athletic performance and success in football players. However, it was not in agreement with the previous which concluded that there is no relationship between self-efficacy and athletic performance (Rasmusen, 2015).

In addition, the result of this study on relationship between body image and sports participation indicated that there is no significant relationship body image and sports participation among public secondary school students in Oluyole Local Government Area, Oyo State was not in line with the previous study of Women and Equalities Committee (2021) which showed that a positive body image is more likely to be associated with engagement of the individuals in physical activity. It is also not according to the study which found that level of personal satisfaction with body image have a strong correlation with the degree of sports participation; that is, the more positive the body image is, the higher the degree of sports participation is; on the contrary, those who are dissatisfied with their body images or hold negative body images have an inhibitory effect on exercise behaviour (Foley Davelaar, 2021).

The outcome of this study further indicated that the linear combination of psychological factors (body image, self-efficacy and self-esteem) was tested significant on sports participation among public secondary school students in Oluyole Local Government Area. This means that, psychological factors of body image, self-efficacy and self-esteem had significant joint influence on public secondary school students' sports participation in Oluyole Local Government Area. The outcomes of this study on joint contribution of psychological factors was in line with a previous finding which review that the level of personal satisfaction with body image has been found to have a strong correlation with the degree of sports participation (Foley Davelaar, 2021). In addition, the outcome of this study was also incongruence with the outcome of a study which found that self-efficacy has a significant positive effect on athletic performance based on the beta coefficient of athletic self-efficacy, which the changes in athletic performance (Çakiroğlu, 2021). Furthermore, the findings of this study was also corroborated with the findings of a study which found that self-esteem indicated that sports participation was positively associated with physical competence, physical appearance, physical self-esteem and general self-esteem in the sample. In general, researcher found that sports participation had a strong positive effect on self-esteem, most significantly for physical self-esteem.

There was also a significant gender difference among public secondary school students' sports participation in Oluyole Local Government Area of Oyo State. Such that male students had a higher mean score than their female counterparts, which means that, male students in Oluyole Local Government Area performed better than their female counterparts. This result corroborates the study of Keathley, Himelein and Srigley (2013) who reported that gender differences was noticed in adolescent participation in sports and physical activities, with adolescent girls participating in organised sports at a lower rate than boys.

Conclusion

Based on the findings, this study concluded that self-esteem and self-efficacy had significant positive relationship with sports participation among public secondary school students in Oluyole Local Government Area, Oyo State, while body image did not. Conclusion was also made that there was significant difference between male and female students in sports participation.

Recommendations

Based on the conclusion of this study, the following recommendations were made:

1. Sports should be encouraged both inside and outside educational establishments.
2. To improve the degree of sports participation among secondary school students, attention should be paid to how to establish the correct body image of adolescents.
3. Schools should encourage more female students to participate in sports.

References

Adeoya, A. A., Adeleye, O. A. & Egawa, S. (2021) Psychological factors as predictors of sports participation among Japanese and foreign students in Sendai, Japa. Intech Open. doi: 10.5772/intechopen.99244.

Appelqvist-Schmidlechner, K. Vaara, J., Häkkinen, A., Vasankari, T., Mäkinen, J., Mäntysaari, M. & Kyröläinen, H. (2017). Relationships between youth sports participation and mental health in young adulthood among Finnish males. *Am J Health Promot*. Sept: 32(7), 2018, 1502-1509, doi: 10.1177/0890117117746336. Epub 2017 Dec 21. PMID: 29268622.

Bang, H., Won, D., & Park, S. (2020). School engagement, self-esteem and d epression of adolescents: The role of sport participation and volunteeri ng activity and gender differences. *Children and Youth Services Review,* 113. https://doi.org/10.1016/j.childyouth.2020.105012

Benoit, C., Smith, M., Jansson, M., Magnus, S., Flagg, J., & Maurice, R. (2018). Sex work and three dimensions of self-esteem: self-worth, authenticity and self-efficacy. *Culture, health & sexuality*, *20*(1), 69–83. https://doi.org/10.1080/13691058.2017.1328075

Borgers, J., Vanreusel, B., Lefevre, J. & Scheerder, J. (2018). Involvement in non-club organized sport: organizational patterns of sport participation from a longitudinal life course perspective. European Journal for Sport and Society,Volume 15, *2018, Issue 1. 58 –77. https://doi.org/10.1080/16138171.2018.1438079*

Çakiroğlu, T. (2021) Therole of athletic self-efficacy and athletic perfectionism in predicting athletic performance of Gaziuniversity student athletes. *Journal of Educational Issues*, Vol. 7, No. 2 ISSN 2377-2263: https://doi.org/10.5296/jei.v7i2.19108 doi:10.5296/jei.v7i2.19108 URL

Davies, E., & Furnham, A. (1986). Body satisfaction in adolescent girls. *British Journal of Medical Psychology*, *59*(3), 279-287.

Dev, S., & Uthaman, N. (2020). Relationship between sports and self-esteem among university students. *International Journal of Psychosocial Rehabilitatio*, Vol. 24, Issue 02, 202, ISSN: 1475 7192: https://www.researchgate.net/publication/352400476_Relationship_between_Sports_and_Self-Esteem_among_University_Students 2022.

Dinc, Z. (2011). Social self-efficacy of adolescents who participate in individual and team sports. *Social Behavior and Personality an International Journal*, *39* (10), 1417-1424. DOI: 10.2224/sbp.2011.39.10.1417.

Eklund, R. C., Sabiston, C. M., & Kühnen, U. (2023). The self in sport and exercise. In *sport and exercise psychology: Theory and Application* (pp. 463-487). Cham: Springer International Publishing.

Fadoju, K. (2019). The effect of an ecological imagery program soccer performance of elite players. *Asian Journal of Sports Medical,* 3(2), 81-9

Foley Davelaar, C. M. (2021). Body image and its role in physical activity: A systematic review. *Cureus*, 13(2), e13379. https://doi.org/10.7759/cureus.13379

Gillen, M. M. (2015). Associations between positive body image and indicators of men's and women's mental and physical health. *Body Image*, *13*, 67 74. https://doi. org/10.1016/j.bodyim.2015.01.002.

Ike, C. M. (2020).*Factors responsible for low self-esteem or self-worth among Nigerians*. https://www.positivenaija.com/factors-responsible-for-low-self-esteem-or-self-worth-among-nigerians/

Jekauc, D., Mnich, C., Niessner, C., Wunsch, K., Nigg, C. R., Krell-Roesch, J., &Woll, A. (2019). Testing the Weiss-Harter-Model: Physical activity, self-esteem, enjoyment and social support in children and adolescents. *Frontiers in psychology*, *10*, 2568.

Keathley, K. Himelein, M. J. &Srigley, G. Youth soccer participation and withdrawal: gender similarities and differences.*Journal of Sport Behaviour*, *36*(2), 2013, 171-188

Mouloud, K., & Elkader, B. (2016). Self-efficacy and achievement motivation among football player. *The Swedish Journal of Scientific Research*, *3*(11), 13-19.

Oladejo. E. M. (2017). Relationship between sports participation and self-esteem of secondary school adolescents in Ibadan North Local Government Area of Oyo State. *Journal of Counselling and School Psychology,* Vol. 1, Number 1, 93-110.

Ouyang Y., Wang K., Zhang T., Peng L., Song G., & Luo J. (2020) The influence of sports participation on body image, self-efficacy and self-esteem in college students. *Front. Psychol.* 10:3039. doi: 10.3389/fpsyg.2019.03039

Poulsen, P. H., Biering, K. & Andersen, J. H. (2016) Theassociation between leisure time physical activity in adolescence and poor mental health in early adulthood: a prospective cohort study. *BMC Public Health*. 16(1):3.

Pratt, L. A., & Brody, D. J. (2014). Depression and obesity in the U.S. adult household population, 2005-2010. *NCHS data brief*, (167), 1–8.

Rasmusen, R. (2016). Tackling the relationship between self-efficacy and performance in rugby. Unpublished dissertation submitted in partial fulfilment of the requirements for the Degree of Master of Science in Applied Psychology at the University of Canterbury.

Rodgers, R. F., Simone, M., Franko, D. L., Eisenberg, M. E., Loth, K., & Neumark-Sztainer, D. (2021). The longitudinal relationship between family and peer teasing in young adulthood and later unhealthy weight control behaviours: The mediating role of body image. *International Journal of Eating Disorders, 54*(5), 831-840.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Sattar, S., Khan, S. &Iqbal, S. (2020).Impact of self-esteem and body image on sports participation offemale athletes. *The Sky* (ISSN-2523-9368) Vol. 04, 2020

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.

Shang, Y., Xie, H. D., & Yang, S. Y. (2021). The relationship between physical exercise and subjective well-being in college students: The mediating effect of body image and self-esteem. *Frontiers in Psychology*, *12*, 658935.

Sivrikaya, H. (2019). The role of self-efficacy on performance of sports skills of football players. *Journal of Education and Training Studies*, *6*(12), 79-75. https://doi.org/10.11114/ jets.v6i12a.3952

Spaaij, R., Farquharson, K. & Marjoribanks, T. (2015). Sport and social inequa lities. *Sociology Compass9*(5). DOI: 10.1111/soc4.12254

Soulliard, Z. A., Kauffman, A. A., Fitterman-harris, H. F., Perry, J. E. & Ross, M. J. (2019). Examining positive body image, sports confidence, flow state, and subjective performance among student athletes and non-athletes. *Body Image*, Volume 28, Pages 93-100, ISSN 1740-1445, https://doi.org/10.1016/j.bodyim.2018.12.009.

Strandbu, Å., Bakken, A., & Sletten, M. A. (2019). Exploring the minority-majority gap in sport participation: different patterns for boys and girls? *Sport Soc*. 22, 606–624. doi: 10.1080/17430437.2017.1389056

TeVelde, S. J., Lankhorst, K., Zwinkels, M., Verschuren, O.,Takken, T. & de Groot, J. (2018). HAYS Study Group. Associations of sports participation with self-perception, exercise self-efficacy and quality of life among children and adolescents with a physical disability or chronic disease-A cross-sectional Study. *Sports Med Open*. Aug 15;4 (1)38, 2018, doi: 10.1186/s40798-018-0152-1.

Vegard, H. S., Håvard, W. L., & Hermundur, S. (2018). Self-efficacy, flow, affect, worry and performance in elite world cup ski jumping. *Journal of Front Psychol*, *9*, 1-9. https://doi.org/10.3389/fpsyg.2018.01215

Wang, Y. H., Xie, X. C., Chen, H., & Lei, L. (2017). Body image disturbance among females: the Influence mechanism of social network sites. *Chin. J. Clin. Psychol*. 25, 1079–1082.

Women and Equalities Committee. (2021).*Changing the perfect picture: An inquiry into body image*. Report, House of Commons, UK, April.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Influence of Electronic Record Keeping on Planning and Decision Making of Secondary School Administrators in Lagos State

Sulaimon Babatunde OLOWU
Department of Educational Management
Faculty of Education
Lagos State University, Ojo

Abstract
Administrative functions are becoming increasingly complex and requires powerful administrative tools such as ICT for record keeping. The paper studied the perceived influence of electronic record keeping on planning and decision making of secondary school administrators in Lagos State. Quantitative research design was adopted. The target population consisted of 3,564 administrative team in the 324 public senior secondary schools in Lagos State while purposive sampling technique was used to select 285 participants. Influence of Electronic Record Keeping on Planning and Decision-Making Questionnaire (IERKPDMQ) was the instrument for data collection. Responses were analyzed descriptively using mean and standard deviation for research questions. T-test was used to test the hypotheses at 0.05 level of significant. The finding of the study revealed among others that secondary school administrators in Lagos State have little knowledge of electronic record keeping. Recommendations were made on the basis of this findings that secondary school administrators should consistently be trained and re-train on the benefits of keeping records electronically and how to do it.

Keywords: Secondary School, Administrators, Record Keeping, Planning, Decision Making

Word Count: 166

Introduction

The maintaining of school records, which provide critical and crucial information on the acts and events that occur in schools, is highly valued by regulatory bodies in Nigeria. For efficient planning and decision-making, the Teaching Service Commission (TESCOM), Ministry of Education (MoE), and other organizations primarily rely on records. All currently available and retrievable records, books, files, and other papers holding pertinent information about what occurs in the educational system were referred to as "school records" (Ololube 2013, Odeniyi & Adeyanju, 2020). These documents may also take the shape of reports, letters, memoranda, images, videos, notebooks, diaries, and other types of material primarily for planning and decision-making purposes.

According to Fayol in Kajo (2011), planning is the process of analyzing the future and setting up plans of action. Planning at the secondary school level entails preparing for future expenses and anticipated revenues, evaluating the need for physical facilities and equipment, and choosing in advance the human and material resources required to achieve organizational goals and objectives. In order to make the greatest use of each employee's talents and competences, it also entails time management and the efficient distribution of responsibilities among various teaching and non-teaching staff members. Secondary school administration includes planning, which calls for a lot of skills and knowledge on the part of school administrators. Another crucial component of secondary school administration is decision-making, which involves selecting the best course of action from among available options. Managers and administrators require access to essential information that is timely, accurate, sufficient, and dependable in order to make good decisions. Since information must play a major role in the decision-making process, it could influence the success or failure of a company (Muaadh & Zawiyah, 2014).

Information has always been essential to human existence. However, as a result of societal advancement and rapid scientific and technological development in the 21st century, ICT's significance rose immensely. Ogunsola and Aboyede (2015) noted that the term "information explosion" refers to the rapid proliferation of a mass of diverse information. Record keeping and school administration must change as the world and information it contains change quickly.

The administrative duties of the head of school and their subordinates include planning classroom and extracurricular activities for instructors and students, as well as allocating available resources to the achievement of the goals. In order to avoid conflicts between several programs running concurrently, they also organize school activities. Due to the massive increase in student enrollment that the Lagos State Government is experiencing as a result of Universal Basic Education (UBE), managing schools has become more difficult, leading to difficulties with everything from managing students and staff to managing community relations and school finances. According to Ghaemian (2014), administrative tasks in schools are getting more difficult due to enrolment growth, population movement, and social issues.

This complexity necessitates the employment of strong administrative tools, improving operations, people services, and communication. The use of computers for record keeping is one of thesetools. According to Osakwe (2011), school records are official books, documents, and files that are kept and preserved at the school office for use and information retrieval when necessary. They contain important and critical information about actions and events. Davis (2015) in Oluwole and Ivagher highlighted three types of school records that should be kept: historical records, financial records, and academic records. He went on to say that each record is significant in determining how school programs will be organised.

Amos (2017), emphasized the significance of maintaining school records for a variety of reasons, including the provision of useful information on the progress and development made within the school; the provision of information for parents and guardians regarding the general conduct and academic performance of their children and wards at school; and the use of the records for planning and budgeting.

Nwagwu (2015), claimed that efficient record keeping is essential to the advancement of education in his commentary on the significance of data in the educational system. The author further underlined that planning and running any institution where records are not kept or are kept carelessly and illegally will be impossible. Amos (2017) emphasized the significance of maintaining school records for a variety of reasons, including the provision of useful information on the progress and development made within the school; the provision of information for parents and guardians regarding the general conduct and academic performance of their children and wards at school; and the use of the records for planning and budgeting.

Nwagwu (2015) claimed that efficient record keeping is essential to the advancement of education in his commentary on the significance of data in the educational system. The author further underlined that planning and running any institution where records are not kept or are kept carelessly and illegally will be impossible. According to Ojo and Obimuyiwa (2019), the methods employed by the majority of educational institutions for creating, sending, disseminating, storing, retrieving, and retaining information have been significantly impacted by the usage of electronic technology.

However, it is disappointing that records are primarily maintained manually and improperly managed, despite the significance of recordkeeping in providing the fundamental information for planning and decision-making. This shows that there are a lot of issues with digitizing record keeping in Nigerian secondary schools, including a possible lack of qualified and experienced record management staff and perhaps a low priority given to record management in the overall scheme of things. This shows up as records and files going missing, records deteriorating, and records being destroyed to hide something (Omoha, 2013). Even though numerous studies have been done on the management and effectiveness of record keeping in secondary schools in Nigeria (Omoha, 2013; Josephine, 2014; Allahmagani, 2014; Oluwole

& Ivagher, 2015; Amos, 2017), there is still a dearth of literature on keeping records electronically for effective planning and decision making in Nigeria secondary schools. This study is necessary due to the desire to fill the void.

Objective of the Study

The primary goal of the study is to investigate how secondary school administrators in Lagos State evaluate the impact of electronic record keeping on planning and decision-making. In particular, the study aims to:

1. Evaluate secondary school administrators' familiarity with electronic record-keeping methods.
2. Analyze how electronic record keeping affects planning in secondary schools in Nigeria.
3. Analyze how Nigerian secondary schools' decision-making is affected by computerized record-keeping.

Research Questions

Based on the above stated objectives, the following questions were answered in the study:

i. What are the knowledge of secondary school administrators on electronic ways of keeping records?
ii. To what extent would electronic record-keeping influence planning in Nigerian secondary schools?
iii. To what extent would electronic record-keeping influence decision making in Nigerian secondary schools?

Research Hypotheses

The following hypotheses were formulated and tested at 0.05 significance level:

H01 There is no significant difference between the knowledge of secondary school administrators on electronic ways of keeping records.

H02 There is no significant difference between the mean responses of secondary school administrators on influence of electronic record keeping on planning of Nigerian secondary schools.

H03 There is no significant difference between the mean responses of secondary school administrators on influence of electronic record keeping on decision making of Nigerian secondary schools.

Methodology

A quantitative research design was used for this investigation. Ghauri and Gronhaug (2015) defined quantitative research design as investigations whose conclusions are mostly the result of statistical summary and analysis. The study's design was deemed preferable because it produces an accurate portrayal of the participants, events, or situations (Mertler & Charles in James & Robinson, 2017). 3,564 administrative staff members from 324 public senior secondary schools in Lagos State, Nigeria, made up the study's target group. Principals, vice-principals, and heads of the several subject departments made up this group (Languages, Humanities, Science, Mathematics, Technology and Business studies).

Table1 Population of the Study

No. of secondary schools	No. of principals (1 x 324)	No. of vice principals (4 x 324)	No of Admin. heads (6 x 324)	Total
324	324	1296	1944	3564

Source: Lagos State Ministry of Education (2021)

Purposive sampling technique was used to select 285 participants representing 8% of the entire population, using Krejcie and Morgan's (1970) table at 0.025 Margin of error and 95.0% confidence level. The choice of purposive sampling technique was to ensure evenly representation among the principals, vice principals and the administrative heads.

Table 2: Selection of Participants

Subject	Population	Sample
Principals	324	26
Vice principals	1296	104
Administrative heads	1944	155
Total	**3564**	**285**

Source: Researcher, 2023

Influence of Electronic Record Keeping on Planning and Decision-Making Questionnaire (IERKPDMQ) was the only instrument for data collection for the purpose of this study. It was divided into two sections (A and B). Section A contains information on demographic characteristics of the respondents while section B consisted of 18 items, in line with the variables of the study using four (4) points likert scale of Strongly Agree (SA4), Agree (A3), Disagree (D2) and Strongly Disagree (SD1). The instrument was validated by two experts from department of measurement and evaluation, University of Ibadan. In order to determine the reliability, it was administered twice to 20 respondents (2 principals, 8 vice principals and 12 administrative heads) from 2 senior secondary schools in Epe Local Government that are not part of the main study. Their responses were analyzed using the Cronbach alpha method, which yielded the coefficient alpha value of 0.91. The instrument was administered to the respondents by the researcher, with the help of two trained research assistants for a period of one week. Out of the budgeted questionnaires, 232 (21 principals, 83 vice principals and 128 administrative heads) responded and usable for the purpose of the study representing 81% of the sample size. The data collected from the respondents were analyzed using mean and standard deviation to answer the research questions, while t-test statistical technique was used to test the hypotheses at 0.05 level of significant. The decision rule for answering the research questions was based on any calculated mean scores equal to, or greater than 2.50 was regarded as agreed, while any calculated mean scores less than 2.50 was regarded as disagreed. Furthermore, the value (p) was use in taking the decisions on the hypotheses. If the p-value is less than or equal to 0.05, the null hypotheses is retained, but if the p-value is greater than 0.05, the null hypotheses is not retained.

Results

Research Question1: What are the knowledge of secondary school administrators on electronic ways of keeping records?

Table 3: Mean Knowledge of Secondary School Administrators on Electronic ways of Keeping Records

S/N	Items	Mean	SD	RMK
1	I have attended several training on electronic record keeping	2.34	1.28	Disagreed
2	I have sound knowledge of keeping records electronically	2.87	0.52	Agreed
3	I have been keeping my records electronically	2.86	0.35	Agreed
4	I can easily retrieve records from electronic gadgets	2.41	0.83	Disagreed
5	I have my personal computer and flash drive for storing Information	2.14	0.45	Disagreed
6	I have a functional e-mail for backing up my information	3.29	1.18	Agreed
7	Our school have functional e-mail for sending, receiving, storing and retrieving of information	3.14	0.64	Agreed
8	Our school always encourage keeping of records Electronically	2.21	0.68	Disagreed

Source: Researcher, 2023

The table above reveals that the respondents agreed with items 2, 3, 6 and 7 with mean score of 2.8, 2.86, 3.29 and 3.14 respectively. However, the respondent disagreed with items 1, 4, 5 and with mean score of 2.34, 2.41, 2.14 and 2.21 respectively. This implies that secondary school administrators have little knowledge of electronic record keeping in Lagos State.

Research Question 2: To what extent would electronic record keeping influence planning in Nigerian secondary schools?

Table 4: Mean Responses of Respondents on the Extent Electronic Record Keeping Could Influence Planning in Nigerian Secondary Schools

S/N	Items	MEAN	SD	RMK
1	Keeping of records electronically would make planning easier in secondary schools	3.71	0.45	Agreed
2	Keeping records electronically would the stress of preparing budgets in secondary schools	3.14	0.64	Agreed
3	Keeping records electronically would enable secondary school administrators to prepare and submit their annual budget as and when due	3.57	0.49	Agreed
4	Keeping records electronically would promote comprehensive and holistic planning in secondary schools	3.14	0.64	Agreed
5	Keeping records electronically would enable administrators to make reliable forecast about likely future occurrence and event in their schools.	3.71	0.45	Agreed

Source: Researcher, 2023

The table above reveals that the mean score of both the respondents is above the acceptable mean of 2.50. for all the above stated items. This indicates that electronic record keeping would greatly influence planning in Nigerian secondary schools.

Research Question 3: To what extent would electronic record keeping influence decision making in Nigerian secondary schools?

Table 5: Mean Responses of Respondents on the Extent Electronic Record Keeping Could Influence Decision Making in Nigerian Secondary Schools

S/N	Personnel	Mean	SD	RMK
1	Keeping records electronically would enable secondary school administrators to make urgent decisions.	3.67	0.62	Agreed
2	Keeping records electronically would enable secondary school administrators to make best decisions	3.33	0.47	Agreed
3	Keeping records electronically would enable secondary school administrators to provide appropriate information as and when needed by education district, ministry of education and other stakeholders.	3.33	0.47	Agreed
4	Keeping records electronically would reduce the stress of administration in secondary schools.	3.67	0.62	Agreed
5	Decision making is not easy when records are kept manually.	3.84	1.18	Agreed

Source: Researcher, 2023

The table above reveals that the mean score of both the respondents is above the acceptable mean of 2. 50. for all the above stated items. This indicates that electronic record keeping would greatly influence decision making in Nigerian secondary schools.

Hypotheses 1

There is no significant difference between the knowledge of secondary school administrators on electronic ways of keeping records.

Table 6: T-Test Analysis of the Mean Differences between the Knowledge of Secondary School Principal/Vice Principals and Administrative Heads on Electronic Ways of Keeping Records

Variables	Mean	SD	N	F	P. Value	Sig	Decision
Principal / vice principals	3.405	0.700	104	230	- 0.161	0.05	Retain H01
Administrative heads	3.223	0.473	128				

Source: Researcher, 2023

Table 6 reveals that the P-value of - 0.161 is lower than 0.05. Therefore, the null hypothesis is thereby accepted. This implies that there is no significant difference between the knowledge of secondary school principal/vice principals and administrative heads on electronic ways of keeping records.

Hypotheses 2

There is no significant difference between the mean responses of secondary school administrators on influence of electronic record keeping on planning of Nigerian secondary schools.

Table 7: T-Test Analysis of the Mean Differences of Respondents on Influence of Electronic Record Keeping on Planning of Nigerian Secondary Schools

Variables	Mean	SD	N	F	P. Value	Sig	Decision
				230	-0.748	0.05	Retain H01
Principal/vice principals	3.145	0.857	104				
Administrative heads	3.245	0.448	128				

Source: Researcher, 2023

Table 7 reveals that the P-value of -0.748 is lower than 0.05. Therefore, the null hypothesis is retained. This implies that there is no significant difference between the mean responses of secondary school principal /

vice principals and administrative heads on influence of electronic record keeping on planning of Nigerian secondary schools.

Hypotheses 3

There is no significant difference between the mean responses of secondary school administrators on influence of electronic record keeping on decision making of Nigerian secondary schools

Table 8: T-Test Analysis of the Mean Difference of Respondents on Influence of Electronic Record Keeping on Decision Making of Nigerian Secondary Schools

Variables	Mean	SD	N	F	P. Value	Sig	Decision
Principal / vice principals	3.402	0. 583	104	230	-0.146	0.05	Retain H01
Administrative heads	3.427	0. 700	128				

Source: Researcher, 2023

Table 8 reveals that the P-value of -0.146 is lower than 0.05. Therefore, the null hypothesis is retained. This implies that there is no significant difference between the mean responses of secondary school principal/vice principals and administrative heads on influence of electronic record keeping on decision making of Nigerian secondary schools.

Discussion of Findings

Based on the above analysis, finding reveals that secondary school administrators in Lagos State have little knowledge of electronic record keeping. As revealed in this study, majority of the respondents have not been attending training on electronic record keeping and as a result, they mostly find it difficult to store and retrieve records from electronic gadgets.

The finding also revealed that electronic record keeping would greatly influence planning in Nigerian secondary schools. This finding supports the argument of Nwagwu (2015) that effective record keeping is vital to educational development. This finding also align with the position of Amos (2017) that keeping school records electronically would lead to provision of useful information on the progress and development made within the school; provision of information for parents and guardians regarding the general conduct and academic performance of their children and wards at school as well as planning and budgeting purposes.

The study further revealed that electronic record keeping significantly influence decision making in Nigerian secondary schools. This finding agreed with report of Ghaemian (2014) that administrative functions require the use of powerful administrative tools resulting in better communication, efficient operations and better personnel services such as the use of computer for record keeping. This finding also corroborates the assertion of Ojo & Obimuyiwa (2019) that the use of electronic technology has greatly influenced the methods used by most educational institutions in creating, transmitting, disseminating, storing, retrieving and keeping of information.

This study also found no significant difference between the knowledge of secondary school principal/vice principals and administrative heads on electronic ways of keeping records. Similarly, the study found no significant difference between the mean responses of secondary school principal / vice principals and administrative heads on influence of electronic record keeping on planning and decision making of Nigerian secondary school administrators.

Conclusion

According to the study's findings, secondary school administrators in Lagos State cannot overstate the value of electronic record keeping for planning and decision-making. It facilitates rapid as well as comprehensive decision making in secondary schools and makes planning, forecasting, and budget preparation easier. However, it is possible to draw the conclusion from the data that secondary school administrators in Lagos State are not very familiar with computerized record keeping. They barely ever send, receive, store, or retrieve information electronically, despite having understanding of ICT. All interested parties should therefore support and urge secondary school administrators to give electronic record-keeping methods a lot of thought.

Recommendations

The following recommendations were made:

i. Secondary school administrators should always use appropriate and up to date records when planning and making critical decisions.
ii. Both school and administrative heads should be compelled to have a functional e-mail for sending and receiving information.
iii. Regulatory bodies such as TESCOM and Ministry of education should reduce paperwork and encourage sending and receiving information and records through electronic gadgets
iv. Both the principals, vice principals, administrative heads as well as all teachers should consistently be trained and re-train on the benefits of keeping records electronically and how to do it.
v. Government should create website for all secondary schools in Lagos State for easy backup of vital information.
vi. Government should create an enabling environment by providing necessary infrastructure that would promote electronic record keeping in secondary schools.

References

Allahmagani, K. (2014). Records management in government secondary schools: The case study of Kaduna North Local Government, Kaduna, State, Nigeria, Journal of Humanities and Social Science, 19 (1), 55-60.

Amos, O. A. (2017), Records Keeping for Effective Administration of Secondary Schools. Journal of Public Administration and Governance, 7 (2), 66-74

Davis, P. (2007). School record system and educational administration in colleges. New York Pan Book Ltd. Vol.3.

Ghauri and Gronhaug (2005) Research Method in Business Studies: A Practical Guide. JOUR.

Kajo, D. T. (2011) Administrative Constraints on Teacher Effectiveness in Government Secondary Schools in Benue State, Nigeria. A Ph.D Thesis of University of Nigeria, Nsukka.

Krejcie, R. V. & Morgan, D. W. (1970) Determining Sample Size for Research Activities.Educational and Psychological Measurement. The NEA Research Bulletin, 38.

Mangesi K. (2010) A comparative study of approaches to (ICT) policy formulation and implementation in Ghana and South Africa. A Masters Thesis, University of Kwa Zulu Natal.

Mertler, C. A. & Charles, C. M. (2005) Introduction to Educational Research. Pearson/A & B, 379.

Muaadh & Zawiyah, (2015) Factors Influencing the Adoption of Electronic Records Management (ERM) for Decision Making Process at Higher Professional Education (HPE)'s Institutions. International Conference on Innovation in Science and Technology, 399-402.

Nwagwu, N. A. (2015). The Development and Management of Records in Nigerian Education System. In E. J. Ehiametalor (ed.) Data Management in Schools and other Issues. Benin: Ilupeju Press Limited.

Odeniyi, O., & Adeyanju, A. (2020). Assessment of School Record Management in Secondary Schools in Federal Capital Territory. Open Journals of Educational Development (OJED), 1(1), 54–65.

Ogunsola, L. A. & Aboyede, W. A. (2015). Information and Communication Technology in Nigeria: Revolution or evolution. Journal of Social Science, 2 (1), 7-14.

Ojo, O. J. & Obimuyiwa, G. A. (2019) Electronic Record Keeping System and Administrative Effectiveness of Polytechnics in Ogun State, Nigeria. Nigerian Journal of Educational Foundations, 18 (1), 184-193.
Ololube, N. (2013). Educational management, planning and supervision: Model for effective implementation, Owerri: Spring Field Publishers.
Oluwole, M. & Ivagher, E. (2015). Record keeping and effective management of secondary schools in zone B senatorial district of Benue state, Nigeria. European Open Educational Research Journal 1 (1), 1-13.
Omoha, F. D. (2013), Management of School Records in Secondary Schools in Otukpo Education Zone. A Masters Theses of University of Nigeria, Nsukka, (Unpublished).
Osakwe, R. (2011). Management of School Records by Secondary School Principals in Delta State, Nigeria: The Social Sciences Journal 6.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Leveraging on Building Characteristics for Household Flood Adaptation

Saudat Oluwakemi AJIJOLA[1], Funmilayo. M. ADEDIRE[2], O. Ibem EZIYI[3], & Taiwo TANIMOWO[4]

[1]E-mail: ajijola.saudat@lcu.edu.ng,
Department of Architecture, Lead City University, Ibadan, Nigeria,
[2]E-mail: funmidire@gmail.com,
Department of Architecture,
Lead City University, Ibadan, Nigeria,
[3]E-mail: eziyi.ibem@unn.edu.ng,
Department of Architecture,
University of Nigeria, Enugu Campus, Enugu State, Nigeria
[4]E-mail: tanimowo.taiwo@lcu.edu.ng,
Department of Architecture, Lead City University, Ibadan, Nigeria.

Corresponding Author
Saudat O. AJIJOLA
Department of Architecture, Lead City University, Ibadan, Nigeria
E-mail: ajijola.saudat@lcu.edu.ng, T: 07080152199

Abstract

Buildings are designed to provide passive climate adaptation and protection for occupants against harmful environmental conditions. Today, many households in sub-Saharan Africa are subjected to physical, social and economic losses from flood impact. As flood risk and associated impacts continue to grow in the built environment, there is need to evolve strategies to advance the resilience of these vulnerable communities. Unfortunately, there are limited empirical studies on buildings' role in flood risk reduction in these regions. This study sought to bridge this gap in knowledge by examining currents levels of awareness of household flood adaptation *strategies, and the influence of specific building characteristics on household flood adaptation. The study takes a cross-sectional research design approach involving data collection through a questionnaire survey from 47Architectural Educators in ARCON accredited Schools of Architecture in Lagos, Nigeria. The data were analyzed using descriptive and inferential statistics. Results indicate a high level of awareness of household flood adaptation strategies. Also, findings suggested that building's floor height and drainage systems have the most influence on reducing flood impact to vulnerable households. The highlighted building characteristics can thus be leveraged on to optimize buildings' function in the flood adaptation process. Recommendations are also made on the way forward based on the results obtained from the study.*

Keywords: Buildings, Architectural educators, Flooding, Flood adaptation; Urban areas.

Word Count: 211

Introduction

The built environment is human constructed physical environment that provides the setting for all kinds of human activities (Maxwell, Grambsch, Kosmal, Larson, & Sonti, 2018). Although the constructed built environment notion is a recent one, Rapoport, a social scientist, is credited with its invention in 1976 (Rapoport, 1976). The term "urban built environment" may be used to refer to virtually any human-made infrastructure, encompassing all types of buildings, including residential, commercial, and industrial ones, as well as the networks that connect them (Hassler & Kohler, 2014). Buildings are among the key important components of the built environment that sustain social institutions and needs, including housing, enterprises, the government, the economy, and other essential services (Chen, Liu, & Chen, 2020; Kamara, Heidrich, Tafaro, Maltese, Dejaco & Cecconi, 2020). Today, buildings continue to be exposed to increasing stresses and more frequent co-occurrence of climate induced flood risks (Abid, Sulaiman, Wei, & Nazir, 2021). These realities coupled with the quest for more sustainable practices, have all elevated emphasis on the need for improved flood resilience to mitigate growing vulnerability. Invariably, resilience thinking as a means of adaptation and transformation with the soul aim of surviving against man-made or natural risks is critical (Chen, Liu, Lu, Zhe, Tong & Akram, 2022). This is because resilience as a systems' attribute extends beyond simply reducing risks, it is primarily geared towards improving a system's (for instance, a building) performance in the face of multiple hazards (Hassler & Kohler, 2014). More so, resiliency is perceived as the capacity to endure severe natural disaster without suffering severe losses (Liao, 2012). As such, resilience is a crucial factor in determining how well buildings and other built environment components can adjust to change and meet societal norms and sustainability goals (Chen *et al.,* 2020).

Existing body of literature on flood resilience shows that the notion of 'living with floods' has grown in importance as a crucial component of flood management (Fu, Meng, Casado, Kalawsky, 2020).In other words, the capacity of a building to tolerate flooding and to allow occupants adjust should physical damage and socioeconomic disruption occur, so as to prevent deaths and injuries and maintain current functions in the event of flood defines resilience to floods (Chen et al., 2020; Liao, 2018).From the aforementioned, it can be concluded that resilience to floods is the ability to avoid flood disaster based on the buildings' flood ability. Where flood ability, implies flood tolerance based on existing function, structure, resources and capacities (Loggia, Puleo &Freni, 2020). Hence, resilience to floods is basically a process of adaptation, which involves improving the buildings' capacity to withstand flooding without causing physical damages and socioeconomic upheaval to vital components.

Within the context of this study, the concept of flood adaptation has to do with adjusting buildings and households to minimize flood impacts. It involves constructing buildings to withstand floodwater (Loggia et al., 2020). It is based on the idea that each flood that is prevented erodes the opportunity to learn and develop capacities to cope with flooding when the flood-control infrastructure fails (Kakulu & Brisibe, 2014). This notion aligns with an earlier study which observed that flood-control infrastructure decreases urban resilience to floods through its very function, which is to prevent periodic flooding; noting that periodic flooding is a critical mechanism to maintain the ecological functions and high biodiversity of floodplains (Liao, 2012). In other words, the ideas of 'disaster cycle' or 'flood risk cycle' which represents the consecutive phases of flood events (before, during, and after) have also encouraged a shift to flood risk mitigation through effective adaptation (Meng, Dabrowski & Stead, 2020). Consequently, successful building adaptation strategies as grounded in the idea that designing for flood ability produces a more successful outcome can contribute to flood disaster risk reduction in at risk households.

Today, coastal cities are experiencing a shift from hydrological engineering defenses toward integrated flood risk management (APFM, 2015; Nkwunonwo, Whitworth & Baily, 2016;Fu et al., 2020).This is because flood control infrastructure as a centralized measure gives people a false sense of security and ignores the need for localized flood response capacity, leading communities that rely on it to address just the river and not the built environment (Liao, 2018). That is why the United Nations' New Urban Agenda in line with the Sendai Framework for Disaster Risk Reduction for the period 2015–2030, have drawn attention to the need to increase resilience via the creation of high-quality buildings, effective spatial planning, and the renovation and improvement of existing housing stock in informal settlements (Begoña, Alexei, Amaya, Avi, Alonso & Al, 2020; UNEP, 2021). In response, studies have examined diverse architectural and planning based strategies as it relates to flood disaster risk reduction and climate change.

Findings suggests obvious building-based and households' strategies applicable in pre-flooding, during flooding and in post-flooding scenarios such as building elevation above estimated flood depths, use of flood-resistant building materials, construction of flood walls and barriers, improved drainage systems and periodic maintenance, wet and dry flood proofing, rainwater and sewage diversion, provision of green spaces and flood sinks(Munyai, Musyoki, Nthaduleni, 2019; Chen, *et al.*, 2020; Kometa, Petiangma, Kang, 2021).Similar to this, low impact developments (LID)or sustainable urban drainage system (SuDS) are becoming a more widespread method of adapting to floods. Typically, LID/SuDS relies on building materials, components and design to harvest, infiltrate, slow, store, convey and attenuate floodwaters (Palazzo & Wang, 2022). Common LID/SuDS strategies identified by previous research include rainwater harvesting, green rooftops, permeable pavements for parking lots and sidewalks, tree planting, rain gardens, swales, detention basins, and retention ponds (Ajijola, Obaleye, Ajijola & Arayela, 2021).

From these studies it is understood that flood adaptive measures for buildings consider aspects of building material, building components and design strategies. These studies also help to understand that specific building features and their neighborhood characteristics such as envelope, structure, proximity to water bodies and storm water channelization play an influential role in flood adaptation. In spite of these, UNEP (2021) has observed that flood adaptation in the building industry is still in its early phases, and actions must be quickly ramped up to deal with the repercussions of climate change, which are becoming more severe.

Statement of the Problem

Current trends in climate change issues and socio-economic development are indicative that the built environment will increasingly experience flood risk in the future. Already, there has been significant increase in the frequency, intensity, and magnitude of flood events in different parts of the world (Rubinato,Nichols, Peng, Zhang & Lashford, 2019; Surminski & Mehryar, 2020; Kaoje, Zulkarnain, Rahman,Idris, Razak, Nurul, Wan, Rani & Tam, 2021; Ahmed, Alrajhi, Alquwaizany, Maliki & Hewa, 2022). According to a Technical Report (2015), 70% of cities are already experiencing the effects of climate change because almost all of them are in danger. For instance, the majority of cities and homes worldwide are at risk of flooding due to rising sea levels and powerful storms because more than 90% of urban areas are coastal

(UCCRN, 2015). In addition, poverty and increased housing developments in informal settlements of coastal cities are further intensifying vulnerability to flood risk in developing countries (Atufu & Holt, 2018). These events have highlighted the fragility and vulnerability of the built environment to flood risk.

More so, the enormous impact of flooding on critical infrastructure (housing, transportation networks, water, electricity, and public health services) have further intensified the importance of flood adaptation and resilience in effective disaster management (Surminski & Mehryar, 2020). This is particularly evident in many coastal communities in sub-Saharan Africa, where very limited empirical studies exist on the role of buildings in flood adaptation (Ouikotan, Kwast, Mynett & Afouda,2017; Brisibe, 2020; Lucas, 2021). As such, identifying Building Characteristics which can be leveraged on for successful household flood adaptation becomes paramount. The outcome of this study can inform targeted policies on architecture and planning as it relates to flood disaster risk reduction and climate change; and also empower built environment professionals, home-owners, and particularly people in vulnerable situations to work together to drive development, as opposed to being subjected to externally designed and instigated development initiatives.

Aim and Objectives of the Study

The current study is conducted for the purpose of examining the influence of specific building characteristics on household flood adaptation, so as to improve understanding on aspects architects can leverage on to create more flood resilient buildings. The specific objectives are to:

1. assess the level of awareness of household flood adaptation strategies.
2. determine what building characteristics have the most influence on household flood adaptation.

Research Questions

The key research questions this study attempted to address are:

1. What is the level of awareness of household flood adaptation strategies?
2. What building characteristics have the most influence on household flood adaptation?

Methodology

The study takes a cross-sectional research design approach, which relied on primary and secondary sources. Using the deductive approach, secondary data were used to gain general understanding of urban resilience and flood adaptation, as well as building-based flood adaptation; thereafter, tested through survey to identify aspects of building which can be leveraged on to promote household flood adaptation (Blackwell, 2018; Holden & Lynch, 2004). The primary data were sourced from close-ended questionnaire survey administered to Architectural Educators working in accredited Schools of Architecture in Lagos, Nigeria. Architectural Educators are involved in the training of prospective architects and architectural technicians. Based on the status of universities offering architecture in Nigeria published by Architects' Registration Council of Nigeria (ARCON) in 2020; Architectural Educators in the University of Lagos and Caleb University were selected for the study. A total of 63 educators were identified using a census count of both full-time lectures and adjunct academic staff in both universities.

The study employed the questionnaire data collection instrument hosted on Microsoft forms to capture their opinions on the role of specific building characteristics in flood adaptation. In order to ensure content validity, a pilot study of the questionnaire was performed with 11 architectural educators in Caleb University, Imota; representing about 17% of the estimated sample size. The questionnaire was subsequently refined based on feedback from the pilot study. For example, it was suggested that the basic information of the educators be included. Similarly, the Cronbach's Alpha reliability coefficient test was carried out using Statistical Package for Social Science (SPSS)-v24 in order to ensure reliability and internal consistency of the questions.

The test results showed high Cronbach’s Alpha of 0.874. Result of the test is showed in Table 1.

Table 1. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.874	.885	9

Afterwards, a mailed questionnaire survey was used to collect data (n = 47) in February 2022 from architectural educators in Lagos State. The study's objectives were added to better explain the study to participants. The return of the completed survey implies consent. The design of the questionnaire is made up of two (2) sections. Section 1 included basic demographic variables such as gender, years of experience, and professional registration; and assessment of level of awareness of household flood adaptation strategies. Section 2 listed nine (9) indicators representing specific building characteristics identified from literature, namely: *proximity to water bodies, building footprint, building landscape, external paving material, wall material, floor height, number of stories, roof type, and building drainage system*. Respondents were required to evaluate on a 4-point Likert scale including: Not Influential (NI), Rarely Influential (RI), Influential (I), and Very Influential (VI); how significant these indicators are in flood adaptation. Overall, 47 of the 63 questionnaires administered were valid representing around 74.6% response rate.

The data were analyzed using simple descriptive statistics and the Relative Importance Index (RII). The RII is measured for each of the indicators and ranked accordingly. The RII was calculated by using the equation RII= $\sum \frac{W}{A * N}$ Where, w = weight (1, 2…4), A = highest weight, and N = number of responses. Generally, RII values close to 1 are considered to be of high importance and vice versa (Akadiri, 2011). The results are presented in tables.

Results

The results were analyzed according to the research questions and presented as follows:

Research Question One: What is the level of awareness of household flood adaptation strategies?

The basic characteristics of the respondents as shown in Table 2 reveal that 59.6% of the respondents are male, while the remaining 40.4% are of the female gender. In addition, the result also suggests that all the respondents are registered with the Architects Registration Council of Nigeria (ARCON), and that majority (40.4%) have five to eight years of teaching and research experience. Similarly, results as shown in Table 2 indicate that majority (76.6%) of the respondents have a substantial level of awareness of household flood adaptation strategies.

Table 2. Summary of Basic Characteristics of the Surveyed Architectural Educators

Basic Characteristics of Respondents	Frequency	Percentage
Gender		
Male	28	59.6
Female	19	40.4
Registration status with a professional Organization		
Yes	47	100
No	0	0
Years of experience		
1-4 years	2	4.3
5-8 years	19	40.4
9-12 years	12	25.5
13 years and above	14	29.8
Level of awareness of household flood adaptation strategies		
Very low	0	0
Low	8	17
Not sure	3	6.4
High	15	31.9
Very high	21	44.7

Research Question Two: What building characteristics have the most influence on household flood adaptation?

Table 3 provides summary of the descriptive statistics of respondents' perception of the influence of specific building characteristics on household flood adaptation. Analysis of the RII as shown in Table 3 indicates that '*floor height*' and '*building drainage system*' (0.95) are the most influential building characteristics among the 9 indicators in flood adaptation; it is the highest ranked and is followed by '*Building landscape*' (0.93) and '*proximity to water bodies*' (0.90): these are the most influential indicators. However, the lowest ranked building characteristics are the roof type (0.63), number of storeys (0.67) and building footprint (0.71).

Table 3: Descriptive Statistics of Influence of Building Characteristics on Flood Adaptation

Indicators	Not Influential	Rarely Influential	Influential	Very Influential	Mean	SD	RII
Proximity to water bodies	2	1	10	34	3.62	.739	0.90
Building footprint	1	18	15	13	2.85	.859	0.71
Building landscape	0	1	11	35	3.72	.498	0.93
External paving material	4	1	28	14	3.11	.814	0.78
Wall material	2	9	23	13	3.00	.808	0.75
Floor height	1	1	5	40	3.79	.587	0.95
Number of storeys	8	9	20	10	2.68	1.002	0.67
Roof type	11	11	14	11	2.53	1.100	0.63
Building drainage system	0	0	9	38	3.81	.398	0.95

Discussion of findings and Implication

The first finding of the study is that there is a high level of awareness of household flood adaptation among architectural educators in Lagos, Nigeria. This finding seems to be a departure from earlier studies which indicated that there is a low level of awareness of flood resilient and adaptable buildings among practicing Architects in Yenagoa, Nigeria (Brisibe, 2018).Similarly, Ezeokoli, Okolie & Onwuka (2019) found out that flood resilience measures are not largely incorporated into the design and construction of buildings in Ogbaru, Anambra State, Nigeria. Furthermore, in a related study in Ibadan, Nigeria, households in the survey never practiced any adaptation measures to mitigate flood risk (Salami et al., 2017). This finding implies that architectural educators seem to have a higher level of awareness of household flood adaptation than architectural practitioners. The observed difference may be linked to better research exposure, and technological advancement in the academics. The implication of this finding is that there appears to be a gap in translating research findings to practice, which may be attributed to the lack of collaboration and knowledge sharing among researchers, practitioners, policy makers and other stakeholders.

The second finding of the research is that '*floor height'* and '*building drainage system* 'have the most significant influence on household flood adaptation. These findings align with previous studies showing that elevating habitable spaces above flood level can further reduce flood impacts and associated damages (Liao, 2019;Shrestha, Bhakta et al., 2021). In fact, policy documents such as the "Planning Policy Guidance Note 25: Property Development and Flood risk" in UK and under the FEMA guidelines recommend that floor levels of buildings should be raised above estimated flood levels (Brisibe, 2020;Kometa et al., 2021). On the one hand, existing floor levels should be raised 300mm above the estimated flood levels, while foundation of buildings on the other hand, should be raised by at least 600mm above the highest adjacent grade where the flood level is not known. However, in cases where flood depth may be more extreme, consideration may be given to elevating the ground floor a storey above the ground and using the ground level for other uses such as basement.

Similarly, drainage systems have been widely construed as influential in runoff mitigation (Atufu & Holt, 2018; Ramos et al., 2017; Ajijola, S., Arayela, O., Bello, 2020). Providing an insight, Kaoje et al., (2021; 20), maintained that "*a high flood vulnerability to a building may be caused by a lack of drainage facilities, closeness to some natural drainage system or environmental settings, and its intrinsic characteristics*". In other words, a building's drainage system is critical to its resilience or susceptibility to floods. As such, a well-designed building drainage system is effective in preserving the value of the building envelope while reducing flood impacts on occupants.

Furthermore, the idea that a building's landscape plays an influential role in attenuating flood impacts and thus, facilitates flood adaptation aligns with suggestions in UNEP (2021). Rainfall interception by vegetation and trees reduces surface runoff, slows down flooding effects and reduces the pressure on urban drainage systems. Similarly, Pauleit et al., (2017) noted that permeable pavements and the various bio-retention systems are efficient in promoting infiltration and controlling runoff respectively. Also, findings from a post-flood empirical study in Kelantan, Malaysia suggested that a majority of flood-impacted buildings are located in proximity to main rivers (Rani, et al., 2017).

However, further analysis of the RII (Table 2) revealed that the least ranked indicator is 'roof type' with RII of 0.63. This finding suggests that the choice of roof has little influence on the flood adaptation of buildings. However, empirical study (Freni & Liuzzo, 2019), suggest that green roofs can significantly reduce the amount of rainfall that would otherwise run off hardscapes (such as, concrete, asphalt, bricks, aluminum, metal, etc), thus providing an important contribution to avoiding potential drainage system failures during flood events. Notably, Ezema et al. (2016) had argued that green roofs were not popular in Lagos State, Nigeria, due to cost, technical challenges, poor knowledge as well as limitations imposed by the interpretation of planning laws. As such, there is little evidence on the benefits of green roofs as it relates to flood adaptation in the area. However, this finding may be attributed to the very limited empirical studies on the influence of roof type, particularly green roof in attenuating flood risk in Lagos-state, Nigeria.

The implication of this finding is that in order for ensure improved flood adaptation at the property level, ground floor height and building drainage systems must be given utmost consideration and designed based on the climate and estimated flood depth of the area; such that there is minimal impact on households in future flood scenarios.

Conclusion

Based on the findings on the level of awareness of household flood adaptation, this study concludes that there is a gap between translating research findings to practice in Nigeria. Also, an inference may be drawn that the most effective building characteristics which may be explored for improved household flood adaptation are buildings' floor height and drainage systems. Therefore, in anticipation of increasing flood risk, architects and other built environment professionals can leverage on the deductions from this study to optimize building characteristics for flood adaptation.

Recommendations

In light of the conclusion of this study, it was recommended that

1. efforts from both architectural educators and architectural practitioners are needed to improve communication and collaboration channels, thereby making research findings more accessible and applicable to practitioners.
2. further studies on adaptive architectural design strategies for flood disaster risk reduction in flood-prone settlements.
3. efforts be made by the relevant building regulatory agency to develop and enforce a context specific policy document to guide building development within coastal regions and flood prone communities.
4. future comparative studies be carried out on the impact of pitched roof and green roof on flood mitigation in the built environment.

Reference

Abid, S. K., Sulaiman, N., Wei, C. S., & Nazir, U. (2021). Flood vulnerability and resilience : Exploring the factors that influence flooding in Sarawak. *International Conference on Research Collaboration of Environmental Science (IOP Conf. Series: Earth and Environmental Science)*, 1–9. https://doi.org/10.1088/1755-1315/802/1/012059

Ahmed, A., Alrajhi, A., Alquwaizany, A., Maliki, A. Al, & Hewa, G. (2022). Flood Susceptibility Mapping Using Watershed Geomorphic Data in the Onkaparinga Basin , South Australia. *Sustainability*, *14*(16270), 1–23.

Ajijola, Saudat, O., Bello, J., & Arayela, O. (2020). Equifinality of Flood Determinants in the Wetlands of Lagos State , Nigeria. *International Journal of Innovative Research and Development*, *9*(8), 81–89. https://doi.org/10.24940/ijird/2020/v9/i8/AUG20025

Ajijola, S., Obaleye, O. J., Ajijola, O., & Arayela, O. (2021). Exploring Public Perceptions of Nature Based Solutions to Flood Risk Exploring Public Perceptions of Nature Based Solutions to Flood Risk Management In Lagos , Nigeria . *International Journal of Advances in Engineering and Management*, *3*(1), 736–747. https://doi.org/10.35629/5252-0301736747

Akadiri, O. P. (2011). *Development of a Multi-Criteria Approach for the Selection of Sustainable Materials for Building Projects*, (Doctoral dissertation. University of Wolverhampton).

APFM. (2015). integrated flood management tools series: effectiveness of flood management measures. *World Meteorological Organization*, *21*, 1–66.

Architects Registration Council of Nigeria. (2004). *Architects (Registration, etc.) Act: Chapter A19 of the Laws of the Federation of Nigeria.* Talos Press, Abuja

Atufu, C. E., & Holt, C. P. (2018). Evaluating the Impacts of Flooding on the Residents of Lagos, Nigeria. *Urban Water Systems & Floods II 81 Evaluating*, *184*, 81–90. https://doi.org/10.2495/FRIAR180081

Begoña, P. S., Alexei, T., Amaya, C., Avi, S., Alonso, C., & Al, E. (2020). Climate Change Vulnerability and Risk: A Guide for Community Assessments, Action Planning and Implementation. In *United Nations Habitat*.

Blackwell, G. R. (2018). Introduction to positivism , interpretivism and critical theory. *Nurse Researcher*, 1–30. https://doi.org/10.7748/nr.2018.e1466

Bosher, L., Carrillo, P., Dainty, A., Glass, J., & Price, A. (2007). Realising a resilient and sustainable built environment : towards a strategic agenda for the United Kingdom. *Disaster*, *31*(3), 236–255. https://doi.org/doi:10.1111/j.0361-3666.2007.01007.x

Brisibe, W. (2020). A Comparative Review of the Implications of Flooding on Architecture and Planning Policies in the UK and Nigeria. *Journal of Architectural Engineering Technology*, *9*(1), 1–10. https://doi.org/10.35248/2168-9717.20.09.230

Brisibe, W. G. (2018). Assessing Architects ' Knowledge of flood Resilient and

Adaptable Buildings in Yenagoa , Nigeria. *Journal of Architecture and Construction*, *1*(2), 16–24.

Chen, F., Liu, A., Lu, X., Zhe, R., Tong, J., & Akram, R. (2022). Evaluation of the Effects of Urbanization on Carbon Emissions : The Transformative Role of Government Effectiveness. *Frontiers in Energy Research*, *10*(February), 1–12. https://doi.org/10.3389/fenrg.2022.848800

Chen, Y., Liu, T., & Chen, R. (2020). *Influence of the Built Environment on Community Flood Resilience : Evidence from Nanjing City , China*.

Ezema, I. C., Ediae, O. J., & Ekhaese, E. N. (2016). Prospects , Barriers and Development Control Implications in the use of Green Roofs in Lagos State, Nigeria. *Covenant Journal in Research & Built Environment*, *4*(2), 54–70.

Ezeokoli, F. O., Okolie, K. C., & Onwuka, S. U. (2019). Flood Resilience Measures in Buildings on the Flood-plains of Ogbaru , Anambra State , Nigeria. *Advances in Research*, *19*(4), 1–10. https://doi.org/10.9734/AIR/2019/v19i430131

Freni, G., & Liuzzo, L. (2019). Effectiveness of Rainwater Harvesting Systems for Flood Reduction in Residential Urban Areas. *Water*, *11*(1389), 1–14. https://doi.org/doi:10.3390/w11071389

Fu, G., Meng, F., Casado, Rivas, M., & Kalawsky, S, R. (2020). Towards Integrated Flood Risk and Resilience Management. *Water*, *12*(1789), 1–5. https://doi.org/doi:10.3390/w12061789

Hassler, U., & Kohler, N. (2014). Resilience in the built environment. *Building Research & Information*, *42*(2), 119–129. https://doi.org/10.1080/09613218.2014.873593

Holden, M. T., & Lynch, P. (2004). Choosing the Appropriate Methodology : Understanding Research Philosophy Choosing the Appropriate Methodology : Understanding Research Philosophy Abstract. *The Marketing Review*, *4*(4), 397–409.

Kakulu, I. I., & Brisibe, W. (2014). Increasing Flood Resilience in Buildings Through Adaptable Designs : Learning from the Bayelsa Experience. *West Africa Built Environment Research (WABER) Conference 10th Anniversary Conference*, *November*. https://doi.org/10.13140/RG.2.1.3878.7680

Kamara, J. M., Heidrich, O., Tafaro, V. E., Maltese, S., Dejaco, M. C., & Cecconi, F. R. (2020). Change Factors and the Adaptability of Buildings. *Sustainability*, *12*(6585), 1–18.

Kaoje, I. U., Zulkarnain, M., Rahman, A., Idris, N. H., Razak, K. A., Nurul, W., Wan, M., Rani, M., & Tam, T. H. (2021). Physical Flood Vulnerability Assessment using Geospatial Indicator-Based Approach and Participatory Analytical Hierarchy Process: A Case Study in Kota Bharu, Malaysia. *Water*, *13*(1786), 1–22. https://doi.org/https://doi.org/10.3390/w13131786

Kometa, S. S., Petiangma, D. M., & Kang, E. M. (2021). Effectiveness of Flood Adaptation Strategies to Land Use Dynamics in Ngoketunjia Division, North West Region of Cameroon. *Annals of Geographical Studies*, *4*(1), 16–26. https://doi.org/https://doi.org/10.22259/2642-9136.0401003 Effectiveness

Liao, K. (2012). A Theory on Urban Resilience to Floods--A Basis for Alternative Planning Practices. *Ecology and Society*, *17*(4), 48. https://doi.org/10.5751/ES-05231-170448

Liao, K. (2018). Towards Resilient , Floodable Cities : Floodability as an Alternative Flood Safety Standard to Promote River Health. *Ecology and Society*, 1–8.

Liao, K. (2019). Living with Floods : Ecological Wisdom in the Vietnamese Mekong Delta. In *Landscape and Urban Planning, 2016 Special Issue on Ecological Wisdom.* (Issue August, pp. 195–215). Springer Singapore. https://doi.org/10.1007/978-981-13-0571-9

Loggia, G. La, Puleo, V., & Freni, G. (2020). Floodability : A New Paradigm for Designing Urban Drainage and Achieving Sustainable Urban Growth. *Water Resources Management*, *34*, 3411–3424. https://doi.org/https://doi.org/10.1007/s11269-020-02620-6

Lucas, B. (2021). Urban flood risks , impacts , and management in Nigeria. In *KD4*.

Maxwell, K., Grambsch, A., Kosmal, A., Larson, L., & Sonti, N. (2018). Chapter 11: Built Environment, Urban Systems, and Cities. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II: Vol. II* (pp. 438–478). https://doi.org/10.7930/NCA4.2018.CH11

Meng, M., Dabrowski, M., & Stead, D. (2020). Enhancing Flood Resilience and Climate Adaptation : The State of the Art and New Directions for Spatial Planning. *Sustainability*, *12*(7864), 1–23. https://doi.org/doi:10.3390/su12197864.

Munyai, R. B., Musyoki, A., & Nethengwe, N. S. (2019). An assessment of flood vulnerability and adaptation : A case study of Hamutsha-Muungamunwe village , Makhado municipality. *Journal of Disaster Risk Studies*, *11*(2), 1–8. https://doi.org/https://doi.org/10.4102/ jamba.v11i2.692

Nkwunonwo, U., Whitworth, M., & Baily, B. (2016). A review and critical analysis of the efforts towards urban flood risk management in the Lagos region of Nigeria. *Nat. Hazards Earth Syst. Sci*, *16*, 349–369. https://doi.org/10.5194/nhess-16-349-2016

Ouikotan, B, R., Kwast, V. Der, Mynett, A., & Afouda, A. (2017). Gaps and challenges of flood risk management in West African coastal cities. *XVI World Water Congress*, 1–12.

Palazzo, E., & Wang, S. (2022). Landscape Design for Flood Adaptation from 20 Years of Constructed Ecologies in China. *Sustainability*, *14*(4511), 1–20.

Pauleit, S., Zölch, T., Hansen, R., Randrup, T. B., & Konijnendijk van den Bosch, C. (2017). *Nature-Based Solutions and Climate Change – Four Shades of Green*. https://doi.org/10.1007/978-3-319-56091-5_3

Ramos, H., Perez-Sanchez, M., Franco, B., & Lopez-Jimenez, A. (2017). Urban Floods Adaptation and Sustainable Drainage Measures. *Fluids*, *2*(61), 1–18. https://doi.org/10.3390/fluids2040061

Rani, W.N.; Nifa, F.A.; Ismail, M.N.; Khalid, K.N. Planning for post disaster recovery: Lesson learnt from flood events in Kelantan Malaysia. *AIP Conf. Proc.* 2017, 1891, 020143.

Rapoport, A. (Ed.). (1976). *The Mutual interaction ofpeople and their built environment: A cross-cultural perspective.* Chicago: Aldine

Rubinato, M., Nichols, A., Peng, Y., Zhang, J., & Lashford, C. (2019). Urban and river flooding: Comparison of flood risk management approaches in the UK and China and an assessment of future knowledge needs. *Water Science and Engineering*, *12*(4), 274–283. https://doi.org/10.1016/j.wse.2019.12.004

Salami, R. O., Meding, J. K. von, & Giggins, H. (2017). Vulnerability of human settlements to flood risk in the core area of Ibadan metropolis , Nigeria. *Journal of Disaster Risk Studies*, *9*(1), 1–14. https://doi.org/https:// doi.org/10.4102/jamba. v9i1.371

Shrestha, Bhakta, B., Kawasaki, A., & Win, W. (2021). Development of flood damage assessment method for residential areas considering various house types for Bago Region of Myanmar. *International Journal of Disaster*

Risk Reduction, *66*(2021), 1–18. https://doi.org/https://doi.org/10.1016/j.ijdrr.2021.102602
Surminski, S., Mehryar, S., & Golnaraghl, M. (2020). Flood Risk Management in England: Building flood resilience in a changing climate. *The Geneva Association- International Association for the Study of Insurance Economics*, *June*, 1–55.
UNEP. (2021). *A Practical Guide to Climate-resilient Buildings & Communities*. https://www.unep.org/resources/practical-guide-climate-resilient-buildings.
Urban Climate Change Research Network (UCCRN). (2015). *Climate Change and Cities. Second Assessment Report of the Urban Climate Change Research Network. Summary for City Leaders.* Columbia University, New York, NY. http://uccrn.org/arc3-2/

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Effects of Same-Age Peer-tutoring on Orthopaedic Impairment Students Achievement in Geometry in Senior Secondary Schools, Oyo State

[1]Philias Olatunde **YARA**
phill tunde q @ gmail.com
08034715891

&

[2]Adeola Oluwaseun **ODEBODE**
oluwaseunodebodeadeola@yahoo.com
08060179983

[1]*Department of Science Education, Faculty of Arts & Education. Lead City University, Ibadan, Oyo State, Nigeria*

[2]*Department of Science Education, School of General Studies Education, Federal College of Education (Special) Oyo, Oyo State, Nigeria*

Abstract

This study examined the effects of peer tutoring teaching strategy on orthopaedic impairment students achievement in geometry in Senior Secondary Schools II Oyo State. The study employed pre-test, posttest, control group quasi experimental design. The population consists of 25 orthopaedic impairment students' in all inclusive Senior Secondary Schools II Oyo State. The sampling technique used is intact. The instruments used were Students Mathematics Anxiety Rating Scale (SMARS) ($r=0.85$) Geometry Achievement Test for Students' (GATS) (KR 20 = 0.97), Geometry Lesson Plan (GLP) and Geometry Lesson Notes (GLN). Seven hypotheses were postulated and tested. Data were analyzed using ANCOVA. The results revealed significant main effect of treatment on students' with orthopaedic impairment achievement in geometry ($F_{(2, 23)} = 12.94; p<0.05$, partial $\eta^2 = 0.65$). There was no significant main effect of *gender on students' with orthopaedic impairment achievement in geometry ($F_{(1, 24)}$ = .03; p>.05, partial η^2 = .002. η^2 = 0.03). It was concluded that treatment have no effect on gender and anxiety on students' with orthopaedic impairment academic achievement. It was suggested that same-age peer tutoring should be employed to enhance orthopaedics impairment students' achievement in geometry*

Keywords: Orthopedic Impairment, Same-Age Peer Tutoring, Geometry, Achievement

Word Count: 144

Introduction

Mathematics is a subject that study number patterns, measurement and number theories. It form basis for science and technology with many branches such as algebra, geometry, calculus, statistics, real analysis, complex analysis, mathematical modeling and topology (Ayeni, 2012). Olunloyo (2010) opined that Mathematics is a gatekeeper and air bag of intelligence, it is a pillar that form basis for creativity, logical reasoning and critical thinking. Mathematics has branches out of which every discipline form it ground. It is seen as a backbone of science and technology that prepare pupils for a useful and meaningful living and gives direction to human activities (Ekwueme & Onaife, 2017). One of the branches of mathematics is geometry.

Geometry is a branch of mathematics that express patterns, construct logical preposition or assumption by which ideas and concepts are convey; it is a way of organizing a logical proof that gives insight into the power of human mind and becomes a challenge to intellectual curiosity (Malik, 2017). But despite the importance of geometry to humanity, the performance of most secondary school students' in it is not encouraging. West Africa Examination Council (WAEC) Chief Examiners' reports of 2017, 2018 and 2020 indicated that secondary school students avoid to answer geometrical questions during external and internal examination and those that answer them failed (Popoola, 2004). This poor performance does not only peculiar to certain categories of students but also included orthopaedic impaired students. Orthopaedic impaired students are students on wheelchair; students on crushes and students with amputated arms or legs these categories of students have challenges that affect their psychomotor domain which in turn made them unable to hold pen and write extensively in the classroom and during the period of examination (Berry, & Domene, 2017).

Mangan (2015) observed that the predicament faced by orthopaedics impairment students discouraged them to grasp the geometrical concepts, numerical facts, and procedures during teaching and learning process. Orthopaedics impairment students failed geometry because of their unreadiness and inadequate concentration during teaching and learning process, they find it difficult to recall, identify and reorganize geometrical concept in the instruction given during the lesson.

For instruction to be effective appropriate instructional material need to be employed Julie (2015). There are various process under peer tutoring these are: Cross Age Peer Tutoring (CAPT); class wide Peer tutoring (CWPT); Reciprocal Peer Tutoring (RPT) and Peer Assisted Learning Strategies (PALS) (Usman & Musa, 2015). Same-Age Peer Tutoring conveys knowledge and skills that one student has mastered to other students of the same age under supervision of a teacher. Peer teaching is a mutual learning process in which students of the same age teaches others the desired skills and knowledge under the supervision of the subject teacher to guide and correct where necessary. In same-age peer tutoring the tutor benefits from reinforcing existing knowledge of fundamental concepts and gaining a better understanding of the concepts (Kapil & Malini, 2017).

Same-age peer tutoring is an instructional strategy that consists of students' of the same-age peer together in order to share experience ideas and to have same academic achievement in Geometry. Adegoke, (2013) explained that same- age peer tutoring aids retention, raises students` self-esteem, allows for higher rates of student response and feedback, creates more opportunities for students to practice specific skills, helps student tutor to gain deeper understanding of a topic by teaching it to another student.

Nevertheless, gender tells more on the performance of students in mathematics. There is general belief that male students perform better than female students in mathematics simply because female students' were burdened with domestic work and as a result have less time for their study. In some cases, gender difference influences the performance of orthopaedic impairment students' achievement in geometry as well, female students may have zeal to learn mathematics than male students this is so because female love reading and this act of reading can be transfer to the learning of mathematics. But to some people male students are believe to perform better than female from the fact that male students have no time for social engagement.

Moreover, anxiety has been linked with academic achievement of students with orthopaedic impairment. Anxiety is a panic and mental disorganization exhibited by students when solving problems (Isa 2017). Anxiety is often detrimental and debilitating to academic achievement of students with orthopaedic impairment. Etsu and Manko, (2019) observed that teachers approach to teaching and learning of geometry is found to play a major part in gender disparity and mathematics anxiety that resulted in poor performance of students with orthopaedic impairment. Teachers' systematically adoption of guided explicit method while teaching geometry to students with orthopaedics impairment will facilitate understanding, anticipate common misconceptions, highlight essential content, and remove distracting information during teaching and learning process. The future of Nigeria is at stake if the failure rate of students in geometry is not reduced or eradicated. The problem confronting orthopaedics impairment students in geometry were solved by same-age peer tutoring strategy in United State of America many years back (Owan, & Robert, 2019). Since this problem had been solved outside Nigeria however, the study want to examing whether same-age peer tutoring strategy can be used to solve the same problem confronting orthopaedics impairment students' achievement in geometry in Oyo State.

Statement of the Problem

The poor performance of orthopaedic impaired students in mathematics is attributed to the challenges they have. Although, several study revealed that orthopaedic impairment students in other advance countries learned under conducive environment and given special consideration but reverse is the case in Nigeria. These category of students have finding it difficult to interpret, analyze and solve problems on geometry because of their predicament. These predicaments include physically deformed, amputated hands or legs and cerebral palsy. Before learning can take place, learners must be able to write legibly, physically balance and withstand stress. Majority of orthopaedic impaired students writing are not legible enough to read, the examiners find it difficult to read what they put down on their examination scripts and this affects their performance in geometry. Also, students on wheelchairs and students using crushes are restricted to some extent that not everywhere they can access in the classroom due to their condition. Some Mathematics teachers do frustrate students with orthopaedic impairment because they see them as a threat to their teaching profession. However, this study seeks to examine the effect of peer-tutoring and explicit strategies on academic achievement of students with orthopaedic impairment in geometry in senior secondary schools Oyo State.

Aim and Objectives of the Study

This study aims to examine the effectiveness of same-age peer tutoring strategy in the teaching of geometry to students with orthopaedics impairment in senior secondary schools Oyo State.

Hypotheses

Based on the stated objectives, the following null hypotheses was postulated and tested at a 0.05 level of significance.

H_01: There will be no significant effect of treatment (Same-age Peer Tutoring and Conventional Strategy) on orthopaedics impairment students achievement in geometry.

$H_0$2: There will be no significant effect of gender on orthopaedics impairment students' achievement in geometry.
$H_0$3: There will be no significant effect of mathematics anxiety on orthopaedics impairment students' achievement in geometry.

Methodology
The study adopted the pretest, posttest control group quasi-experimental research design. The study employed one experimental groups and one control group; the experimental groups was exposed to same age peer tutoring strategy, while the control group was exposed to the conventional strategy. The population for the study are 25 orthopaedic impaired students. in Ijokodo High School Ibadan. The sampling procedure used was intact sampling techniques was used to select Fifteen (15) students from Chesire High School Oluyole Ibadan and ten (10)students from Ijokodo High School Ibadan. The instruments that were used to collect data were Students Mathematics Anxiety Rating Scale (SMARS); Geometry Lesson Plan (GLP); Geometry Lesson Notes (GLN) and Geometry Achievement Test for Students (GATS). The instruments were validated under content, construct, and face validity. The reliability of the Mathematics Anxiety Rating Scale, Cronbach's Alpha was used. The reliability coefficient obtained was r =0.85.To ensure its reliability using Kuder Richardson Formular (KR20). The reliability coefficient of r=0.97 was obtained.The data collected were analyses using inferential statistics of Analysis of Covariance (ANCOVA).

Results
This chapter presents the results, analysis and discussion of findings. The results and discussion of findings were presented based on the respondents' demographic data analysis, hypotheses and discussion of findings.

$H_0$1: There will be no significant effect of treatment (Same-age Peer Tutoring and Conventional Strategy) on orthopaedics impairment students achievement in geometry.

Table 1 : Analysis of Covariance (ANCOVA) showing main effect of treatment on students with orthopaedic impairment achievement in geometry.

Source	Type III Sum of Square	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	292.141	10	29.214	5.692	.002	.803
Intercept	115.197	1	115.197	22.443	.000	.616
Pre achievement	94.941	1	94.941	18.497	.001	.569
Treatment	312.796	2	66.398	12.936	.001	.649
Gender	.132	1	.132	.026	.875	.002
Mathematics Anxiety	26.504	1	26.506	5.164	.039	.629
Treatment x Gender	1.182	2	.591	.115	.892	.016
Error	71.859	14	5.133			.000
Total Corrected	24080.000	25				
Total	364.000	24				

R. Squared = .80 (Adjusted R Squared = .66) Denotes significant $p<.05$
Source: *Fieldwork,*

Table revealed that there was a significant main effect of treatment on students' with orthopaedic impairment achievement in geometry ($F_{(2, 23)} = 12.936$; $p<0.05$, partial $\eta^2 = 0.649$). The indicated effect size of 65.0% means that 65.0% of the total 66.0% variation observed (Adjusted $R^2 = .66$) in students' with orthopaedic impairment post-achievement scores in geometry in this ANCOVA model was due to the significant main effect of the treatment. Therefore, hypothesis 1 was not accepted.

$H_0 2$: There will be no significant effect of gender on orthopaedics impairment students' achievement in geometry.

It also revealed in the table that there was no significant main effect of gender on students' with orthopaedic impairment achievement in geometry ($F_{(1, 24)} = .026$; $p>.05$, partial $\eta^2 = .002$). Therefore, hypothesis 2 was upheld. This means that gender had no effect on students' with orthopaedic impairment achievement in geometry.

Moreover, the table also indicated that there was a significant main effect of mathematics anxiety on orthopaedic impairment students' achievement in geometry. ($F_{(1, 24)} = 5.164$; $p<.05$, partial $\eta^2 = .629$). Hence, hypothesis 3 was rejected. This means that mathematics anxiety had effect on students' achievement in geometry. The table also revealed the effect of 62.9% which means that 62.9% of the variation in students' with orthopaedic impairment post-achievement scores in geometry was caused by main effect of mathematics anxiety.

Discussion of Findings and Implications

The result showed that same-age peer tutoring was effective in improving the orthopaedic impairment students' achievement in geometry, while conventional strategy (Control) was least effective. Same-age peer tutoring is better than conventional strategy because learners within the same-age range relate together and solve problems together under the supervision of their teacher. These findings are in line with the study revealed that same-age peer tutoring gives room for students of the same age range to transmit knowledge, skills and ideas on how to solve mathematics problems among themselves (Tiamiyu, Salman & Issau, 2016).

Same-age peer tutoring is an intervention strategy that paired students that is above average with students below average in order to improve their performance, it increase students' participation, motivation and attendance rate (Malik & Salman, 2018). This is in agreement with the study that students of the same age range do free to interchange knowledge, skills and ideas during learning process (Fuentes, Myers, Swars, Smith & Smith, 2020). Furthermore, Same-age peer tutoring required students' attention, involvement and collaboration when solving problems related to geometry (Oladosun, 2009). The result also showed that orthopaedic impairment students taught with same-age peer tutoring achieved more than those taught by conventional strategy (Ching, 2017) contradicting the findings of Oragwam, (2006) that maintained that there was no significant effect of the peer tutoring strategy on students' achievement in science subjects. The contradiction might be due to disparity in the socio-cultural environment of the researchers which carried out the study among learners in one South Texas school district, in the United State of America.

Moreover, the finding of this study also revealed that there was no significant main effect of gender on orthopaedic impairment achievement students in geometry. This means that gender did not affect orthopaedic impairment students' achievement in geometry. The result of this finding supported the findings of Sinnes, (2006) that reported that gender difference does not affect students' achievement in learning (Scada, Jacobs, Becker & Glimer, 2015). The finding also revealed no significant difference between male and female students' achievement in mathematics contradicting the opinion of (Jacob & Linus, 2017) that shown that females achieved more than males in geometry.

This finding also revealed that there was a significant main effect of mathematics anxiety on orthopaedic impairment students' achievement in geometry. The result obtained in this study agree with the findings of (Peter, 2017) that reported the level of anxiety exhibited was related to the score obtained in a standardized Mathematics test (the high the anxiety level the less the score obtained. Ching (2017) reported a significant relationship between anxiety and achievement which contradicts the observation of Mahoney (2019) that said there is no significant difference between mathematics Anxiety and Mathematics performance.

Anxiety is seen as self-preoccupation with low self-esteem it leads to negative evaluation, lack of concentration, unpleasant physiological reactions, and low proficiency in test performance (Chapell & Mccann, 2017). The findings confirm the finding of (Campbell, Blanding, Takahashi, Silverstein, Newman, Gubi & Mccann, 2019) that mathematics anxiety plays a significant role in academic settings and prevent some students from realizing their fullest academic potentials. This is in agreement with the findings of Ezeudu (2018) that reported a negative significant relationship between mathematics anxiety and achievement. The study was also in consonance with the findings of Akinsola & Nwajei (2013), whose study revealed that mathematics anxiety and depression are negatively related to academic performance.

Conclusion

This study determined the effects of Same-age Peer Tutoring and Guided Explicit on academic achievement in Geometry of Students with Orthopaedic Impairment. It can be concluded from the study that students with orthopaedic impairment performed better in Geometry if Same-Age Peer Tutoring Strategy are used by the teacher to teach them. In addition, when Students with Orthopaedic Impairment are exposed to this teaching strategies, it will enable them to improve and have remarkable academic achievement in Geometry.

Recommendations

The following recommendations are made based on the findings:

i. To improve Students with Orthopaedic Impairment achievement in Geometry, Same-age Peer Tutoring Strategies should be adopted by Mathematics teachers.
ii. Teacher should ensure that students with orthopaedic impairment are carried along during teaching and learning process irrespective of their sex to improve their performance in Geometry.
iii. Mathematics teachers should endevour to make students with orthopaedic impairment participate in the teaching and learning in order to reduce or eradicate their fear for mathemat

References

Adegoke, B. A. (2013). *Modeling the Relationship between Mathematical Reasoning Ability and Mathematics Attainment*. European Journal of Educational studies. 4(1).17-26. Retrieved on December 2nd 2021 from http://www.accdemicjournals.org/ijpc.

Akinsola, E. F. & Nwajei A. D, (2013).Test Anxiety, Depression and Academic Performance: Assessment and Management Using Relaxation and Cognitive Restructuring Techniques. *Psychology,* 4 (6) 18-2. http://dx.doi.org/10. 2022 4236/psych.

Alzahrani, T. & Leko, M. (2018). The Effects of Peer Tutoring on the Reading Comprehension Performance of Secondary Students with Disabilities: A Systematic Review. Reading & Writing Quarterly; 34(3) 1-17.

Ayeni, R.O. (2012). *The Quest for Development: Why Mathematics Matters*. The 9th Inaugural Lecture Series, Lautech, Ogbomoso.

Berry, S. J. & Domene, J. F. (2017) *Supporting Postsecondary Students with Sensory or Mobility Impairments in Reaching*. Their Career Aspirations. Career Development and

Bisandu, D. D. Datiri, D. D. & Yakube, J. Z. (2019). *Relationship between Mathematics Test Anxiety and Achievement of Secondary School Students in Kafanchan Educational Zone Kaduna State*. International Journal of Latest Technology in Engineering, Management & and Applied Science. 8(5), 108-112.

Bokhorst-Heng, W. & Marshall, K. K. (2019). *Informing Research (Practices) through Pedagogical Theory: Focus Groups with Adolescents*. International Journal of Reseach Methodology in Education. 42 (8), 148–162. doi: 10.1080/1743727X.2018.1449195

Chapell, M. S. & Mccann, N. (2017). *Test Anxiety and Academic Performance in Undergraduate and Graduate Students*. Journal of Educational Psychology. 97 (2), 268-274.

Ching, B. H. H. (2017). Mathematics Anxiety and Working Memory: Longitudinal Associations with Mathematical Performance in Chinese Children. Contempor. Edu. Psychol. 5(1), 99–113. Doi: 10.1016/J.Cedpsych.2017.06.006

Ching, B. H. H. (2017). Mathematics Anxiety and Working Memory: Longitudinal Associations With Mathematical Performance In Chinese Children. Contempor. Edu. Psychol. 5(1), 99–113. doi: 10.1016/j.cedpsych.2017.06.006.

Campbell, A. Blanding, A. Takahashi, T. S. Silverstein, W. Newman, T. Gubi, S. & McCann, I. (2019). *Design-Based Research Principles for Successful Peer Tutoring on Social Media*. International Journal of Mathematics Educational Science and Technology. 50(1), 1024–1036. Doi: 10.1080/0020739x.2019.1650306.

Ekwueme, C. O. & Onaife, N. M. (2017). *Innovative strategies on Teaching Plane Geometry Using Geogebra Software in Senior Secondary School in Delta State*. Global Journal of Educational Research 16(1), 123- 126.

Etsu, S. M. & Manko, A. U. (2019). *Effects of Mathematics Peer Tutoring Strategy on Geometry Achievement among Junior Secondary School in Niger State*. Abacus: the Journal of the Mathematics Association of Nigeria 1(44), 541 -550.

Ezeudu, F. O. (2018). *The Relationship between Test-Anxiety and Academic Achievement in Chemistry*. Implication for Technological Growth. Journal of Nigeria Association of Teacher of Technology. 2(1), 147-148.

Fuentes, D. S. Myers, K. D., Swars A, S., Smith, S. Z. & Smith, M. E. (2020) *Developing the Pedagogical Capabilities of Elementary Mathematics Specialists during a K-5 Mathematics Endorsement Program*. Journal of Teacher Education, 71, 261–274.

Gunderson, E. A. Park, D. Maloney, E. A. Beilock, S. L. & Levine, S. C. (2018). *Reciprocal Relations among Motivational Frameworks, Math Anxiety, and Math Achievement in Early Elementary School*. Journal of Cognitive Development. 19(4), 21–46. Doi: 10.1080/15248372.2017.1421538

Isa, S. G. (2017). *Evaluation of the Mathematics Programme of Kano Educational Resource Department*. Journal of Mathematics (IOSR-JM). 13(1), 60-63.

Jacob, F. & Linus, k. S. (2017). *Effect of Gender on Senior Secondary School Students' Achievement on Geography in Ganye Educational Zone, Nigeria*. European Journal of Educational Studies. 3(1), 157–165.

Julie, M. (2015). *Effects of Guided Discovery and Problem- Solving Strategies on Attitude and Performance towards Geometry Among Junior Secondary School Students in Kaduna*

Kapil, Y. & Malini, J. S. (2017). *Scholarly Research.* Journal for Interdisciplinary Studies Paired with A Less Advanced Student. 6(3), 7792-7798.

Kraeme, D. J. & Pizzie, R. G. (2017). Avoiding Mathematics on a Rapid Timescale: Emotional Responsivity and Anxious Attention in Mathematics Anxiety.*118* (4), 100–107.

Leikin, R. & Srirama, B. (2017,). *Introduction to Interdisciplinary Perspectives from to Creativity and Giftedness and Beyond*: Journal of Advances in Mathematics Education. 5(2): 3 -11.

Mahoney, M. W. (2019). Peer-Mediated Instruction and Activity Schedules: Tools for Providing Academic Support for Students With ASD. *Teach. Except. Child.* 5(1), 350–360.10.1177/0040059919835816.

Malik, N. A. & Salman, M. F. (2018). *Effect of Think-Pair-Share Cooperative Strategy on Mathematics Achievement of Attention-Deficit Hyperactive Students*. Abacus: Journal of Mathematics Association of Nigeria. 43(1), 145-149.

Malik, N. A. (2017). *Teaching Perceptions of Teachers and Pupils on use of Bridge IT Mobile Application for Teaching Mathematics in Lagos State, Nigeria* (Unpublished doctoral dissertation). University of Ilorin, Ilorin, Nigeria.

Mangan, S.K. (2015). *Educating Exceptional Children*. 4th edition, Senepate, Haryana Rajkamal Electric Press. 151-156. Retrived on 21st April from http.//scholarworks.unit.edu.2017

Oladosun, R. A. (2009). *Students' Test Anxiety, Motivation for Examinations and Science Achievement in Junior Secondary Schools in Ogun State, Nigeria*. International journal of psychology and counseling, 1(10), 194-198. Retrieved on 10/2/2021. From http://www.academicjournals.org/ijpc

Olaitan, A.W. & Moroluyo, A.T. (2014:) . *Contributions of Test Anxiety, Study Habits and Locus of Control to Academic Performance*. British journal of psychology research, 2(1), 14-24. Olunloyo, V. O. (2022). *The Pre-eminence of mathematics and is Infinite applications*. Distinguish Lecture. University of Ibadan. Ibadan, Nigeria. 2010. Retrieved from http://www.accdemicjournals.org/ijpc.

Oragwam, E. O. (2006). Enriching Mathematics Education through Guided Shoring Method. Abuja: NERDC Publication (Paper) 6(1), 267-269. Retrived on 10/2/2021. from:www.globaljournalseries.com.

Owan, V. J. Eno, E. E. & Esuong, U. U. (2019). *Administration of Punishment, Students'Test Anxiety, and Performance in Mathematics in Secondary Schools of Cross River State, Nigeria.* International Journal of Academic Research in Business and Social Sciences. 9(6), 415–430. https://doi.org/10.6007/IJARBSS/v9-i6/5963

Owan, V. J. & Robert, I. A. (2019). *Students 'Perception of Teachers' Effectiveness and Learning Outcomes in Mathematics and Economics in Secondary Schools of Cross River State, Nigeria.* International Journal of Contemporary Social Science Education (IJCSSE), 2(1), 157–165. Https://bit.ly/2VbLzfK.

Peter, I. O. (2017). *Effect of Peer Tutoring Strategy on Academic Achievement of Senior Secondary School Students in Technical Drawing in Nigeria*. British Journal of Education, Society & Behavioral Science. 19(1), 1-10.

Popoola, A. A. (2004). *Effectiveness of problem solving strategy on the academic achievement of secondary school students in Mathematics*. Nigerian journal of counseling and applied psychology. *(2)1, 130-142*. Retrieved from https://wenr.wes.org/2017/ education-in-Nigeria

Scada, W. G.(2015) J. E. Jacobs, J. R. Becker & G. F. Glimer. Teachers as Researchers: Understanding Gender Issues in Mathematics Education. in (Eds). Changing the Faces of Mathematics Perspective on Gender. 4(1), (43-57) Reston. : National Council of Teachers of Mathematics.

Sideeg, A. (2017). *Test Anxiety, Self-Esteem, Gender Difference, and Academic Achievement:* The Case of The Students of Medical Sciences at Sudanese Universities: (A Mixed Methods Approach). British journal of arts and social sciences. 19 (2), 39-59.

Sinnes, A. T. (2006). Approaches to Gender Equity in Science Education. Two Initiatives in Sub-Saharan African seen through a Lens Derived from Feminist Critique of Science. Oslo, 2 (1): 57-64.

Tiamiyu, M. A. Salman, M. F. & Issau, K. A. (2016). *Errors Committed by Senior School Students in Solving Word Problems Involving Set Theory in Asa, Kwara State, Nigeria*. *Abacus*: Journal of Mathematical Association of Nigeria. 44(1), 178-192.

Usman, M. & Musa, D. C. (2015). *Effect of Inquiry Teaching Method on Students' Achievement in Algebra in Bauch Local Government Area, Bauchi State, Nigeria*. Abacus, The Journal of Mathematics.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Effect of Aerobic Exercise on Selected Cardiometabolic Risk Factors of Prehypertensive Adolescents in Lagos State

A.B. TAIWO; F.A. APALARA, & R.O. OKUNEYE
Department of Human Kinetics, Sports and Health Education
Lagos State University, Ojo
Email: erudite1434@gmail.com

Abstract

The study examined the effect of 8-week moderate-intensity aerobic exercise on the systolic and diastolic blood pressure, heart rate, blood glucose level, and body mass index of prehypertensive adolescents in Lagos State. The study adopted a pretest-postest control group design. The participants for the study consisted of 50 prehypertensive adolescents selected from five junior secondary schools in Education District V of Lagos State. The participants' age ranged from 10-15 years and were selected using a purposive sampling technique. All the participants participated in the pretest measurement which include participants' resting heart rate, systolic and diastolic blood pressure, blood glucose level, and BMI. Only the participants in the experimental group were exposed to 8 weeks of aerobic exercises while the control group was not given any treatment. Data collected was analysed using description statistics of mean and standard deviation and inferential statistics of Multivariate analysis of covariance (MANCOVA) to test for differences in pre and post-test measures of the variables at 0.05 level of significance. Results revealed that aerobic exercise has significant effect on resting heart $F(1, 43) = 14.332, p < .023$, *blood glucose level* $F(1, 43) = 179.49, p < .001$ *and body mass index* $F(1, 43) = 5.881, p < .020$ *but aerobic exercise does not have significant effect on systolic* $F(1, 43) = 1.200, p > .279$ *and diastolic blood pressure* $F(1, 43) = 1.274, p > .265$ *of the participant. The study recommends that 8-week*

moderate-intensityexercise should be used as an exercise intervention for the management of prehypertension in adolescents.

Keywords: Cardiometabolic risk factors, aerobic exercise, systolic and diastolic blood pressure, Heart Rate, Body Mass Index

Word Count: 144

Introduction

Prehypertension is becoming a major public health problem among adolescents with increasing prevalence in Nigeria. Prehypertension in adolescents is a condition in which the blood pressure is more than the 90th percentile but less than the 95th percentile, for age, sex, and height, or a measurement of more than 120/80 mmHg. Many studies on hypertension and prehypertension in Nigeria have been on middle-aged and elderly patients giving the impression that hypertension is a disease of those age groups. The astonishment and disbelief with which young individuals react to the diagnosis of hypertension is a pointer to this assertion. Until recently, the condition is not common among adolescents and it is often overlooked. Previous studies such as Ejike, Ugwu & Ezeanyika (2010) in north central, Mijinyawa (2008) in Kano, and Ujunwa et al (2013) reported prehypertension prevalence between 1-13% among adolescents in their study area.

Sedentary lifestyle has been reported to be the chief cause of cardiometabolic conditions. Before now, insufficient physical activities and associated illness is synonymous with old people, but recently there has been an increase in sedentary behaviour among adolescents. The World Health Organization (WHO 2010) stated that moderate to vigorous physical activities lasting at least 30 min a day and at least 5 days a week are required to obtain health benefits. Another WHO report in 2018, based on data from 1.6 million people in 146 countries, found that more than 80% of adolescents aged between 11 and 17 did not meet a W.H.O. recommendation for at least an hour of physical activity a day (W.H.O, 2018).

Sedentary behaviour involves not expending energy due to low-intensity activities, such as watching television or using a mobile phone for social media activities. The way people spend their leisure nowadays, particularly television viewing, results in people being less active, therefore regular physical activities is recommended for secondary prevention of several diseases (Okuneye, Dansu & Idowu 2011).

Cardiometabolic risk factors are risk factors that increase individual susceptibility to cardiovascular diseases such as diabetes, hypertension, and coronary heart disease among others. Cardiometabolic risk factors are elevated blood glucose, high blood pressure, Atherosclerosis, and obesity among others. The presence of at least two cardiometabolic risk factors is a pointer to susceptibility to cardiovascular diseases. Sedentary lifestyle is the chief cause of cardiovascular disease and cardiovascular diseases are the chief cause of morbidity and mortality globally. An estimated 17.9 million people died from cardiovascular diseases in 2019, representing 32% of all global deaths (W.H.O 2021). The role of exercise is not only to promote health but also to prevent illness that is associated with insufficient physical activity. Hence, exercise can be used in the management of most of the well-known metabolic and chronic diseases. It reduces insulin resistance, helps regulate blood glucose, lowers uric acid and triglycerides, and leads to an increase in the low-density lipoprotein/high-density lipoprotein cholesterol ratio (Banfi et al., 2012).

Exercise has been reported to be potent in the management of cardiovascular diseases and attaining wellness. Apart from promoting growth and development, sufficient physical activity also has multiple benefits for physical, mental, and psychosocial health that undoubtedly contribute to learning., sufficient activity reduces the risk for hypokinetic diseases, promotes fitness, improves aerobic capacity, muscle and bone strength, flexibility and reduces stress and anxiety. Sufficient physical activity is associated with cardiorespiratory fitness and with other coronary heart disease risk factors such as obesity; and exercise can improve lipoprotein profile and lower blood pressure, and is an important component of weight control (Okuneye & Dansu, 2007).

Much attention has not been given to the management of prehypertension in adolescents. Though there are numerous studies on exercise intervention in the management of prehypertension in adolescents, these results may not be applicable to all adolescents due to differences in physiological variables and lifestyle.

Methods

The participants for the study consisted of 50 prehypertensive adolescents selected from five junior secondary schools in Education District V of Lagos State. The participants' age ranged from 10-15 years and were selected using a purposive sampling technique. Informed consent was obtained from the parents of the participants. Only participants whose parents signed the informed consent forms were allowed to participate in the study. The participants were then assigned to experimental and control groups. All the participants participated in the pretest measurement which include the measurement of resting heart rate, systolic and diastolic blood pressure, blood glucose level, and BMI. Only the participants in the experimental group were exposed to 8 weeks of aerobic exercises while the control group was not given any treatment.

For the experimental group, the participants were exposed to aerobic exercise made up of a combination of stepping, jogging, skipping, running and arm-swinging movements under the supervision of the researcher and research assistants. The aerobic exercise was carried out 2 times per week on alternate days. The training session began with 5 minutes of warm-up activities, followed by 20 minutes of aerobic exercise and then 5 minutes of cool-down activities. The duration of the aerobic exercise was increased to 40minutes after the 2 weeks, 6 minutes for warm-up activities, 30 minutes for aerobic exercise, and 4 minutes for cool-down activities. After 4 weeks, the duration of was further increased to 60 minutes, 6 minutes for warm-up exercises, 50minutes for aerobic exercises, and 4 minutes for cool-down activities.

The post-test measurement was taken after the 8-week aerobic exercise regime. The participants were asked to warm up for 5 minutes, then rest for 10 minutes before the resting heart rate, blood pressure, and blood glucose level measurement were taken. The height and weight were also recorded to compute the BMI. Data collected was analysed using description statistics of mean and standard deviation and inferential statistics of Multivariate analysis of covariance (MANCOVA) were used to test for differences in pre and post-test measures of the variables at 0.05 level of significance.

Results

Table 1: Result of Descriptive analysis of selected Cardiometabolic Risk Factors of Junior Secondary School Students

	Control Group				Experimental Group			
Cardiometabolic Variables	Pre-Test		Post-Test		Pre-Test		Post Test	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Systolic BP (mmHg)	112.36	10.26	112.24	4.62	112.12	5.37	110.60	6.44
Diastolic BP (mmHg)	61.52	2.31	60.80	3.54	60.28	2.43	60.72	2.96
Blood Glucose (mg/dL)	138.08	2.61	137.11	2.88	137.44	3.55	125.16	3.21
Resting Heart Rate (bpm)	87.60	3.40	86.12	4.28	87.36	3.47	80.48	5.41
BMI (kg/m^2)	19.76	1.80	19.52	2.29	20.40	2.29	17.68	2.76

Table 1 shows the mean, and standard deviation of the pre–test, and post–testof systolic blood pressure, diastolic blood pressure, blood glucose, resting heart rate, and BMI for the pre-test and post-test groups.The result showed that the mean value of systolic blood pressure of study participants in the control group was 111.05 mmHg and 109.16 mmHg respectively for pretest and post-test. There was a slight decline of 1.89 between the pretest and post-test mean systolic blood pressure of the control group. The systolic blood pressure for the experimental group was 112.7 mmHg and 103.50 mmHg for the pretest and post-test respectively. There was a sharp decline of 9.20 between the pretest and post-test for the experimental group. The mean values of diastolic blood pressure of study participants in the control group were 61.34 and 63.11respectively for the pretest and post-test. Diastolic blood pressure values of participants in the control group showed an increase of 1.77 from the pretest and post-test. However, diastolic blood pressure of 65.02 and 60.91 was recorded for the pretest and post-test respectively in the experimental group. This shows that there was a decrease of 4.11mmHg between the pretest value and the post-test value. participants in the control group showed a slightly increasing tendency from a pre-training value of 61.08 to a post-training value of 62.56.

Table 2: Result of MANCOVA showing the Effect of Aerobic Exercise on Systolic blood pressure, diastolic blood pressure, Resting Heart Rate, Blood Glucose and BMI

Dependent	Variable	Sum of Squares	df	Mean Square	F	Sig.
Post SBP	Contrast	9.024	1	9.024	1.200	.279
	Error	323.322	43	7.519		
Post DBP	Contrast	6.002	1	6.002	1.274	.265
	Error	202.578	43	4.711		
Post BG	Contrast	1614.787	1	1614.787	179.485	.001
	Error	386.861	43	8.997		
Post RHR	Contrast	262.412	1	262.412	14.332	.023
	Error	787.315	43	18.310		
Post BMI	Contrast	39.131	1	39.131	5.881	.020
	Error	286.092	43	6.653		

Table 2 presents the result of multivariate analysis of covariance of effect of aerobic exercise on systolic blood pressure, diastolic blood pressure, resting heart rate, blood glucose and BMI. From the table, it could be observed that there was a statistically significant difference between the control group and the experimental group on the blood glucose, BMI and resting heart rate after controlling for covariates.

Discussion of Findings

The result of the study reveals that 8-week aerobic exercise does not have a significant effect on the systolic blood pressure of adolescents. The difference between the pretest and post-test is not significant enough to suggest that the 8-week aerobic exercise improves systolic blood pressure. This suggests that 8 weeks of aerobic exercise is not enough to condition the heart. Similarly, the 8-week aerobic exercise does not have a significant effect on the diastolic blood pressure of the participants. The reason for the non-significant effect of exercise on systolic and diastolic blood pressure could be due to dose parameters such as the frequency and intensity of the exercise programme adopted in this study. Generally, exercise increases the body's demand for oxygen, the increased demand for oxygen for the working muscles forces the heart to work harder. With sustained long periods of exercise, the heart becomes stronger, bigger, and more efficient at pumping blood. Also, the arterial walls become more elastic reducing blood vessel stiffness so blood can flow more easily and consequently reducing blood pressure. The result of this study disagrees with the report of Corenlissen and Smart (2013) in which aerobic exercise training was found to significantly affectsystolic and diastolic blood pressure by 4.3 mmHg and 1.7 mmHg respectively. Similarly, Huang et al (2013) reported that aerobic exercise has a significant effect on systolic and diastolic blood pressure with a net reduction of 5.3 mmHg and 3.7 mmHg. Walid, Thomas & Elise, 2016), Esan and Nweke (2022) also reported that aerobic exercise significantly lowers the blood pressure of their subjects.

With regard to blood glucose, it could be observed that there was a 2.39 mg/dL decline in the blood glucose level between the pretest and post-test mean value of participants in the control group with a pretest value of 138.50 mg/dL and a post-test value of 136.11 mg/dL. For the experimental group, the value of 137.32 mg/dL and 130.25 mg/dL was recorded for the pretest and post-test respectively. Which indicates a reduction of 12.28mg/dL. This suggests that an 8-week aerobic exercise program can be used to manage diabetic conditions in adolescents. During exercise there is an increased demand for glucose as fuel for the working muscles, the constant utilization of blood glucose by the working muscles during exercise helps to reduce blood glucose levels thereby increasing insulin sensitivity, which is the ability of the body cells to effectively use available glucose in the blood. This result is consistent with previous reports. Ezema, *et al.,* (2022), reported that decrease in blood glucose levels as a result of aerobic exercise. Tansey *et al.,* (2006), stated that prolonged periods of aerobic exercise produced an average fall in plasma glucose of approximately 40% of baseline values. Similarly, Gordon et al. (2008), reported that aerobic exercise caused 29. 48% reduction in fasting blood sugar among their subjects.

Result also reveals that the resting heart rate for the control group was 88.13 and 86.05 respectively for the pretest and post-test. Similarly, the resting heart rate for the experimental group was 87.12 and 81.34 respectively for the pretest and post-test. This shows that there was a sharp decline (5.78) in the resting heart rate of participants in the experimental group. There was a slight decline in resting heart rate of 0.36 in the pretest and the post-test for the control group. For the experimental group, there was a 2.44 decline in the mean body mass index. The reason for the decrease in heart rate could be the adaption and efficiency of the heart in meeting the demand of the working muscles. During exercise, there is increased demand for oxygen and nutrients by the working muscles, in response to the increased demand, there is an increase in heart rate which consequently increases stroke volume by pumping more blood and the amount of blood that fills the left ventricle before it pumps. But with sustained exercise over a long period, the heart becomes adapted and more efficient in meeting the demand of the working muscle and thus there is decreased heart rate. This result agrees with previous authors that aerobic exercise decreases heart rate as observed by (Esan and Nweke 2022; Reimers, Knapp & Reimers, 2018).

Results also reveal there was a slight decline of 0.36 in BMI between the pretest and the post-test for the control group. For the experimental group, there was a 2.44 decline in the mean body mass index of the participants. This suggests that aerobic exercise reduces body mass index by reducing body weight. Sustained exercise depletes stored body fat thereby reducing body weight. With constant height, reduced body weight will decrease the body mass index. Also, when the energy expenditure during exercise is more than the energy consumed there is weight reduction which consequently reduces the body mass index. The result of this study agrees with previous studies such as (Ajala, Adedokun, Adedeji, and Ojo, 2020; Abass and Moses, 2013) which reported that exercise intervention decreases body mass index in adolescents. But contradict Reilly et al., (2006), which stated that exercise intervention had no effect on BMI in children.

Conclusion and Recommendation

This study examined the effect of 8-week aerobic exercise intervention on selected cardiometabolic risk factors of prehypertensive adolescents in Lagos State. Results revealed that 8-week aerobic exercise does not have an effect on the systolic and diastolic blood pressure of prehypertensive adolescents. But have an effect on the resting heart rate, blood glucose, and body mass index of prehypertensive adolescents. It is therefore concluded that 8-week aerobic exercise can be used to lower resting heart rate, blood glucose, and body mass index in prehypertensive adolescents. Based on the results of this study, it is recommended that adolescents with prehypertensive conditions should engage in moderate-intensityaerobic exercise at least twice a week to manage the prehypertensive condition.

Reference

Ajala, R.B., Adedokun, K.I., Adedeji, O.C. and Ojo, O.R. (2020). Aerobic Dance Exerciseand its Effect on Cardiorespiratory Variables and Body Composition of Obese Youth and Adolescents in College of Education Ila- Orangun, Nigeria. *The International Journal of Humanities & Social Studies* 8(8)22-28.

Akinkugbe F.M, Akinwolere O.A, Kayode C.M. (1999). Blood pressure pattern in Nigeria adolescents. *West African Journal of Medicine*18: 196-202.

Banfi G, Colombi A, Lombardini G, Lubkowska A. (2012). Metabolic markers in sportsmedicine. *Advanced Clinical Chemistry*, 56, 1-54.

Cornelissen, V.A., & Smart, N.A., (2013). Exercise Training for Blood Pressure: A Systematic Review and Meta-analysis. *Journal of the American Heart Association* 2(1).

Ejike E.C, Ugwu C.E, Ezeanyika L.U, Olayemi A.T (2010). Blood pressure patterns in relation to geographic area of residence: a cross-sectional study in Kogi State, Nigeria. BMC Public Health. 8: 411-421. 10.1186/1471-2458-8-411.

Esan, J.A & Nweke E.O., (2022). Effects Of Aerobic Dance on Cardiovascular Variables of Junior Secondary School Students. *Journal of Human Kinetics and Health Education Pedagogy* 4(1).

Ezema C.I, Onwunali A.A, Lamina S, Ezugwu U.A,Amaeze A.A, Nwankwo M.J. (2022). Blood glucose response to aerobic exercisetraining programme among patients with type 2 diabetes mellitus at theUniversity of Nigeria Teaching Hospital, Enugu South-East, Nigeria. *Sahel Medical Journal*17:54-9.

Mijinyawa M.S, Illiyasu Z, Borodo M.M. (2008). Prevalence of hypertension among teenage students in Kano, *Nigeria. Nigerian Journal of Medicine*. 17: 173-178.

Okuneye, R.O. & Adewale, E.O. (2007). Weight and age as determinant of blood pressure among adolescents in Lagos City, Nigeria. *Nigerian Journal of Physical Health Education and Recreation. 3:17–21*

Okuneye, R.O. & Dansu, A. (2007). Exercise behaviour as correlate of resting heart rates and blood pressures of LASU female employees. *Journal of Nigeria Association of sports Science and Medicine IX: 87-91 Ibadan.*

Okuneye, R.O.; Dansu. T. & Idowu, B.B. (2011). Exercise Behaviour as Correlate of Selected Health Indicators among Female Nurses in a Suburb in Lagos Nigeria. International Council for Health, Physical Education, Recreation, Sport and Dance 53rd Anniversary World Congress. Cairo Egypt.

Reilly J.J, Kelly L, Montgomery C, Williamson A, Fisher A, McColl J.H, et al (2006). Physical activity to prevent obesity in young children: Cluster randomized controlled trial. *BMJ.* 2006;333:1041–3.

Reimers AK, Knapp G, Reimers CD. (2018). Effects of Exercise on the Resting Heart Rate: A Systematic Review and Meta-Analysis of Interventional Studies. *Journal of Clinical Medicine.* 7(12):503. doi: 10.3390/jcm7120503. PMID: 30513777; PMCID: PMC6306777.

Ujunwa, F.A., Ikefuna, A.N., Nwokocha, A.R. *et al* (2013). Hypertension and prehypertension among adolescents in secondary schools in Enugu, South East Nigeria. *Italian Journal ofPediatrician* 39, 70

W.H.O (2021). Cardiovascular diseases. Retrieved from https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds) on 27th August 2022

Walid, B., Thomas, V., Elise, S., Georges, K.; Bernard, G. & Pierre, O.L. (2017). Health benefits of aerobic training programs in adults: A systematic review. Public Medicine ncbi.nlm.nih.gov>

World Health Organization WHO, (2010). Global recommendations on physical activity for health. Book Global Recommendations on Physical Activity for Health (Editor ed.eds.). City: Geneva

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679* ***ISSN Print:** 2354-3981*

Towards EEG-Based Approach in Nigeria, Challenges and Application

[1]Emmanuel ADEDIRAN [2]Victoria OYEKUNLE & [3]Iyanuoluwa FATOKI

[1]@adediran.emmanuel@lcu.edu.ng : +234 814 121 4893
[2]@oyekunle.victoria@lcu.edu.ng : + 234 813 502 8704
[3]@fatoki.iyanuoluwa@lcu.edu.ng: +234 706 675 2276
[1] Department of Computer Science, Lead City University Ibadan, Nigeria
[2]Department of Computer Science, Lead City University Ibadan, Nigeria
[3] Department of Computer Science, Lead City University Ibadan, Nigeria

Abstract

Electroencephalography (EEG) is a non-invasive neuroimaging technique that measures electrical activity in the brain. It has gained considerable attention in recent years due to its potential applications in various fields, including healthcare, neurology, and cognitive neuroscience. However, the successful implementation of EEG-based approaches poses several challenges that need to be addressed. This abstract focuses on exploring the challenges associated with EEG-based approaches and their application in Nigeria. The challenges include limited resources and infrastructure, lack of specialised training, cultural and societal factors, and data quality issues. These challenges can hinder the widespread adoption and effective utilization of EEG technology in the Nigerian context. Despite these challenges, EEG-based approaches hold significant promise in various applications within Nigeria. The potential applications include diagnosing and monitoring neurological disorders, studying cognitive processes, investigating mental health conditions, and developing brain-computer interface systems. To address the challenges, collaborative efforts between researchers, healthcare professionals, and policymakers are essential. Investments in infrastructure, training programs, and research funding can help overcome resource limitations and promote the adoption of EEG technology. Additionally, raising awareness about the benefits of EEG-based approaches, addressing cultural and societal concerns, and establishing *data quality standards are crucial steps towards successful implementation. In conclusion, while EEG-based approaches face challenges in Nigeria, they offer immense potential for advancing healthcare and neuroscience research. Overcoming these challenges through concerted efforts will pave the way for the widespread adoption and effective application of EEG technology in Nigeria, leading to improved diagnosis, treatment, and understanding of brain-related conditions.*

Keywords: EEG, EEG-Based approach, EEG Technology

Word Count: 247

Introduction

In the rapidly evolving field of neuroscience, one area that has seen remarkable progress in recent years is electroencephalogram (EEG) research (Miniussi & Thut, 2009; Pinti et al., 2020). This non-invasive technique, which measures the electrical activity of the brain, has proven to be an invaluable tool for understanding how the brain functions, diagnosing neurological disorders, and even facilitating direct communication between the brain and external devices. As its applications continue to expand globally, it is critical to consider the specific role of EEG in different regional contexts, such as Nigeria (Pinti et al., 2020). Nigeria, with its rich cultural diversity and rapidly growing population, offers a unique environment for EEG-based research (Hassan and Wendling, 2018). By examining the challenges and opportunities that researchers face in utilizing EEG in Nigeria, we can not only advance our understanding of the brain but also have profound implications for healthcare, education, technology, and societal development. The purpose of this systematic review is to explore the current state of EEG-based approaches in Nigeria, shedding light on both the obstacles researchers encounter and the promising applications that have emerged. This review will involve a meticulous examination of research papers, scientific articles, and conference proceedings relating to EEG research in Nigeria. By analyzing and synthesizing these sources, we strive to provide a comprehensive overview of the current status and potential of EEG-based approaches in Nigeria. One of the primary goals of this review is to identify and address the hurdles faced by researchers utilizing EEG in Nigeria. These obstacles may include limited access to equipment, a scarcity of trained professionals, and financial constraints. By acknowledging and understanding these challenges, we can develop strategies to overcome them, ensuring that EEG research in Nigeria can thrive and contribute significantly to the field of neuroscience. Additionally, this review aims to highlight the promising and innovative applications of EEG in Nigeria. These applications may range from diagnosing and treating neurological disorders to improving education and advancing technological development (Ruchika et al., 2023). By recognizing the potential of EEG in these areas, we can encourage further research and collaboration in order to harness the full benefits of this powerful technique, it is worth noting that this review maintains a professional and unbiased tone throughout (Perpetuini et al., 2023). The analysis presented is grounded in empirical evidence, with an emphasis on objectivity and rigor. Findings and conclusions will be drawn based on the available literature and data, providing an accurate representation of the current state of EEG-based research in Nigeria. In summary, this systematic review seeks to delve into the current landscape of EEG-based research in Nigeria. By examining the challenges faced by researchers and exploring the promising applications that have emerged, we aim to contribute to the advancement of neuroscience and its impact on healthcare, education, technology, and societal development (Ke et al., 2022). By shedding light on the role of EEG in Nigeria, this review aims to foster further research and collaboration, ultimately leading to a better understanding of the brain and its potential for positive change.

Challenges

Pioneering EEG-based research in Nigeria presents a myriad of hurdles to overcome. These challenges encompass limited funding and resources, infrastructure deficiencies, noise interference, scarcity of trained personnel, and the unique complexities of participant recruitment and diversity. Each of these obstacles demands inventive solutions in order to advance research within this field (Ke et al., 2022). The foremost challenge researchers face is the restraint imposed by **limited funding and resources**. Acquiring the state-of-the-art EEG equipment, along with its necessary accessories, commands a hefty price tag. This financial burden can make it difficult for research institutions in Nigeria to procure and maintain high-quality EEG systems. To surmount this obstacle, creative financing options must be explored, such as seeking partnerships with international organizations or governmental grants. Additionally, collaborations between research institutions can help alleviate the financial strain by sharing resources and pooling funds (Ke et al., 2022). Lamentably, the infrastructure in Nigeria poses significant setbacks for conducting EEG research. A paramount requirement for successful studies is a controlled and quiet environment. Yet, **inconsistent power supply, disruptive noise pollution, and electromagnetic interference** pervade the Nigerian landscape, diminishing the quality of EEG signals. To tackle this dilemma, researchers need to devise innovative strategies. Installations such as backup power generators can provide a stable and uninterrupted power supply, while soundproof rooms can mitigate the disturbances caused by external noise. Furthermore, implementing effective electromagnetic shielding measures can safeguard the integrity of EEG signals and ensure accurate data collection. A grave concern is the scarcity of trained personnel well-versed in the intricacies of EEG studies. The successful execution of such research mandates individuals who possess a profound understanding of the technology, methodologies, and data analysis techniques. Sadly, **Nigeria lacks an adequate number of qualified professionals in this field**. Creative approaches are necessary to address this shortage. Establishing partnerships with international institutions experienced in EEG research can facilitate knowledge transfer and skill development through training programs (Adeola et al., 2022). Additionally, local universities and research institutions can collaborate to develop comprehensive education curricula that focus on EEG studies. By nurturing a new generation of researchers, Nigeria can bridge this proficiency gap and propel its EEG-based research forward. **Navigating the pitfalls of participant recruitment and diversity presents an intricate challenge**. Nigeria's cultural and linguistic diversity necessitates prudent consideration of language, cultural norms, and varying educational levels when selecting participants for EEG studies. Ensuring a representative sample requires additional efforts. One possible solution is collaboration with research organizations that specialize in cross-cultural studies and can provide valuable insights on effective recruitment techniques. Additionally, utilizing translators and cultural advisors during the recruitment process can help establish open lines of communication and build trust with potential participants (Adeola et al., 2022). In conclusion, conducting EEG-based research in Nigeria requires ingenuity and forward-thinking in overcoming the challenges posed by limited funding and resources, infrastructure deficiencies, noise interference, scarcity of trained personnel, and participant recruitment and diversity (Alyas et al., 2023). Creative financing options, collaborations, and partnerships can help alleviate financial burdens and resource limitations (Adeola et al., 2022). Implementing innovative approaches, such as backup power generators, soundproof rooms, and electromagnetic shielding, can establish the necessary infrastructure for successful studies. Fostered partnerships with international institutions and development of comprehensive education curricula can address the scarcity of trained personnel. Finally, diligent recruitment strategies, including cultural advisors and translators, can ensure a diverse and representative sample (Alyas et al., 2023). By navigating through these obstacles with ingenuity and perseverance, Nigeria can carve a path towards groundbreaking EEG research.

Applications of EEG based approaches

EEG-based approaches hold immense potential in the Nigerian context with a multitude of applications that can bring significant benefits. From clinical diagnosis and monitoring to cognitive neuroscience and brain-computer interfaces, EEG technology presents numerous opportunities to advance healthcare, understand cultural influences, and improve the quality of life for individuals with disabilities (Yen et al., 2023).

Clinical diagnosis and monitoring: EEG plays a pivotal role in the diagnosis and management of epilepsy, a neurological disorder that is prevalent in Nigeria. By recording and analyzing brain wave patterns, EEG can identify abnormal patterns during seizures, aiding in treatment planning and providing valuable insights for healthcare professionals (Yen et al., 2023). Beyond epilepsy, EEG can also assist in diagnosing other neurological disorders such as stroke, brain tumors, Alzheimer's, and Parkinson's disease (Yen et al., 2023). As Nigeria's population ages, these conditions become increasingly prevalent, necessitating effective diagnostic tools. EEG offers a non-invasive and efficient method to detect and monitor these disorders, enabling early intervention and better patient outcomes.

Cognitive neuroscience and psychology: EEG can contribute to studying cultural differences in perception, attention, and memory. By conducting EEG studies specific to the Nigerian population, researchers can investigate how cultural influences shape cognitive processes and neural responses (Grimaldi et al., 2014). This understanding is crucial for tailored interventions and improved mental health outcomes that account for cultural nuances (Saminu et al., 2021). Furthermore, EEG studies can explore the neural patterns associated with language acquisition and literacy skills in Nigeria's diverse linguistic landscape. With numerous indigenous languages spoken across the country, EEG research can shed light on how the brain processes language in different contexts (Yen et al., 2023). This knowledge can inform educational strategies and interventions to enhance language and literacy development, ensuring that every Nigerian child has equal opportunities to excel academically.

Brain-computer interfaces (BCIs): This represent another frontier where EEG technology can bring transformative change, particularly in Nigeria's context. BCIs empower individuals with disabilities by enabling them to communicate and control devices using their brain signals. (Adeola et al., 2022) This technology has the potential to greatly improve the quality of life for people with motor impairments, allowing them to regain independence and participate more fully in society. In the field of assistive technology, BCIs can revolutionize the way individuals with disabilities interact with the world (Adeola et al., 2022). By translating brain signals into commands that control computers, prosthetics, or other assistive devices, BCIs offer a new frontier of communication and control for those who face physical limitations. This technology can bridge the gap between abilities and aspirations, opening doors to education, employment, and social participation. Moreover, EEG-based BCIs can be seamlessly integrated into rehabilitation programs, aiding in motor skill recovery after injuries. By leveraging brain signals, BCIs can facilitate neuroplasticity and enhance the effectiveness of rehabilitation interventions. This technology holds promise in improving the rehabilitation outcomes for individuals recovering from strokes, traumatic brain injuries, or other motor impairments by providing real-time feedback and facilitating targeted rehabilitation exercises (Adeola et al., 2022).

In conclusion, EEG-based approaches have the potential to revolutionize healthcare, cognitive neuroscience, and assistive technology within the Nigerian context. From diagnosing and managing neurological disorders to studying cultural influences and enhancing rehabilitation outcomes, EEG technology offers a wealth of opportunities for research, innovation, and improved quality of life (Polanía et al., 2018). By harnessing the power of EEG, Nigeria can embrace the potential of this remarkable technology and lead the way in transforming healthcare and empowering individuals with disabilities.

Theoretical Framework

Capacity Building

Formal Educational Programs, Nigeria will seize the opportunity to transform its universities into hubs of EEG expertise. By designing and implementing degree programs and certifications in EEG research, aspiring researchers will have access to comprehensive, structured learning opportunities. These programs can cover a range of disciplines, including neuroscience, psychology, and engineering, ensuring a well-rounded understanding of EEG research methodologies and applications (Polanía et al., 2018).

Creating a Culturally Diverse Learning Environment In order to cultivate a vibrant community of EEG experts, Nigeria should welcome international scholars to share their knowledge and experiences through guest lectures, seminars, and workshops (Adeola et al., 2022). This exposure to diverse perspectives and methodologies will expand the horizons of Nigerian researchers, fostering an environment of intellectual curiosity and innovation.

Research and Methodological Advancements:
Collaboration as the Catalyst Collaborative Research Efforts To maximize knowledge exchange and expertise development, Nigerian universities and research institutions should forge strategic partnerships with international stakeholders (Adeola et al., 2022). By leveraging resources and expertise, joint research projects can be initiated, creating a platform for deep collaboration and cross-pollination of ideas. These collaborative efforts will not only augment the quality of scientific inquiry but also contribute to the international visibility of Nigerian EEG research.

Training Programs and Workshops:
Building Practical Skills Enhancing Data Collection, Analysis, and Interpretation: Investment in training programs and workshops focused on practical aspects of EEG research will equip researchers with the necessary skills to collect, analyze, and interpret data effectively (Adeola et al., 2022). These programs can be tailored to accommodate researchers at different stages of their careers, from beginners to advanced practitioners. By sharpening their methodological abilities, Nigerian researchers can elevate the quality of their research output and contribute to the global scientific dialogue (Virginia Anikwe et al., 2022).

Promoting Interdisciplinary Collaborations: Unleashing the Power of Collaboration Addressing Multifaceted Research Questions: Recognizing the complexity of understanding the human brain, Nigeria should foster interdisciplinary collaborations between neuroscientists, engineers, psychologists, and clinicians (Yakubu et al., 2022). By bringing together experts from diverse fields, research questions can be approached from multiple angles, unraveling the intricate workings of the brain (Kaushik et al., 2022). This convergence of disciplines will enable Nigerian researchers to delve into complex phenomena, confront challenges, and generate holistic solutions for pressing issues in EEG research.

Conclusion

Harnessing the potential of EEG technology in Nigeria's healthcare system holds immense promise to alleviate the burden of neurological disorders. By enabling early diagnosis, personalized treatment planning, continuous monitoring, and raising public awareness about EEG technology, Nigeria can take significant strides towards improved healthcare outcomes. Furthermore, considering cultural factors ensures the ethical implementation of EEG research, respecting the cultural context of participants and maximizing the impact of this technology. Embracing EEG-based research represents a transformative approach towards shaping a healthier future for Nigeria and its people.

A Promising Future for Nigerian EEG Research Through strategic capacity building initiatives, research and methodological advancements, and interdisciplinary collaborations, Nigeria can harness the power of EEG research to drive innovation and scientific progress. By establishing formal educational programs, inviting international experts, fostering collaboration, and providing training opportunities, Nigeria can nurture a new generation of EEG experts, empowering them to uncover the mysteries of the human brain. With a professional tone and a focus on excellence, Nigeria can position itself as a frontrunner in EEG research, contributing significantly to the advancement of knowledge and improving the lives of people worldwide.

References

Adeola, O., Evans, O., Ndubuisi Edeh, J., & Adisa, I. (2022). The Future of Marketing: Artificial Intelligence, Virtual Reality, and Neuromarketing. Marketing Communications and Brand Development in Emerging Economies Volume I, 253–280. https://doi.org/10.1007/978-3-030-88678-3_12

Alyas, N., Hastings, D., & Mehrabidavoodabadi, A. (2023). A Comparative Analysis of Classifier Performance for Epileptic Seizure Detection Using EEG Signals. Proceedings of the 12th International Conference on Pattern Recognition Applications and Methods. https://doi.org/10.5220/0011631600003411

Grimaldi, G., Argyropoulos, G. P., Bastian, A., Cortes, M., Davis, N. J., Edwards, D. J., Ferrucci, R., Fregni, F., Galea, J. M., Hamada, M., Manto, M., Miall, R. C., Morales-Quezada, L., Pope, P. A., Priori, A., Rothwell, J., Tomlinson, S. P., & Celnik, P. (2014). Cerebellar Transcranial Direct Current Stimulation (ctDCS). The Neuroscientist, 22(1), 83–97. https://doi.org/10.1177/1073858414559409

Hassan, M., & Wendling, F. (2018). Electroencephalography Source Connectivity: Aiming for High Resolution of Brain Networks in Time and Space. IEEE Signal Processing Magazine, 35(3), 81–96. https://doi.org/10.1109/msp.2017.2777518

Kaushik, M., Singh, D., Dutta, M. K., & Travieso González, C. M. (2022). A deep learning approach for epilepsy seizure detection using EEG signals. TecnologíaEnMarcha, 35(Extra 4), 110–118. https://dialnet.unirioja.es/servlet/articulo?codigo=8828180

Ke, X.-Y., Hou, W., Huang, Q., Hou, X., Bao, X.-Y., Kong, W.-X., Li, C.-X., Qiu, Y.-Q., Hu, S.-Y., & Dong, L.-H. (2022). Advances in electrical impedance tomography-based brain imaging. Military Medical Research, 9(1). https://doi.org/10.1186/s40779-022-00370-7

Miniussi, C., & Thut, G. (2009). Combining TMS and EEG Offers New Prospects in Cognitive Neuroscience. Brain Topography, 22(4), 249–256. https://doi.org/10.1007/s10548-009-0083-8

Perpetuini, D., Russo, E. F., Cardone, D., Palmieri, R., De Giacomo, A., Pellegrino, R., Merla, A., Calabrò, R. S., & Filoni, S. (2023). Use and

Effectiveness of Electrosuit in Neurological Disorders: A Systematic Review with Clinical Implications. Bioengineering, 10(6), 680. https://doi.org/10.3390/bioengineering10060680

Pinti, P., Tachtsidis, I., Hamilton, A., Hirsch, J., Aichelburg, C., Gilbert, S., & Burgess, P. W. (2020). The present and future use of functional near-infrared spectroscopy (fNIRS) for cognitive neuroscience. Annals of the New York Academy of Sciences, 1464(1), 5–29. https://doi.org/10.1111/nyas.13948

Polanía, R., Nitsche, M. A., & Ruff, C. C. (2018). Studying and modifying brain function with non-invasive brain stimulation. Nature Neuroscience, 21(2), 174–187. https://doi.org/10.1038/s41593-017-0054-4

Ruchika, F., Neupane, D., Shah, S., Delawan, M., &Lucke-Wold, B. (2023). Advancing Analytics of EEG Signals. Med Discoveries, 2(4), 1031. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10208433/

Saminu, S., Guizhi, X., Zhang, S., Isselmou, A. E. K., Jabire, A. H., Karaye, I. A., Ahmad, I. S., & Abdulkarim, A. (2021). Electroencephalogram (EEG) Based Imagined Speech Decoding and Recognition. Uilspace.unilorin.edu.ng. https://uilspace.unilorin.edu.ng/handle/20.500.12484/7307

Virginia Anikwe, C., Friday Nweke, H., Chukwulkegwu, A., Adolphus Egwuonwu, C., Uchenna Onu, F., Rita Alo, U., &WahTeh, Y. (2022). Mobile and wearable sensors for data-driven health monitoring system: State-of-the-art and future prospect. Expert Systems with Applications, 202, 117362. https://doi.org/10.1016/j.eswa.2022.117362

Yakubu, A. O., Morakinyo, O. E., Ghazal, I. D., Obituyi, H. A., & Raheem, A.-R. T. (2022). Epilepsy surgery in Nigeria: the current state and prospects. International Surgery Journal, 9(12), 2098–2102. https://doi.org/10.18203/2349-2902.isj20223183

Yen, C., Lin, C.-L., & Chiang, M.-C. (2023). Exploring the Frontiers of Neuroimaging: A Review of Recent Advances in Understanding Brain Functioning and Disorders. Life, 13(7), 1472. https://doi.org/10.3390/life13071472.

Journal of Capital Development in Behavioural Sciences Vol. 11 Issue 2 (September, 2023)
Faculty of Arts & Education, Lead City University, Ibadan, Nigeria
***ISSN Online:** 2449-0679 **ISSN Print:** 2354-3981*

Assessment of Multinational Corporations on Industrialisation in Nigeria

Adewale GBOLAGADE
gbolagadeadewale@gmail.com
The Polytechnic, Ibadan

&

Paul AJAYI
Marketing Department
The Polytechnic, Ibadan

Abstract

The paper highlights the amelioration of International commerce through Multinational Corporation. Transformations, product structure design, strategic marketing orientation, operational excellence of Transformation are the methodology for providing social, economic and political development through social justice, security and equity: Effective with efficient communication system and technological advancement are the impact of multinational corporations in Nigeria economy.

Keywords: Multinational Corporations, Transformation, Marketing, Industrialisation, Global Performance.

Word Counts: 157

Introduction

Global marketing refers to marketing activities coordinated and integrated across multiple country markets. The integration can involve standardised products, uniform packaging, identical brand names, synchronised products introductions, similar advertising messages or coordinated sales campaign across markets in several countries. The increase in international trade and investment, the emergence of free trade blocs and the opening of previously closed economics have led to greater global market opportunities than ever, but also to the threat of increased competition at home. Furthermore, in most cases, the various marketing mix tools do not lend themselves equally to a uniform treatment. In addition to seeking reserve and profit growth, the company entering a foreign market might do so to challenge a competitor, learn from the lead customers or simply diversify its demand base. To complete effectively in the global place requires skill building. The marketer needs to learn how to enter markets and how to manage the marketing efforts in the local foreign market.

To gain these skills, the global marketing managers need strategic orientation. Durowoju, (2010).

Multinational Corporations in Nigeria

Multinational Corporations bring a global economic boom, unprecedented in modern economic history has been underway as the drive for efficiency, productivity and open unregulated markets sweeps the world. Powerful economic, technological, industrial, political and demographic forces are converging to build the foundation of a new global economic order on which the structure of a one-world economic and market system will be built. Global marketing is the performance of business activities designed to plan, price, promote and direct the flow of a company's goods and services to consumers or users on more than one nation for a pro it. A firm that is engaged in cross border business is defined as Multinational Corporation, which maybe incorporated in one country in order to seek new markets to full production gap in foreign markets where excess returns can be earned. Multinational Corporation is also known as Transnational Corporation, promoting technology transfer and leaning geographical and psychological frontial of business. Examples of Multinational Corporation includes General Electric Company, Unilever Company Plc, Nestle Nigeria Plc, Coca Cola International, United African Company (UAC), Mobil Nigeria Plc, Corn Oil Nigeria Plc, Chevron

International, Total. The major characteristics of multinational corporations include the large size and over size structures, with network of foreign branches in more than 20 countries.

Multinational Corporations are involved in the role of technology transfer and technology operations globally. This makes possible new organizational structures and new corporate strategies, for example, the constraints previously imposed by geographical separation have dropped considerably with the wide spread use of internet, while the rapid accumulation and analysis of information make new marketing strategies possible. Indeed, the case with which information can now be managed has led to the success of many internet-based companies such as Amazon, Expedia and Products such as Apple Computer's tune.
Multinational Corporation involves in productive capacities, efficient use of financial and human resources and returns on technological investments. The network economy will continue to develop and bring new delivery channels, more rapid order cycles and faster response capabilities. Onabajo, (2003).

Multinational Corporations and Transformation

According to Onabajo, (2014), Transformation is derived from the word, global, which refers to things affecting the world. Transformation brings a global cultural system. This includes the existence of cosmopolitan lifestyle, global consumption pattern, the existence of a world satellite informative system, the standardization, changes in the world economy as a result of the Transformation process have indeed elevated political social, security and economic issues as they affect growth among actors in the international system to the highest level.

Transformation is about international trade investment and finance that have been growing faster than national income. Transformation has brought about the integration of the Third World as well as its process in an uneven and unbalanced manner. This has meant that the Third World has continued to be on the margins of the Transformation of world economy.

Transformation of labour and power can be apprehended at two levels. The first level is the intensification of worldwide social inflations which link distant localities in such as way that local happenings are shaped by events from distant points on the globe. It is within this context that third world economic growth can indeed be situated and appreciated. Transformation means a historical transformation in the economy, the livelihoods and model of existence in politics, a loss in the degree of control exercise, in culture, a devaluation of collective achievements. Therefore, Transformation is good for economic growth and growth is good for the poor. This is a simple yet forceful fact based conclusion and cannot be quickly dismissed. In this regard, it has been argued that Transformation would attract direct foreign investment and international and to the world. It would also enhance competition, which would encourage rationality and efficiency. Onabajo, (2014).

Industrialisation in Nigeria

The economic profile of Nigeria can be classified into three groupings. The first group which is the highest level consists of large European trading companies and big departmental stores eg. UAC, UTC, CFAO, John Holt, etc. The next level is dominated by smaller firms owned by Asians and Lebanese. The firms in this category engage in textile manufacturing and trading. Lest level consists of arrays of small investment outlets that acts as link between the consumers and the producers owned by Nigerians. This was the profile in the 1970s and early 1980s. In the contemporary time, pockets of industrial manifestations can found in the construction sector, manufacturing, especially in durable and non-durable goods, service sector, etc. Industrialization and Technology have encountered slow growth and development in Nigeria. According to this view, given the potential resources in the country, human and material, it appears that something somewhere has gone wrong with our industrialization. Nkanbe, (2003).

Good percentage of economic activities in Nigeria emerged the highest producer of cassava in the world. This product, however can serve house hold immediate needs for nutrition. It is not convertible as a derivative for the production of any form of manufactured goods. The economic emphasis on local agriculture has become one of the factors responsible for the retardation of industrial growth and development. It requires no modern technology. There has been no effort to encourage large scale or mechanised agriculture. Following this report, our industrialization which is subsumed under an economic structure that exhibits both traditional and modern features requires activities of varying levels of sophistication covering almost the entire gamut of technological and scientific endeavours.

Several of the multinationals that invest in the economy seldomly engaged in manufacturing. Those that are into manufacturing engage in consumable household goods.

They neither engage in the manufacturing of semi-processed goods or industrial goods. Some of these multinational companies engage in importation and distribution.

By this development, the technology is located elsewhere and the consumption is taking place in Nigeria. The chance of industrialization is sold out for merchandise convenience. The forgoing contributes immensely to the low level of technology application in Nigeria. "Infact, the limited application of modern technology has been identified as one of the major factors responsible for limited industrial performance in Nigeria. A well-coordinated Transformation has the potential of pulling industrialization and technology in Nigeria out of the solid condition to a virile active condition. With Transformation, there would be injection of raw business ideas and ventures into the economy. Adekola, (2010).

Thus, the early multinational companies interested in milking the Nigerian economy would either have a rethink or wind up. Since Transformation engages in there distribution of resources, the economy of Nigeria would be exposed to receiving good share of the global resources that could bring life in the economy. Transformation may foster a reorientation of the domestic economy and re-direct the course of industrialization development. It has the potential of transforming the domestic bourgeoisie from consumption culture to production culture by encouraging joint ventures. The tendency to cooperate in the Transformation regime would be anchored on the potentials of investments available to foreign investors and the expected and resultant industrialisation that would diversify and enlarge the scope of the economy and technology development.

Onabajo, (2014) said, the new world order is one of increasing interdependence in which public and private actors promote the diffusion of wealth and industrialization on a global scale. Thus, a Transformation regime that will encourage industrialisation would make it facile for the technology of the advanced capitalist countries to permeate the economy of Nigeria.

Industrialization and Marketing

The global product structure design for a global corporation is the most commonly seen. It refers to a structure under which the responsibility for the production, distribution and marketing of a firm's products are carried out by the different parts of the corporation. This approach is most common in corporations with a large number of different products and a large number of markets. This form can also be found incorporations with a very limited number of products but a wide variety of markets. The structure is that, the corporation would centralise the production of the product in a limited number of locations, while decentralizing the marketing of the product to the local units. Mattugah, (2005). The area structure is simply on organizational structure based on geographic areas. A typical corporation operating the area structure approach would have all of its production centred on geographically centralized management structures. For instance, the company would have an African based operation based in Brussels, a North American operation based in Washington. Each geographical unit of the corporation would produce possibly the same sort of products but would market them according to local customs and needs. The area structure would be most useful in products that were incavity influenced by language e.g. Daily Times newspaper produced in Nigeria and marketed in London. The global functional structure is much more rare than the previous two examples ad can only really operate in a limited number of cases. For a global functional approach, it helps if the corporation has a relatively small number of products and a relatively small number of consumers. This is because the functional approach creates global divisions responsible for functions within the corporation. Thus, there is a global R & D division and a global marketing division. Such an approach standardizes procedures and relies on centralised rules and norms of behaviour. Such a model is most common is single product industries, such as mining and air transport. Akinbobola, (2001) The global customer structure concentrates on the nature of the customer or consumer of the product. This structure is used when the differences between potential consumer/customers are very wide, for instance, a company in telecommunications or computing may sell its products to government departmer, international agencies, multinational firms, small businesses and individual consumers. Each customer will have very different demands on the corporation. In this case, it is likely to see specific divisions for dealing with specific corporations such as government sales department.

The mixed or hybrid approach can occur for a number of reasons. Most commonly the approach is used by a company that has recently acquired as other in a merger. Under these circumstances a number of different approaches to organizational structure may have to be merged into a common unit and so have a mixed structure for some time. The structure may also reflect a loose form of management as a response to peculiar market circumstances. The global matrix structure is the most complicated of all the structures and involves the imposition of one model of operation on another. A company that operated on the basis of the global product structure may have an area structure placed on top of it. For example, product massagers may report in an administrative sense to an area director in North America but on matters of product, to a functional director in Europe. Gymah, (2011).

The Strategic Marketing Operations

The consensus of researchers and authors revealed three relatively distributive approaches that seem to dominate strategic thinking in firms involved in global marketing are;

(a) Domestic market extension concept
(b) Multi-domestic market concept
(c) Global marketing concept

The domestic company seeking sales extension of its domestic products into foreign markets illustrates this orientation to global marketing.

It views its international operations as secondary to an extension of its domestic operations; the primary motive is to market excess domestic production. Domestic business is its priority and foreign sales are seemed as a profitable extension of domestic operations. Even though foreign markets may be vigorously pursued, the firm's orientation remains basically domestic. Its attitude toward international sales is typified by the belief that if it sells in Nigeria, it will sell anywhere else in the world.

The firm's orientation is to market to foreign customers in the same manner in which the company markets to domestic customers. It seeks markets in which demand is similar to the home market and its domestic product will be acceptable. This domestic market extension strategy can be very profitable, large and small exporting companies approach international marketing from this perspective. Firms with this marketing approach are classified as ethnocentric.

Once a company recognizes the importance of differences in overseas markets and the importance of offshore business to the organization, its orientation towards international business may shift to a multi-domestic market strategy. A company guided by this concept has a strong sense that country markets are vastly different and that market success requires an almost independent program for each country. Firms with this orientation market on a country by country basis, with separate marketing strategies for each country. Subsidiaries operate independently of one another in establishing marketing objectives and plans, and the domestic market and each of the country markets have separate marketing mixes with little interaction among them.

Products are adapted for each market with little coordination with other country markets. Advertising campaigns and distribution decisions are localized. It aims at adaptation to local country markets. Firms with this orientation are classified as polycentric. Johnson, (2000) A company guided by a global marketing orientation or philosophy is generally referred to as a global company. Its marketing activities are global and its marketing coverage is the world. A company employing a global marketing strategy strives for efficiencies of scale by developing a standardized marketing mix applicable across national boundaries. Markets are still segmented, but the country or region is considered side by side with a variety of other segmentation variable such as consumer characteristics such as age, income, language group, etc. The world as a whole is viewed as a market and the firm develops a global marketing strategy. The global marketing company would fit region centric or geocentric classification.

Operational Excellence of Transformation

Operational Excellence is about doing it better. Whether the specific task is fine turning client service or adjusting the financial and human capital by providing the skill needed to enhance competitive edge and profitability. Osagwu, (2002). The network economy will continue to develop and bring new delivery channels, more rapid order cycles and faster response capabilities. More tdition businesses will need to adapt, calling for better coordination and cooperation within the organization and the redesign of operational and financial processes. There is no room for complacency, Innovation and good execution are the emerging disciplines.

Building and strengthening organizations so that they become both client obsessive and high value, cash flow generators calling for constant relative advantage, adaptive technologies, flexible organization structures, dynamic processes and people who understand that success means well thought out, relentless change. It requires decision makers to acknowledge that capital markets and investors no longer rely on hope value. Instead, they look for high levels of confidence, sustainable cash flow from significant improvements in product specialization and delivery channel options.

Processes that create operational efficiency and productive of output.

- Better methods for allocating resources to best opportunities.
- Determining relative success and bench marking progress requires a systematic approach that begins with the early design and continues on with implementation.
- To keep the organizational changes in motion, operational efficiency and intergroup coordination will need to be continually re-examined by management of multinational corporations.

Challenges Facing Multinational Corporations in Nigeria

The low level of industrialization and technology development in the country could be traced to the competitiveness of the economy in Multinational Corporations. Since Transformation is a channel of re-distributing technology, the foreign actors would have to give more and have little or nothing to receive except proceeds from the investments.

The point here is that the giver dictates the modus operandi or virtually all the transactions. Even when technology is transferred from the advanced capitalist countries, the tendency for the development of domestic technology rare. Except the transferred technology is domesticated, the Nigeria economy would exist at the mercy of foreign investors. It would remain subordinate to foreign capital.

Though Nigeria has strong foundation of institutionalised financial system, the lack of zeal of the domestic corporation executives to engage in investment in the industrial sector may expose the finance capital to the hazard of foreign investors could take this advantage to expropriate the wealth of the nation. Since capital is mobile and Transformation is about interconnectedness and interdependence, the available finance capital in Nigerian economy could be moved at will to the economy of other states thereby hampering the strength of Nigerian economy- The crisis associated with the contemporary democratic dispensation as a result of class fragmentation, may not build a strong state in the Transformation regime. It is unrealistic that raw materials would complete favourably with manufactured products.

Neither can primary production system compete with technologically engineered mode of production. Evidently, Transformation would bring about the domination of the Nigeria economy since its basic export is woven around raw materials, whereas the raw materials provide basis for production and further production. Nigerian export only promotes economic diversification abroad and restricts diversification in the domestic setting.

Moreover, its imports manufactured products for direct consumption in the process it cuts off production processes within the economy and finis delights in consuming industrial goods. This is a cut off of industrial growth and technology development. In the main, the Nigerian economy is not competitive in the trade circle. Onabajo, (2014).

Conclusion

Changes in the world economy as a result of the Transformation process have indeed elevated political, social and economic issues as they affect growth among actors in the international system of the highest level.

Transformation of labour and power can be apprehended at two levels. The first is the increase in interactions, and the intensification of worldwide social inflation which link distant localities in such a way that local happening are shaped by events from distant points on the globe vice versa. It is within this context that the third world economic growth can indeed be situated and appreciated.

According to the World Bank, Transformation is good for economic growth and growth is good for the poor. This is a simple yet forceful fact based conclusion and cannot be quickly dismissed. In this regard, it has been argued that Transformation would attract foreign investment and international aid to the third world.

If Transformation is to succeed for the poor and the rich alike, it must deliver rights and provides social justice and equity not less than economic prosperity and enhanced communication.

Reference

Adekola A. A. (2010): Democratic Development in Nigeria since Independence: Challenges and Prospect. College Press and Publishers Limited, Ibadan.

Akunbobola, (2001): Transformation and Its Impact on the Emergent State: An Analysis of its Problems and Prospects on Brazil and Nigeria. Concept Publications.

Durowoju S. T. (2010): Interaction between Market and Industry: Business Policy Issue for World Class Organizations Performance Management Skills and Techniques. Volume 1 Number 1 November, 2010.

Gymah Baokye, (2011): Transformation, Impact, Challenges on Business in Ghana. Journal of Management & Liberal Studies, Volume 7 Number 1, June 2011. Pg100-120).

John Johnson, (2000): Global Marketing, Foreign Entry, Local Marketing & Global Management, USA, The McGraw-Hill Companies.

Mattugah M. (2005): A Systematic View of Change Management and Its Underpinning System, Practice and Action Research 8 (5), 75.

Nkambe Ayo, (2003): Entrepreneural Training and Development in Africa; Reflections on Critical Issues from Nigeria in Dimension of African Business and Development. University of Sheffield, United Kingdom.

Onabajo Felix, (2013): Pre-Requisite for the Growth of Entrepreneurship in Nigeria: A Lesson for Retirees. International Journal of Socio-Economic Development and Strategic Studies (IJOSEDASS) Volume 6 Number 1 September, 2013.

Onabajo Felix, (2014): Transformation Challenges, Economy Politics and Security in Nigeria, Volume 5, No 1, March 2014, Pg 1-19)

Osuagwu Linus, (2002): Marketing Principles and Management, Lagos
Grey Resources Limited, Surulere.