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Gusau International Journal of Management and Social sciences (GIJMSS) is a biannual (October and April) academic journal published by the Faculty of Management and Social Sciences, Federal University Gusau. The Journal welcomes contributions from the diverse fields of management and social sciences. The mission of the journal is to publish high quality papers from all over the world and make GIJMSS a high ranked journal.

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Efficacy of Nigerian Energy Industry's CSI Initiatives on Sustainable Development Goals (SDGs) Optimization in Niger Delta Communities: A PLS-SEM Analysis

Tajudeen Alaburo ABDULSALAM¹; Rofiat Bolanle TAJUDEEN²; Samuel Seun OGUNGBEMI³; Bashir Tunji ABDULRAHMAN⁴

^{1,4}Department of Accounting and Finance, Kwara State University of Malete

²Department of Marketing, University of Ilorin, Ilorin, Nigeria,

³Department of Accounting and Finance, Queen Margaret University, Edinburgh.

Correspondence: alaburotajudeenabdulsalam@gmail.com¹

Abstract

Nigeria ranked 146 out of 166 on the 2023 SDG index, scoring 54.3/100, despite a GDP per capita of \$5,408. The research investigates the effectiveness of Nigerian energy companies' CSI initiatives in the Niger Delta and their impact on achieving Nigeria's SDGs by 2030. Using an exploratory design, an online survey collected responses from 460 members (representing 92% sample rate) of Niger Delta host communities, analysed using the PLS-SEM model. The results show that CSI initiatives (economic, legal, ethical, and philanthropic) are well-practiced among oil and gas firms and correlated with a 68.9% increase in sustainable development indicators in the region. By being backed up by Cronbach's Alpha (over 0.70) and Composite reliability (over 0.75), the findings criticize the conventional notion that profit-maximization is the sole focus of businesses, particularly in socially and environmentally vulnerable areas. The research suggests implementing a CSI reporting framework, enhancing government oversight, and fostering positive interactions between oil companies and local communities.

Keywords: CSI initiatives, Energy companies, Niger Delta, Nigeria, Sustainable development

1.0 Introduction

The industrial revolution marked a transformative era in the business environment, revolutionizing production and sparking unprecedented economic growth. However, it also triggered environmental degradation and resource depletion, highlighting the need for sustainable practices. The Fourth Industrial Revolution (4IR) has profoundly influenced Nigeria's energy sector since the discovery of crude oil in 1956, with the sector being a crucial pillar of the economy, contributing 8.6% to GDP, 70% to government revenues, and 90% to export earnings (Okotie, 2018; Ogbonna, Mobosi, & Ugwuoke, 2020; Ebimobowei, 2022). Despite these contributions, the sector has grappled with sustainability challenges, including pollution, ecological degradation, community unrest, and corruption, resulting in a 35% increase in floods, CO₂ emissions, and greenhouse gases (Kumar et al., 2022). This social criticism has spurred a

widespread call for sustainability and social responsibility, particularly among the younger generation, aiming to achieve the Sustainable Development Goals (SDGs) by 2030, especially in the environmentally sensitive Niger Delta region. Consequently, there is a growing focus on corporate social investment (CSI) in the SDGs, with policymakers and academics actively discussing strategies to address the environmental and social issues (Saka-Helmhout et al., 2024; Naidoo & Naidoo, 2019).

Nigeria's low ranking of 146 out of 166 on the SDG index worth 54.3/100 with a poverty headcount of \$2.15/day in 2023 despite \$5,408 GDP per capita underscores the urgent need for sustainable practices (World Bank, 2023). Nigeria has experienced over 4 million deaths since 2017, with 23% among adults, 26% among children, and over 40% among the elderly attributed to various causes of oil spills (Peace, 2020; Pona et al., 2021). Major contributors to these spills include corrosion (50%), sabotage by restive youths (28%), and operational mishaps during oil production activities (21%), with minimal impact from engineering drills and machine inefficiencies (Ndubuisi-Okolo et al., 2020). Consequently, the World Health Organization (2018) has linked unsustainable environmental practices in Nigeria to 85 out of 102 categories of diseases and injuries in the Niger Delta region.

Despite the significant role of the oil and gas industry in Nigeria's economy, CSI in SDGs practices exhibit a low adoption rate, especially among energy companies and academicians, with only 35% of Nigerian companies publishing sustainability reports, contrasting with the global average of 72% (Duttagupta et al., 2021; Odera, 2021). Moreover, only 27% of these initiatives are fully integrated into business strategies, advocating profit maximization over people and planet security, as noted by the Triple Bottom Line Theory. Thus, the absence of a clearly defined CSI and sustainability policy, as well as dedicated departments responsible for implementing such policies, is concerning, especially considering the staggering loss of over \$16 billion in government revenue due to non-transparent and corrupt practices in the industry (Jo & Harjoto, 2012; Harjoto, Jo, & Kim, 2017; Harjoto et al., 2023). Additionally, environmental impact assessments conducted by companies within the industry are inadequate, with only 24% of Nigerian oil and gas firms engaging in comprehensive assessments (Uduji & Okolo-Obasi, 2022; Erhinyoja & Marcella, 2019). This highlighted policy gap points out that the CSI and SDG index in Nigeria need to be empirically tested from a local community perspective. This approach will

provide valuable insights into the CSI's industry efficacy and identify improvement areas (Alhassan, Islam, & Haque, 2021). Through this, policymakers and industry stakeholders can develop more targeted and sustainable strategies to enhance environmental management practices in the Nigerian energy sector. To address these empirical gaps, the research explores the efficacy of Nigerian energy companies' CSI initiatives in the Niger Delta and their influence on achieving Nigeria's SDGs index by 2030. Specifically, the research seeks to:

- I. Investigate the range of CSI initiatives implemented by these companies and their effectiveness in promoting community development as measured by the SDGs index,
- II. Analyze the influence of Carroll's CSI pyramid on community development indicators in the Niger Delta.

The research provides valuable empirical evidence for several reasons. Firstly, in the modern age, there has been a noticeable shift from a focus solely on profit maximization to a greater awareness of social responsibilities among businesses (Kajola et al., 2023). This shift has led many business managers to consider the impact of their organizational activities on all stakeholders, not just financial gains. This change in business ideology has given rise to the concept of CSI, which aims to contribute to the achievement of sustainable development goals within local communities' economies, as noted by Adekunle et al., (2024). Secondly, there are concerns about the motivations behind implementing CSI in Nigeria's energy industry, particularly due to allegations of environmental misconduct by multinational oil companies (MOC) in the Niger-Delta region (Velte, 2022; Bian et al., 2021). Therefore, the research serves as a reminder that these companies can do more to help Nigeria achieve better SDGs development performance by 2030. Lastly, despite numerous studies investigating the impact of exploiting non-renewable resources on the environment (Nursetiawati et al., 2022; Aguirre, 2023), CSI's PLS-SEM analysis in Nigeria's energy sector is still in its early stages, with unresolved issues regarding SDGs index as theoretical frameworks, measurement approaches, and empirical methods (Castillo-Villar, 2020; Fallah-Shayan et al., 2022). Consequently, CSI's prominent scholars, like Zhang et al., (2022) and Prabawani et al. (2023), emphasize that MOC should expand their value proposition beyond mere profits by considering the community as the organic stakeholders affected by their operations. This is essential as energy companies face accusations of unethical business practices and negative social impacts, including extortion and conflicts of interest, as noted by Emmanuel et al.,

(2021) and Olanrewaju et al., (2020). Therefore, the research findings serve as a guide for firms on how to ethically improve their performance in achieving SDGs in Nigeria.

2.0 Literature Review

2.1 Conceptual Clarification

Origin of CSI Dimension in Nigeria

CSI's origin can be traced back to various points in the industrial revolution era, with indications suggesting its presence as early as the 1930s and 1940s (Abubakar & Mohammed, 2018). Early scholarly works, like Theodore Kreps's "Measurement of Social Performance in Business," J.M. Clark's "Social Control of Business," and Chester Barnard's "The Function of the Executive," hinted at the early foundations of this social investment practices. However, CSI gained formal recognition and began to take shape in the mid-20th century, particularly with the publication of Howard R. Bowen's groundbreaking book "Social Responsibilities of the Businessman" in 1953, which marked a significant starting point for formal literature on CSI, synonymous with CSR (Adedeji, 2023). During this era, Keith Davis emerged as a prominent figure, contributing extensively to defining CSR by focusing on the interplay between social responsibility and business influence, which gained widespread acceptance and laid the foundation for subsequent discussions (Allen & Eze, 2019).

Nigeria's CSI landscape underwent significant development in the mid-1990s, driven by changes in public sector involvement and notable corporate scandals like the incidents involving Ken Saro-Wiwa and Shell (Angela et al., 2021). This period underscored the importance of responsible business practices as it saw the emergence of organizations like 'Business for Social Responsibility', serving as catalysts for promoting CSI initiatives within the business community. Over time, CSI evolved into a subject of extensive discussion, analysis, and research, with businesses worldwide expected to undertake voluntary actions addressing SDGs issues like environmental conservation, climate change, and human rights (Babajee et al., 2022). Despite its widespread discussion, the definition of CSI remains multifaceted, lacking a universally accepted interpretation (Battilana et al., 2022). However, empirical discussions highlight its importance in the realm of effective management, ethical operations, transparency towards stakeholders, and the integration of social and environmental initiatives into regular business practices (Dmytriiev et al., 2021). As of today's 4IR, CSI evolution has been marked by shifts in focus, terminology, and perspective reflecting its dynamic nature (Gballi et al., 2021). For instance, from its early beginnings in the 1930s to

its formalization in literature in the mid-20th century, CSI's prominence in the modern business landscape demonstrates its enduring relevance and adaptation to changing societal needs (Ekhatior & Iyiola-Omisore, 2021). The complex interplay between CSI, business practices, societal expectations, and stakeholder relationships has cemented its status as a crucial aspect of corporate operations, enabling a more responsible and sustainable approach to business.

The concept of CSI is coined as 'triple bottom line,' or '3Ps known as people, planet, profit,' highlighting its multidimensional nature beyond profit-centric operation (Elisha & Golden, 2022). While these terms were introduced by John Elkington in 1998, CSI emphasizes environmental stewardship, social responsibility, and economic growth, ensuring that business operations align with stakeholder and consumer interests. Today, CSI has become a standard practice in contemporary business reporting.

SDGs Dimension of Community Development in Niger Delta

The origin of the SDGs can be traced back to the League of Nations, now known as the United Nations, in 1934 when a commitment to achieving universal primary education was declared in response to the end of the Cold War. However, the concept of the SDGs emerged as a successor to the Millennium Development Goals (MDGs) in the development agenda, representing a new plan proposed by the UN following the perceived shortcomings of the MDGs in 2015 (Abdulkareem et al., 2023). The SDGs encompass a comprehensive set of developmental goals that were formulated after the UN Conference on Sustainable Development, also known as the Rio+20 Conference, held in June 2012. In response to this conference, the Open Working Group (OWG) was established to gather input and recommendations for the SDGs. The OWG held its initial meeting on March 14-15, 2013, focusing on key themes such as water, energy, sanitation, green energy, risk reduction, and management (Lincoln & Diamond, 2023). In June 2014, the UN presented the proposed post-2015 Sustainable Development Goals, aiming to enhance and restructure the previous MDGs. The SDGs were considered more comprehensive and ambitious compared to their predecessors (Lawrence et al., 2020), as the official document titled "Transforming our world: the 2030 agenda for sustainable development" formalized the SDGs (Khan et al., 2022). This agenda comprises 17 sustainable goals along with 169 targets, with the core aim of eradicating poverty, which serves as the primary focus of Nigeria's community problem today (Abubakar, 2022).

Scholarly literature focuses on development and sustainability, emphasizing a dynamic system that endures over time rather than a static endpoint. Sustainability in communities refers to the long-term preservation of valued environmental resources, ensuring that present needs are met without compromising the ability of future generations to meet their own needs (Adeyinka et al., 2020, 2021). Community sustainability is assessed by measuring natural resource depletion and the feasibility of sustaining current resource use rates into the distant future. The overarching goal of sustainable development is to enhance the quality of life comprehensively, contingent upon the vigorous pursuit and societal adherence to environmentally sound policies. Despite Nigeria's emergence as Africa's largest economy, accounting for 17% of the continent's total GDP with a GDP of \$397 billion, a concerning 40.1% of Nigerians, approximately 83 million people, are living in poverty, recording below \$2.56 per capita, which is below the UN threshold (Begho, 2022). This showcases a high poverty level in the Niger Delta region, although there has been observed improvement in southern regions.

Over the past few decades, scholarly literature has documented strategies for sustainable development in Nigeria in three phases: the Pre-SAP era, the SAP era, and the democratic era (Fagbemi & Osinubi, 2020). As Nigeria's economy has grown, the government has shifted poverty alleviation strategies to new approaches, of which the National Social Investment Program (NSIP) introduced in 2016 is a key intervention strategy. This program consists of four critical components: the N-Power program, Conditional Cash Transfer (CCT), Government Enterprise and Empowerment Program (GEEP), and the National Home-Grown School Feeding Program (NHGSFP) (Nwani & Osuji, 2020). These programs have been lauded by academic literature, such as Yetano-Roche et al., (2020), for their efficiency in addressing youth unemployment, despite Olanrewaju et al., (2020) criticizing them for being exploited by politicians and lacking lasting impact. In overall, sustainable development challenges in the Niger Delta have persisted over the years, proving difficult to address through short-term philanthropic projects driven by profit motives and a focus on brand image.

2.2 Theoretical Framework

The research is anchored on the presumption of Stakeholder Theory and Triple Bottom Line (TBL) or 3Ps theory, introduced by John Elkington in 1994 through his book "Cannibals with Forks: The Triple Bottom Line of 21st Century

Business." The theory criticizes conventional accounting theory by postulating the need for sustainability through responsible business, which means the company's responsibility and accountability not just for its financial performance (the "profit/bottom line" of traditional business), but also for its social and environmental impact (coined as people and planet line) (Francis & Pegg, 2020). This further supports the stakeholder theory proposition, introduced by R. Edward Freeman in the 1980s, that business consideration is anchored on stakeholders' value proposition, not just shareholders' returns, in their decision-making processes (Gbali et al., 2021). These theories' assumptions suggest that oil and gas companies' success is closely tied to the well-being of various stakeholders, including the communities and the environment itself. Businesses must recognize that they operate within a complex network of relationships and interactions, where the actions and decisions of community members can significantly impact their existence. By acknowledging that communities have legitimate claims on a company's resources and serving as partners in value creation, the TBL theory emphasizes pursuing long-term sustainability and ethical practices (Hirsch et al., 2023). This can build better relationships and ultimately improve business sustainability that covers people, profit, and the planet.

The concept of 3Ps is justified in CSI practices, especially as corporate scandals and criticisms have highlighted the importance of ethical business conduct. The 3Ps theory emphasizes the need for companies to consider not just financial gains but also the impact on people and the planet (Imoisi, 2022). From a profit perspective, CSI is seen as a necessary requirement for company development, as it can lead to responsible behavior and long-term profitability. However, the economic aspect of CSI goes beyond profit-making; it includes the direct and indirect economic impacts of a company's activities on the local community and other stakeholders. Muoboghare and Guanah, (2023) note that socially responsible companies can be profitable in the long term by saving costs and showing greater concern for their communities. However, the "people" aspect of CSI emphasizes the importance of society and the workforce in a company's success (Izidor, 2022). CSI serves to develop and maintain good relationships between companies and society, which is particularly important for energy companies and their relationship with local communities. Moreover, the "planet" aspect highlights the environmental responsibility of companies (Jackson, 2020). Thus, irresponsible use of natural resources, waste production, and pollution are major negative impacts of corporations. Moreover, environmentally responsible businesses should measure their environmental impact, minimize detrimental

effects, and seek win-win situations where both the company and the environment benefit. Through this, the company should avoid exploiting people, by aligning with the SDGs framework that showcases the need for firms to be environmentally responsible and contribute positively to society while maintaining profitability (Kalu & Ott, 2019).

2.3 Hypothesis Development

Traditional business priorities have focused on improving efficiency, increasing profits, and expanding globally through diversification and product differentiation. The evolving strategic thinking now requires integrating efforts that blend societal and environmental considerations into business decision-making processes. Significant research has been conducted on how CSI dimensions influence the community in question. Researchers have shown interest in examining the interplay between the regulation of CSI and value creation (Brammer et al., 2021; Saka-Helmhout et al., 2024). This contrasts with the findings of the CSI effect on human resources development (Soltani et al., 2024; Saeidi et al., 2022). However, researchers' focus on the developmental role of CSI from the perspectives of economic, legal, and ethical citizenship is limited within the Nigerian context (Simpson et al., 2020). Additionally, researchers' interest in exploring the key drivers of CSI in Multinational Corporations (MNCs), particularly from the stakeholder perspective, is less explored (Thompson et al., 2022). Szegedi et al., (2017) explored the role of foreign direct investment in improving social conditions through CSI and ethical business practices, while Strand et al., (2015) examined the existence of top management positions for CSR and how they affect CSR performance. Iborra and Riera, (2023) argued that CSI provided context and outcomes for leadership scholars, while leadership models could provide the processes of explaining CSR. Given this context, there is a need to test whether:

- H₁: Philanthropic CSI initiatives have no significant impact on the good health and wellbeing dimension (SDG 3) of the Niger Delta sustainable development goals in Nigeria,
- H₂: The ethical CSI initiative does not positively influence the responsible consumption and production dimension (SDG 12) of the Niger Delta sustainable development goals in Nigeria,

CSI research has transformed, shifting from theoretical development to a societal focus on its impact and benefits. Key themes in the literature are anchored on the relationship between CSI and competitive advantage (Herrera, 2015; Trinovianti & Ruslan, 2021), firm performance (Wei et al., 2020; Lenz et al., 2017). Scholars have also investigated stakeholders' perceptions of firms' CSI activities and its impact on business and productivity (Adekunle et al., 2024, Alhassan et al., 2021). Additionally, researchers have explored CSI reporting, social, and environmental reporting (Bian et al., 2021, Duttagupta et al., 2021), the effect of CSI on employee job satisfaction (Erhinyoja & Marcella, 2019; Harjoto et al., 2017; Harjoto et al., 2023). Scholars assess the link between CSI's stakeholder relationships and increased competitiveness (Jo & Harjoto, 2012; Kajola et al., 2023). Despite the descriptive value of this empirical evidence, the range of CSI research reflects the global nature of business, leaving room for its current focus on ethics and the dimensions of SDGs indices like poverty and social security and development (Odera, 2021). This aligns with Velte, (2022) opinion that scholars have paid scant attention to the SDGs index as a strategy for engaging stakeholders to ensure improved outcomes of CSI programs in Nigeria's energy industry. This is significant given the industry's importance as the mainstay of Nigeria's economy. Uduji and Okolo-Obasi, (2022) suggest that CSI policy reformation should address sustainable development, globalization, governance, and the social impact of corporate activities. Therefore, empirical testing is needed to determine whether:

- H₃: There is no significant relationship between the legal CSI initiative and the sustainable cities-communities (SDG 11) dimension of the Niger Delta sustainable development goals in Nigeria,
- H₄: Economic CSI initiative and decent work and economic growth dimension (SDG 8) of Niger Delta sustainable development goals in Nigeria have no significant relationship.

The hypothesized framework is crucial for several reasons. Firstly, it provides analytical evidence to either support or refute the common assumption that CSIs positively impact SDGs achievement in Nigeria. This is essential in the Niger Delta region, where CSIs are prevalent due to the region's socio-economic and environmental challenges (Pona et al., 2021). Secondly, the results can inform policy and practice, helping companies and policymakers understand which types of CSIs are most effective in contributing to specific SDGs. This knowledge can

assist businesses, policymakers, and other stakeholders in allocating resources effectively and implementing strategies that have the greatest impact on the community and the environment. Lastly, it adds to the academic literature, advancing the understanding of the complex relationship between CSIs and sustainable development in the Niger Delta and beyond.

3.0 Research Methodology

Online-based questionnaire survey was the adopted primary data-gathering method, which targeted members of the host communities in the Niger Delta region. This involved randomly approaching potential respondents via Google Form, ensuring voluntary participation with assurances of strict confidentiality and anonymity. The Niger Delta region was intentionally chosen for its diverse cross-section of the population, including potential first-time home users of SDGs initiative from various backgrounds, to ensure a representative sample. The questionnaire accommodated a five-point Likert rating scale ranging from "Strongly Support (SS)" rated as 5, "Support (S)" rated as 4, "Neutral (N)" rated as 3, "Oppose (O)" rated as 2, to "Strongly Oppose (SO)" rated as 1. This is ideal owed to Rice et al., (2017) emphasizes its ethical rigor and data validity. The survey method was then justified by its ability to reach a large sample size, its cost-effectiveness, and its suitability for studying widely dispersed populations like Niger Delta youth (Lefever et al., 2007). This aligned with its predefined response options allowed respondents to express their preferences, ensuring the acquisition of reliable and unbiased responses. This approach is ideal for accommodating a large number of participants while facilitating diverse and quantifiable data collection.

The Niger Delta region hosts approximately 70 oil and gas companies, with 18 categorized as Major Oil Companies (MOCs), employing around 10,000 individuals (Torty et al., 2023). In contrast, the Niger Delta host communities are home to an estimated 28.8 million people, with an almost equal gender distribution of 49.5% male and 50.5% female as of 2006. These communities also comprise 3462 community leaders, according to Torty et al., (2023). The selection of these respondents was based on their relevance to the research topic, given their interactions within the shared environment of the oil industry and the host communities. Their geographical location in the Niger Delta region and their involvement in similar business activities also justify their inclusion in the study. However, while the probabilistic sampling technique ensures equal sample representativeness, the study anchored on simple random sampling technique that

accurately reflects the specificity of the target population, thus enhancing the generalizability of the research findings. This approach is ideal as the researcher can estimate sample parameters with known probabilities, making the results statistically sound (Archaya et al., 2013). This thereby contributes significantly to the CSI research in the community development field. Consequently, the researcher determined the sample size adopting Yamane's formula (1973), at a 95% confidence interval level with a 0.05 precision level of significance:

Formula,
$$n = N / (1 + Ne^2)$$

Where: “n” = sample size, “N” = population, “e” = significance level (95% confidence level or 5% precision level).

$$“n” = 28.81m / (1 + 28.81m (0.05)^2) = 400 \text{ sample size}$$

The total sample size (n) = 500 sample size @ 25% tolerable errors

Partial Least Squares Structural Equation Modelling (PLS-SEM) is considered the most appropriate method for analysing the construct variables in this study, as recommended by Adzovie and Jibril, (2020). This choice is essential because the research framework is dimensional, constructed using composite indices measured as a second-order reflective construct. This enables the simultaneous examination of multiple structural equations, accommodating a large number of dependent and independent variables, and enabling the investigation of both direct and indirect effects, including the identification of mediating variables. Additionally, PLS-SEM allows for the assessment of construct reliability and validity through statistical tools such as mean, median, adjusted regression (R^2), and correlation statistics. This is true as it does not require data normality and can handle large sample sizes, making it an appropriate choice for this study. Consequently, the research analysis is guided by the PLS-SEM assumptions anchored on linearity, reflective measurement model, data interval and ordinal, sample size adequacy, reliability and validity of the indicators, normal distribution of the residuals, and model invariance across groups.

4.0 Result Presentation and Discussion of Findings

The study collected 460 electronic responses through a Google Form from members of host communities in the Niger Delta, which accounts for 92% of the estimated sample size. This can significantly impact the generalizability of findings, as there may be a risk of underrepresentation or bias, potentially leading to skewed results and limiting the ability to apply findings to the broader population accurately. Thus, analysis and result presentation are based on the 460 responses received. The data was then analysed using the partial least squares

equation supported by structural equation modelling, with Smart-PLS 3.2.8 utilized for preliminary analysis and data screening. This included verifying and addressing missing values, outliers, normality tests, common method variance, and multicollinearity tests. These tests ensured that the data was cleaned and ready for further investigation. Finally, Smart-PLS 3.2.8 structural equation modelling was used to build the measurement model and the path modelling. This approach was chosen for its adaptability in terms of distribution and research population, as well as its ability to correct for potential mistakes that could lead to under or overestimation of relationships among the construct (Sarstedt et al., 2017). Consequently, the research analysis is guided by the PLS-SEM assumptions anchored on linearity, multivariate normality, and path measurement model specification.

A) Measurement Model

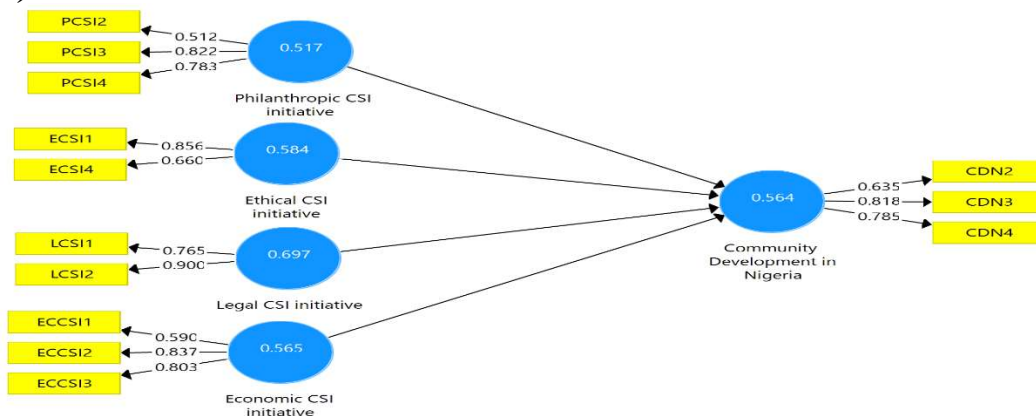


Figure 1: Construct Measurement Model (Smart-PLS, 2024)

Figure 1 showcases the measurement model's validity and reliability, assessed for internal consistencies, convergent, and discriminant validities as proposed by Sohaib et al., (2019) and Henseler et al., (2015). The research found that Cronbach's reliability and internal consistencies, measured by composite reliability, exceeded the recommended threshold of 0.70, aligning with Cheung et al (2023) recommendation to retain construct items with loadings above 0.4 for reliability and discard those below this threshold. Additionally, correlations between variables were lower than the square root of the average variance extracted (AVE), indicating suitable discriminant validity. All variables had AVE values exceeding the suggested threshold of 0.50 (Shrestha, 2021). The Variance

Inflation Factor (VIF) for all indicators exceeded the threshold value of 3.3, indicating a successful collinearity test with no bias (O'brien, 2007). These results are summarized in Table 1, presenting the measurement model outcomes:

Table 1: Internal Consistency and Reliability

	Cronbach's Alpha	Composite Reliability	AVE	Discriminant Validity	HT MT	Loading	Cross Loading
Sustainable Development (SDGs)	0.682	0.793	0.564	0.751	0.651	0.746	0.752
Economic CSI	0.694	0.792	0.565	0.752	0.674	0.743	0.743
Ethical CSI	0.701	0.734	0.584	0.764	0.706	0.758	0.758
Legal CSI	0.688	0.821	0.697	0.835	0.737	0.833	0.92
Philanthropic CSI	0.731	0.756	0.517	0.719	0.681	0.706	0.706

Source: Smart-PLS (2024)

Table 1 shows the Cronbach's Alpha values ranging from 0.734 to 0.821, indicating good internal consistency reliability as they exceed the recommended threshold of 0.7 noted by Leong et al. (2015). The Composite Reliability values range from 0.564 to 0.697, also indicating acceptable internal consistency. However, the Average Variance Extracted (AVE) values range from 0.517 to 0.584, which are above the recommended threshold of 0.5 as noted by Chan and Chong (2012), suggesting that the constructs have adequate convergent validity. This suggests that while the constructs demonstrate good internal consistency reliability, there are no issues with convergent validity. Therefore, researchers need not reconsider the measurement model and potentially revise the items or constructs to improve the model's validity. However, the discriminant validity analysis using the Fornell-Larcker approach, which assesses whether different constructs or variables in the research are distinct from each other (Henseler et al., 2015), shows the bolded diagonal values in Table 1 are higher than the correlations between constructs, indicating good discriminant validity. This suggests that the constructs (Philanthropic CSI, Community Development in Nigeria, Economic CSI, Ethical CSI, and Legal CSI) are distinct from each other. Researchers can therefore be confident that these constructs are measuring unique aspects of CSI, allowing for a more accurate understanding of the impact of different types of CSI initiatives on sustainable development outcomes like decent work and economic growth, good health and wellbeing, and responsible consumption and production. This implies that companies should consider

implementing a variety of CSI initiatives to address various societal needs and enhance their overall social impact.

Cross-loading assesses the load of items onto multiple factors, with a threshold of 0.3 considered significant for the relationship factor, as suggested by Sarstedt et al., (2017). Table 1 shows load and cross-load items above 0.3, implying a significant relationship factor. For instance, ethical CSI initiative (E-CSI) items have a loading of 0.635 on sustainable development (SDGs), which is above 0.3, showcasing relationship factors. This suggests that E-CSI is not specific to the SDGs factor and may also be relevant to other initiatives, indicating that the items may not be as distinct or unique to a single factor as empirically thought, showcasing no overlap or ambiguity in the underlying constructs being measured. Thus, researchers can statistically capture the underlying relationships between items and factors. Finally, Heterotrait-Monotrait Ratio (HTMT) values assess the correlations between the research constructs, indicating that the inter-correlations between constructs are all below the conservative threshold of 0.85, as suggested by Shrestha (2021). This suggests that the constructs have discriminant validity, meaning they represent conceptually different ideas, implying that the construct in question is distinct and does not overlap or share similarities with the other constructs in question.

B) Structural Equation Modelling

The PLS-SEM model was used to examine four hypothesized relationships, with a bootstrapping procedure of 10,000 iterations confirming the relationships between predictor and criterion variables. The study also assessed effect size (F^2), predictive relevance (Q^2), and coefficient of determination (R^2). These statistical measures are crucial for several reasons. Firstly, effect size (F^2) provides insights into the strength of the relationships between variables, helping researchers determine the practical significance of their findings (Kurt et al., 2020). Secondly, predictive relevance (Q^2) indicates the model's ability to predict outcomes, offering valuable information about its reliability and validity (Hang et al., 2022). Lastly, the coefficient of determination (R^2) quantifies the proportion of variance in the dependent variable that is predictable from the independent variables, aiding in the understanding of the model's overall explanatory power (Yamin, 2020). In overall, these measures contribute to the robustness and credibility of the research findings, enhancing their relevance and applicability in the management literature.

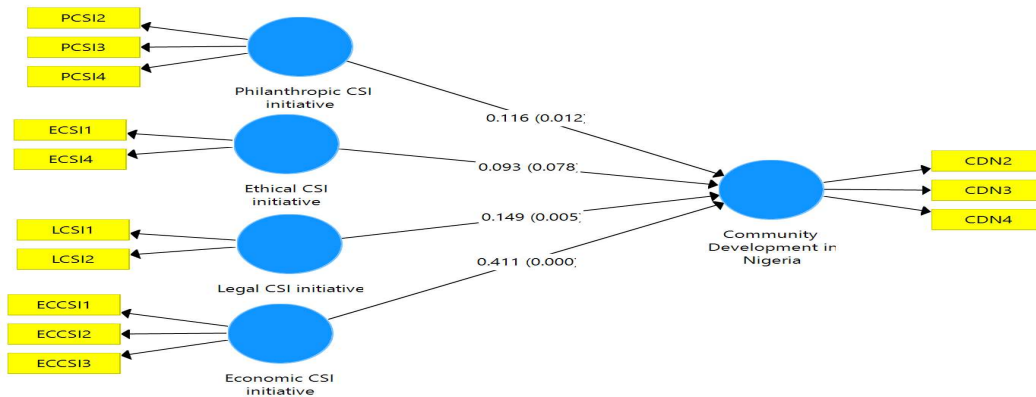


Figure 2: PLS-SEM Equation Model (Smart-PLS, 2024)

As shown in Figure 2, using a significance level threshold of 5% (equivalent to a value of 1.96), the results indicate that approximately 38.9% of CSI initiatives have had a positive impact on the sustainable development of communities in the Niger Delta region. This percentage, which falls within the range of 0 to 1 as suggested by Zabukovšek et al., (2019), represents the proportion of CSI initiatives that have led to an increase in sustainable development. However, Table 2 showcases that the positive value of beta indicates that a 1% increase in CSI initiatives corresponds to a 38.9% increase in sustainable development in the Niger Delta communities. This suggests a strong positive relationship between the two variables, highlighting the significant impact that CSI initiatives can have on sustainable development outcomes. This suggests that increasing investment in CSI initiatives can lead to substantial improvements in the sustainable development of communities in the Niger Delta region. This underscores the importance of continued and possibly expanded efforts in this area, as it has the potential to drive meaningful and positive change in the region.

Table 2: Bootstrapping Results of Hypothesis Testing

Hypothesis	R ²	Adjusted (R ²)	Q ²	F ²	Beta	Standard Error	T Value	P Value	Effect
SDGs	0.389	0.383	0.204						
H ₁				0.016	0.562	0.198	0.012	0.016	Small
H ₂				0.182	0.424	0.241	0.078	0.093	Large
H ₃				0.008	0.430	0.178	0.005	0.149	Small
H ₄				0.022	0.382	0.274	0.000	0.411	Moderate

Source: Smart-PLS (2024)

As different effect sizes are used to describe the strength of variable relationships, Correll et al., (2020) notion that the effect size values of 0.02, 0.15, and 0.35 are considered small, medium, and large effects respectively. Table 2 illustrates that the effects sizes for the relationships among the research variables of H₁ and H₃ are deemed small, while H₂ exhibits a large effect size, and H₄ shows moderate effect. This notion significant relationship between CSI initiatives and SDGs of Niger Delta communities. However, according to Henseler et al., (2015) presumption that a Q² score of 0 or below indicates a lack of practical utility in the model. Thus, the research Q² value of 0.204 in Table 2 suggests that the model does have practical utility. This implies that the continuous efforts of oil and gas firms through CSI initiatives in the Nigerian energy industry could positively contribute to the achievement of SDGs in the Niger Delta communities.

C) Discussion of Findings and Result Implication

The 17th century efforts of oil exploration in Nigeria have had profound social, political, and economic implications on both the Nigerian states and the state-society dynamic (Ebimobowei, 2022). This has led to a significant scholarly interest in the concept of CSI as an industrial weapon, strategy and tools to foster sustainable development, particularly in the Niger Delta region. Despite this focus, CSI and SDGs practices in Nigeria's oil and gas sector show a low adoption rate as only 35% of Nigerian companies publish sustainability reports annually. This well below the global average of 72%, despite 94% of companies having established CSI initiatives anchored on three pillars of community: profit, people and planet. However, despite the substantial loss of over \$16 billion in government revenue due to non-transparent and corrupt practices in the industry, only a mere 27% of these initiatives are fully integrated into their business strategies. This business philosophical stance has led to the sector lacking a clearly defined CSI and sustainability policy, with no dedicated individual and

government departments responsible for implementing CSI and SDGs reporting policies in Niger Delta. In the modern age of technology, there has been a noticeable shift from a sole focus on maximizing profits to a greater awareness of social responsibilities among businesses. This shift compels business managers to consider the impact of their organizational endeavors on the sustainable development of all stakeholders, especially in the Niger Delta community. Consequently, while contrary to the research hypothesis, the research discovered that the implementation of CSI initiatives by Nigeria energy companies has had a positive and significant impact on sustainable development in the Niger Delta community. This finding is consistent with previous literature on CSI and community development (Gulakov, Vanclay, & Arts, 2020; Lefike et al., 2023; Emeka-Okoli et al., 2024; Nthoi-Molefe, 2021; Pasaribu Vanclay, & Zhao, 2020; Prabawani et al., 2023; Makuyana & Nzo, 2022; Guyalo et al., 2022; Makhavhu, Swanepoel, & Venter, 2022). For example, Makhavhu et al., (2022) discovered that CSI projects tend to align with the business strategies of the corporations and target community needs that fit the corporate's area of focus. This aligns with Gulakov et al., (2020) perspective that effective CSI strategies in the oil and gas industry involve a combination of financial investment, stakeholder engagement, and sustainable development practices that prioritize long-term partnerships with local communities and actively involve them in decision-making processes. This tends to achieve better outcomes in terms of social and environmental impact. Therefore, the positive impact of CSI activities extends beyond economic benefits to include philanthropic, ethical, and legal duties to society, and fostering overall sustainable development in Niger Delta community.

The research offered several implications across theoretical, empirical, and managerial aspects of CSI initiative and SDGs performance index in Nigeria. Theoretically, the findings challenge the conventional assumption that profit-maximizing strategies are the primary focus of businesses, especially in resource-rich but socially and environmentally vulnerable regions like the Niger Delta. The research underscores a shift towards a more holistic business approach that considers the social and environmental impacts of corporate activities. This aligns with stakeholder theory, which suggests that businesses should consider the interests of all stakeholders, including communities impacted by their operations. Empirically, the research contributes to the growing body of literature on CSI, SDGs, and community development in the context of the oil and gas industry. By highlighting the effect of hypothesis development, the research provides empirical

evidence that such initiatives can be effective in addressing social and environmental challenges in resource-rich regions.

5.0 Conclusion and Recommendations

While facing social criticism including limited practice, corruption, and lack of reporting framework, CSI remains a valuable tool for managerial organizations, allowing the consideration of broader societal impact of their actions, recognizing the interconnectedness between corporations and society. By promoting environmental consciousness, recognizing resource limitations, and enhancing transparency in operations, the research underscore the CSI contribution to sustaining the past, present, and future generations of the Niger Delta community. Modern business managers are urged to integrate CSI principles into their strategies, as this can benefit both their companies and society. These principles, which encompass economic (profit), environmental (planet), and social (people) sustainability, should be woven into top management's competitive strategies. By doing so, companies not only enhance their corporate citizenship but also foster loyalty from customers, employees, and stakeholders. For energy companies, particularly in the Niger Delta region, embracing CSI dimensions is crucial for sustainable development. The statistically significant impact of these dimensions on sustainable development underscores the importance of adhering to CSI principles. Consistency in providing CSI initiatives is vital for meeting community expectations and fostering a positive perception. This consistency, coupled with adherence to CSI standards, can significantly improve the relationship between companies and the communities they operate in. Therefore, CSI managers should uphold these standards, project the corporation's image effectively, and consistently reinforce the company's positive image in the eyes of stakeholders. The below action plans should be fostered:

Managerially, the research suggests that Nigerian energy companies should prioritize the integration of CSI initiatives into their business strategies. This includes aligning CSI projects with corporate goals, engaging stakeholders, and adopting sustainable development practices. It also emphasizes the importance of transparency and accountability in reporting CSI activities, as this can enhance the credibility and effectiveness of such initiatives. Overall, the research underscores the potential for CSI initiatives to contribute to sustainable development in resource-rich regions like the Niger Delta. It suggests that by embracing a more holistic approach to business, Nigerian energy companies can not only improve

their social and environmental impact but also enhance their long-term sustainability and reputation.

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Does Independent Directors Influence Dividend Pay-out?

Muhammad Salisu¹ & Sunusi Ridwan Ayagi²

^{1,2}Department of Accounting, Bayero University Kano

Correspondence: msalisu.acc@buk.edu.ng

Abstract

Dividend is one of the major factors considered by investors /shareholders in their investment decision, however, dividend decision being a sole responsibility of the board would be influenced by the nature of independence of the board. This study aims to evaluate how the independence of bank boards affects dividend payout decisions with reference to listed deposit money banks in Nigeria. The study extracted secondary data from annual reports and accounts of listed DMBs for a period of 10 years (2012 – 2021) relating to the dependent (Dividend payout ratio) and explanatory variable (outside directors). We analysed the data using descriptive statistics, correlation and GLS regression analyses. The result indicates that independent directors adversely influence dividend pay-out out to shareholders by -81%. This means that outside directors on banks board are strongly oppose to paying dividend supporting the substitution hypothesis, which posits that dividends substitute for independent directors on the board. This evidence implies that shareholders of DMBs that are more interested in dividend income can influence the chances of dividend payment by lowering the number of independent directors in the board. Hence, these findings underscore the need for policy revisions regarding board composition to balance director independence with shareholder dividend preferences.

Keywords: Dividend Policy, Independent Directors, Board Independence.

1. Introduction

Poor governance persuaded by deficiency of independence of board recently perceived in the Nigerian banking Industry expedite managers' opportunistic behaviour at the expense of owners and depositors, hence, shareholders and potential investors look into a firms' capability to pay dividend, while taking their investment decision. Therefore, dividend pay-out becomes essential factor in the investment decision of investors who value more dividend than capital appreciation/accumulation. A high and regular corporate dividend pay-out indicates that the company is doing well. However, accounting theories provide various explanations on the reasons for stable dividend pay-out of firms. Lintner (1962) and Gordon (1962)'s Bird-in-the hand theory suggests that investors prefer to have one bird in the hand (dividend), rather than two in the bush (capital gains), implying that investors prefer dividend paying stock since dividend payment from a stock is less uncertain than the promise of a capital gain in the future.

In addition, Jensen and Meckling (1976) advanced Agency theory highlighting the conflict of interest between principals (the shareholders) and agents (management) due to the fact that management is entrusted with the power and authority to act on behalf of the shareholders. Agency cost arises when managers increase their own benefits at the expense of the principals. They further stated that the principal can limit the agency problem by monitoring and establishing appropriate incentives for the agent. Later on, Jensen (1986) came up with free cash flow hypothesis which suggests that dividend could work as a proxy for monitoring as it would limit the firm's resources and thereby limit the manager's power, as managers have incentives to grow their firms beyond their optimal size by overinvesting. Therefore, paying dividends can be a way for firms to mitigate the manager's power as well as reduce the risk of making unprofitable investments with the excess cash. Managers of a poor independent board might engage in rent extraction. Thus, dividend reduces this free cash flow. Board Independence is the disposition of the boards to monitor management, a greater percentage of non-executives or outside directors on a board ensures better monitoring of the agent thereby safeguarding the common interest of the principals particularly on financial decision like dividend payment.

Baker and Wurgler (2004) articulated a dividend catering theory based on three postulates. Firstly, it posits a source of uninformed investor demand for firms that pay cash dividends. Secondly, limits on arbitrage allow this demand to affect current share prices. Thirdly, managers rationally weigh the short run benefits of catering to the current mispricing against the long run costs and then make the dividend payment decision. They argue that investor demand for dividend-paying stocks is time-varying, thereby causing the relative prices of dividend-paying and non-dividend-paying stocks to fluctuate (assuming arbitrage limits). As a result, managers and the board cater to investor demand for dividends by paying dividends when investors place a premium on dividend-paying stocks, and vice versa. Dividend pay-out policy is simply about the decision on whether to retain part of a company's earnings for further investment or distribute among shareholders as dividend.

Nevertheless, prior literature reports various factors within the management and the board that actually play a pivotal role in paying dividend to shareholders. The findings of various prior studies like Yarram and Dollery (2015), Sakr, Gawad, and Soliman (2016) (Dissanayake and Dissabandara (2021) Saliya (2022) show a strong link between corporate governance mechanisms and dividend pay-out

policy. However, those studies did not isolate independence of board as a singular pointer of overall boards' strength mechanism, hence, this study attempts to specifically evaluate the impact of board independence on the dividend pay-out with reference to the Nigerian deposit money banks. Nigerian deposit money banks are selected for the fact that there were various reports pointing at misconduct in the board of the Nigerian deposit money banks.

According to Sanusi (2010), governance malpractice within the boards of Nigerian became a way of life in a large part of the sector, enriching a few at the expense of many depositors and investors. He further reiterates that governance in many banks failed largely due to the fact that boards ignore good governance practices because they are "misled by executive management" and involve themselves in opportunistic behaviour at the expense of owners and depositors. In addition, Obi and Uwandu (2015) identify poor corporate governance as a dominant negative force against the performance and profitability of banks operating in Nigeria. More so, Oji (2018) reports that the main challenge facing the Nigerian banking industry is the conduct of directors and managers of the financial Industry. Therefore, understanding the role of board independence in the Nigerian banking industry can lead to more effective governance and financial strategies. Hence, the choice Nigerian banking industry as a good setting for investigating the influence of board in dividend pay-out policy.

Specifically, this study aimed to evaluate the relationship between board Independence and dividend pay-out with reference to listed deposit money banks in Nigeria. In line with the specific objective of the study the following hypothesis have been formulated in null form:

H_0 : Board independence has no significant influence on dividend pay-out of listed deposit money banks in Nigeria.

The study contributes to the existing body of literature particularly by exploring and describing the effect of board Independence on dividend pay-out of the Listed DMBs in Nigeria. The result of the study provides additional explanation about the will of independence to meet the desire of investors on increased dividend pay-out in the Nigerian banking industry. In addition, the study will be useful to authorities like Corporate Affairs Commission (CAC) is formulating policies that will better align the interest of the principals (shareholders) with that of the agents (Board and the managers). The study will particularly assist CBN in formulating

policies that will address the corporate governance challenges in Nigerian banks and prevent the failure of banks thereby enhancing investors' confidence as well as ensuring banking stability.

2.0 Literature Review

2.1 Concept of dividend and dividend pay-out policy

Dividend is simply the money that a company pays out to its shareholders from the profits it has made (Kinfu, 2011). Such payments can be made in cash or by issuing of additional shares as in script dividend. Davies and Pain (2002) define dividend as the amount payable to shareholders from profit or distributable reserves. Companies usually pay out dividends on a quarterly, semi-annual or annual bases. The semi-annual or quarterly payment is referred to as the interim dividend. Dividends are normally paid after the corporate tax has been deducted. Dividend pay-out policy refers to a decision on whether to retain part of a company's earnings to reinvest or distribute among shareholders. In other words, dividend pay-out policy involves decisions on how much and when earnings should be paid as dividends. In a nutshell, dividend policy pay-out refers to the allocation of earnings between payments to shareholders and retained earnings.

2.2 Concept of board independence

Independence reflects the willingness of the boards to monitor management (Adams, Hermalin, & Weisbach, 2010). This feature of the board is largely unobservable but has been most commonly proxied by looking at the appropriate mix of executive and non-executive directors sitting on a board (Dalton, Daily, Johnson, & Ellstrand, 1999). The emphasis on having a board with more non-executive directors (NEDs) stems from a theoretical argument which states that a board dominated by executive directors (insiders) is likely to facilitate actions by management that are most favourable for management as opposed to shareholders. Therefore, theoretically, a greater percentage of non-executives or outside directors on a board ensures better monitoring of the agent thereby safeguarding the common interest of the principals particularly on financial decision like dividend payment. Given this perspective, board independence requirements linked to the number of NEDs on a board feature prominently in the various codes of corporate governance. For instance, Section 4.3 of the Securities and Exchange Commission (SEC) code of corporate governance (2009) for all public listed entities in Nigeria states that "the Board should comprise a mix of executive and non-executive directors. The majority of members should be non-executive directors, at least one of whom should be independent director".

Furthermore, Section 5.4 (a) states that NEDs should bring independent judgement as well as necessary scrutiny to the proposals and actions of management and executives especially on issues of strategy, performance evaluation and key appointments.

Likewise, Section 2.2.3 of the CBN Code of Corporate Governance for Banks and Discount Houses in Nigeria (2014) categorically states that “the board shall consist of Executive and Non-Executive Directors. The number of Non-Executive Directors shall be more than that of Executive Directors”. All these are to ensure that the board performed its monitoring function efficiently.

2.3 Review Related Empirical Literature

2.3.1 Board Independence and Dividend Pay-out Policy:

Non-executive directors are believed to be more independent and, therefore, better able to protect the interests of the shareholders. More so, as indicated by Belden, Fister, and Knapp (2005), it is assumed that agency cost in a firm tends to reduce with the non-executive directors on the company board and so dividends increase. However, some prior empirical literatures suggest that strongly independent board limit the amount of dividend pay-out to shareholders.

On one hand, some studies reported a negative effect of board independence on dividend payout policy, for instance, Al-Najjar and Hussainey (2009) examined whether the number of independent directors on the board and dividend pay-out are substitutes or complements mechanisms applied by UK firms to control agency conflicts of interest within the firm. The study used tobit and logit regression models to examine the extent to which firms with a majority of outside directors on their boards experience significantly lower or higher dividend pay-out. The study revealed that dividend pay-out is negatively associated with the number of outside directors on the boards. This result suggests that firms pay lower dividends when higher number of outside directors is employed on the board. Similarly, Sharma (2011) reported that companies pay a lower dividend when the rate of independent directors is higher in the boardroom. Hence, independent directors can effectively limit dividend policies that only meet the interests of management and other stakeholders at the expense of shareholders. This indicates an inverse association between the rate of dividend pay-out and board independence. More so, Elmagrhi et al., (2017) opined that strengthening the independence position of the board reduces the demand for dividends. Likewise, Thompson and Manu (2020) examines the

importance of board characteristics in determining dividend policy. The results of the study show that board independent chair have a negative significant effect on the likelihood of dividend declaration.

In addition, Tahir, Rahman, and Masri (2020) investigate factors that determine dividend pay-out policy in Malaysia. Study reported a negative relationship between board independence and dividend pay-out policy. Lastly, Dissanayake and Dissabandara (2021) investigated the nature and a level of the relationship between board characteristics and dividend policy their results indicate that there is no significant relationship between board characteristics and the level of dividend payment for the selected sample.

On the other hand, Setia-Atmaja, Tanewski, and Skully's (2009) investigated whether corporate governance affect the firm's pay-out ratio. The findings show that board independence is positively associated with dividend pay-out. This implies that, independent directors seem to influence boards to pay higher dividends to shareholders. In the same vein, Abor and Fiador (2013) examined the effect of corporate governance on firms' dividend pay-out policy in sub-Saharan Africa. The findings show that board composition among other board structure variables exhibit significantly positive relationship with dividend pay-out in South Africa, Kenya and Ghana respectively. More so Nuhu (2014) examined the factors that determine dividend pay-out in Ghana and reports that board independence is positively associated to dividend pay-out in Ghana. The implication of these results is that independent boards are more like to pay dividend. Likewise, Yarram and Dallery (2015), Alias, Yaacob, Rahim and Nor (2016), Shafana and Mgh (2019) and Tahir, Masri and Rahman (2020) examined the effects of board Independence on dividend payout. Generally, the results indicate that independent directors positively impact on dividend payment. Overall, these results suggest that large number of independent directors in the board of directors benefits the firms in the use of free cash flow, leading to an increase in distributable income to shareholders.

Therefore, from the foregoing, it can be deduced that prior empirical studies on board independence and dividend pay-out reported inconsistent results, some studies reported a direct relationship between board independence and dividend pay-out which is consistent with agency cost theory, while others reported an inverse relationship, hence, this study aimed to examine the relationship between

board independence and dividend pay-out in the context of Nigerian deposit money banks.

In addition, this also indicates that some corporate board traits disrupt the dividend decision of firms. But specifically, how does board Independence or outside influences dividend payout decision within the Nigerian banking industry? Our study attempts to provide explanations in the context of Nigerian Banking Industry.

3.0 Research Method

3.1 Sample Description

This study adopts quantitative approach with the population comprising of fifteen (15) listed Deposit Money Banks (DMBs) that operated over the period of 2012-2021. The study employs two-point filter to arrive at the sample of the study. Thus, for a bank to be included in the sample it must be listed on the Nigerian Stock Exchange throughout the period under study (2011-2021) without being delisted. This is to ensure that the banks' annual reports and accounts cover the period under study in order to avoid missing variables. Ja'iz bank was established in 2011 and registered for regional banking until 2016 when it transformed to national banking, hence, Ja'iz bank did not meet the criteria as a result, it is filtered out. Polaris bank was established in 2018, thus the bank does not have the available data to fit into the sample. After adherence to these criteria, 13 banks emerged as the sample.

Secondary source of data were used for the study. The data was extracted from the annual report and accounts of the sampled banks over the study period. The study has three types of variables, namely: Dependent variable, the independent variable as well as the control variables.

3.2 Variables of the study and their measurements

Dependent Variable: Dividend pay-out is the dependent variable. Several measures were used by previous studies to proxy dividend pay-out. This study used two different proxies, dividend pay-out ratio and dividend per share.

i. Dividend pay-out ratio: This is the proportion of the company's earning that is distributed to shareholders. In other words, this ratio shows the portion of profits the company decides to keep funding operations and the portion of profits that is given to its shareholders. Dividend pay-out ratio is measured as the amount of

cash dividends declared during the year divided by profit before interest and tax of the year. This measure was used by Manneh (2014) and Chidoziem and Ndubuisi (2017).

ii. Dividend per share: This is the dividend for every ordinary share outstanding. Dividend per share is measured as the total dividend declared and paid by a business, including interim dividends, divided by the number of outstanding ordinary shares. Studies like Ibrahim and Sa'idu (2015), Alias et al. (2016) and Adebayo and Olatunji (2018) used this measure to proxy dividend policy.

Independent Variable

The independent variable of the study is Board Independence. It is measured as the mix of executive and non-executive directors sitting on a board. That is, the number of non-executive directors divided by the total number of directors sitting on the board. This measure was used by Dalton et al. (1999), Beiner et al. (2004), Adams et al. (2010) and Mohammed (2017).

Control Variables

Previous studies recognized the use of some firm specific features as control variables due to their direct effect on dividend payout. Chidoziem and Ndubuisi (2017) for instance use firm size, Leverage as control variables, while investigating the effect of taxation on dividend policy of quoted Deposit Money Banks in Nigerian. In addition, Adebayo and Olatunji (2018) used firm size, while Hassan, Tanveer, Siddique and Mudasar (2013) used firm size and profitability as control variables in their studies. Thus, this study used firm size; profitability and leverage as control variables.

Firm Size: Firm Size is measured by taking the log of total assets. This measure is in line with Gul and Ahmad (2012) and Hassan et al. (2013)

Profitability: Profitability is proxied using Return on assets which is measured as profit before tax divided by the total assets. Gul and Ahmad (2012) and Hassan et al. (2013), Ribeiro, Cerqueira, and Brandão (2015) and Salaudeen and Eze (2018) used ROA to proxy profitability.

Leverage: Leverage is calculated as total debt (long and short term debt) divided by total assets as used by Gul and Ahmad (2012), Pilos (2017) and Ribeiro et al. (2015).

Firms size, profitability and leverage are used as control variables, due to the fact that they were reported to have a significant influence on the dependent variable (dividend pay-out), hence the need to control for their influence.

3.3 Methods of Data analysis

The data generated for the study was analyzed using three statistical techniques, namely: descriptive statistics, correlation and multiple regressions. As a result of the longitudinal nature of the data, panel data regression was used to analyze the data and test the hypotheses of the study. OLS and GLS were used based on the result of different post estimation tests which include multicollinearity, heteroscedasticity, normality test of the variables and error estimation term, others are; Hausman specification and Breuch and Pagan Lagrangian multiplier test for random effects.

Models specification

The model is basically the panel econometric model which includes the dependent variable, the independent variables and the control variables. The model is stated as follows:

$$DP_{it} = \alpha_{it} + \beta_1 BI_{it} + \beta_2 ROA_{it} + \beta_3 FS_{it} + \beta_4 FL_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where:

DP_{it} = Dividend pay-out for firm i in period t

BI_{it} = Board Independence for firm i in period t

ROA_{it} = Return on Asset for firm i in period t

FS_{it} = Firm Size for firm i in period t

FL_{it} = Firm Leverage for firm i in period t

4.0 Results and Discussion

4.1 Descriptive Statistics Result

Table 1 shows the summary statistics of the study variables. To clearly understand their central tendency and spread/dispersion around the mean, the table presents their mean, standard deviation, minimum and maximum.

Table 1 : Descriptive statistics

Variable	N	Mean	StDev	Min	Max	VIF
DPR	130	0.31	0.35	0.00	1.94	

DPS	130	0.93	1.45	0.00	6.60	
BI	130	0.60	0.14	0.27	0.92	1.39
FS	130	1.73trn	1.89trn	70.25bn	10.04trn	1.44
ROA	130	0.03	0.52	-0.12	0.3	1.44
LEV	130	0.12	0.14	0.00	0.63	1.21

Source: STATA 15.0 outputs based on data generated (2011 - 2020)

From Table 1 it can be observed that the study has 130 observations, which means there is no missing value for all the study variables over the period of study. FCMB accounts for the maximum value of dividend payout ratio (DPR) of 1.94 which is nearly 200% in 2015 though the reported profit was ₦2.548bn. This means that the banks had to use part of its reserve to supplement the dividend payment. The minimum value for DPR (0.00) was recorded by many banks in several years indicating that no dividend was paid for those years. The deviation is 0.42 which means there is moderate spread for DPR from one and other and from the mean (0.37).

Zenith recorded the maximum value of dividend per share (DPS) of ₦5.60 naira in 2019. The minimum value for DPS (0.00) was recorded in some periods indicates that those banks did not pay dividend in those periods. The standard deviation reported was 1.25, which indicates a wide spread for DPS from one and other and from the mean (0.88).

Regarding board independence (BI) which refers to the ratio of non-executive directors (NEDs) to total number of directors, Table 1 shows that on average, non-executive directors account for 60% of the total board members which is consistent with the requirement of SEC (2009) that majority of members should be non-executive directors expecting that NEDs should bring independent judgment as well as necessary scrutiny to the proposals and actions of management. However, the standard deviation of 0.14 suggests that BI is not widely dispersed among the banks. This is evidenced from the minimum value for BI (27%) and the maximum of 0.92%. The NED's minimum ratio of 27% indicates small number of NED on a Board. This happens once with UBA in 2017 and 2018.

For the firm size (FS) Table 1 shows 70.25bn and 10.04trn as the minimum and maximum values respectively. The mean value is 1.73trn while the standard deviation stands at 1.89trn. This result suggests that there is a high variation of the

FS across the Deposit Money banks. The substantial variation in FS, indicated by a standard deviation that nearly matches the mean, suggests significant differences in the scale of operations across banks, which could affect their financial strategies including dividend payouts.

For return on asset (ROA) which is the control variable for financial performance/profitability, the table shows an average of about 3%. Stanbic IBTC recorded the highest profitability/performance in the study period as it recorded the maximum value of ROA of 30% in 2017. Union bank recorded the minimum ROA of -12% due to the net loss reported in 2011. The value of the standard deviation (0.50) implies a relatively wide dispersion around the mean (0.03). This means the profitability/performance of the DMBs is nearly consistent across the banks. Finally, for the leverage (LEV) the result provides that, on average the debt to asset ratio stands at 12% with a minimum of 0% and maximum of about 63% recorded by UBA in 2019.

The results of VIF and tolerance tests presented for all the study variables, show the maximum value for VIF is 1.74 and minimum value for tolerance is 57%. The mean VIF is 1.34. This suggests absence of multicollinearity among the independent variables in the models.

4.2 Correlation Matrix

Correlation was used in this study to determine the direction of relationship between dependent and explanatory variables of the study. Table 2 presents the spearman correlation matrix. The choice of the spearman was informed by the result of Skewness and Kurtosis test (Jacque-Bera Test) and Shapiro-Wilk tests for normality, which indicates that some of the values of the study variables are not normality distributed. The values of the spearman correlation coefficients range from -1 to 1. While -1 means strong negative relationship, 1 indicates strong positive relationship. Moderate, weak and no relationship at all lie in between -1 and +1.

Table 2: Pearson Correlation Matrix of the Variables

	Dpr	Dps	Aetr	Lrcetr	Tpocf	Bs	Bi	Bgd	Fs	Roa	Lev
Dpr	1										
Dps	0.37	1									
Bi	0.08	-0.02	0.17	-0.01	0.00	-0.48	1				

Fs	-0.08	0.33	0.07	-0.07	0.09	0.40	-0.2	0.11	1		
Roa	0.23	0.35	0.23	-0.03	0.18	-0.21	0.3	0.35	-0.29	1	
Lev	-0.24	-0.19	-0.15	0.01	-0.05	0.11	-0.2	-0.31	0.05	-0.23	1

Source: STATA 15.0 outputs based on data generated (2011 - 2020)

BI has a positive coefficient with DPR, 8%. The low correlation coefficient between board independence (BI) and dividend payout ratio (DPR) suggests a weak direct link. Also, BI shows a very weak but negative relationship with DPS. This weak relationship implies that possibly other factors such as macroeconomic conditions and/or government regulations are mediating or moderating the relationship. BGD and the ratio of out-side directors BI move in the same direction with the DPR. LEV on the other hand has a negative coefficient with DPR an indication of inverse relationship between leverage and DPR. Suggesting that increased leverage might constrain dividend payouts due to higher debt obligations. Table 2 also shows a negative association between FS and DPR. However, ROA has positive association with DPR. BI and leverage are negatively related with DPS indicating that changes in any of those variables goes with change in DPS in opposite direction.

4.3 Regression Results

Table 3: FGLS Regression Result for Direct Relationship

Variables	Model 1 (DPR)			Model 2 (DPS)		
	Coef.	Z	P> z	Coef.	Z	P> z
Constant	-0.049	-0.11	0.912	-3.985***	-2.62	0.009
Independent Var.						
BI	-0.151	-1.47	0.143	-0.801***	-3.92	0.000
Control Variables						
FS	0.019	0.53	0.598	0.357***	2.62	0.009
ROA	0.351	1.26	0.206	7.578***	8.72	0.000
LEV	-0.246***	-2.65	0.008	-3.984***	-2.62	0.009
Obs	130			130		
Wald chi2(7)	52.73			127.19		
Prob>chi2	0.000			0.000		

Panels	Heteroskedastic with cross-sectional correlation
Correlation	Panel-specific AR(1)

Source: STATA 15.0 outputs based on data generated (2011 - 2020)

*,** and *** mean significant at 10% , 5% and 1 level respectively

From the FGLS result presented in Table 3, the Wald χ^2 is far greater than two and is significant at 1%, which suggests that the model is fit to estimate the relationship between dependent variable and the independent variables.

The relationship between Board Independence (BI) and dividend policy is negative and statistically significant ($P < .001$) only in model 2 as observed from the coefficient of -0.801. This implies that independent directors tend to influence dividend payout ratio negatively, hence, the higher the number of independent directors in a board, the lower would be the dividend payout ratio. This evidence is consistent with the agency theory and substitution hypothesis, which posits that dividends substitute for independent directors on the board. In other words, dividend mechanism can be employed by the board to reduce agency cost resulting from the conflict of interest with shareholders. That is, firms with weak corporate governance need to establish a reputation by paying dividends. Possibly this may be due to reasons such as, risk aversion or differing priorities of non-executive directors. The result support the findings of some prior studies like Al-Najjar and Hussainey (2009) and Thompson and Manu (2020). However, the result is contrary to the findings of some studies e.g Setia-Atmaja et al., (2009) and Tahir, Rahman, et al., (2020) who's results suggest that large number of independent directors in the board lead to an increase in distributable income to shareholders.

5.0 Conclusion and Recommendations

This paper investigates the effect of Independent directors on dividend pay-out policy using a sample of thirteen (13) deposit money Banks listed on the Nigerian Exchange over the period of 10 years. The result indicates that independent directors tend to influence dividend pay-out ratio adversely. This result provides a new empirical insights relating to directors independence and dividend pay-out policy. The findings have a number of implications for DMBs and shareholders, policy makers as well as the regulatory authorities. The evidence implies that shareholders of DMBs that are more interested in dividend income can influence

the chances of dividend payment by lowering the number of independent directors in the board consistent with the agency theory and substitution hypothesis, which posits that dividends substitute for independent directors on the board. That is, dividend mechanism can be employed by the board to reduce agency cost resulting from the conflict of interest with shareholders.

Based on the foregoing, the study recommends that shareholders of Nigerian DMBs can increase the chances of receiving dividend by appointing relatively lower numbers of outside directors. However, shareholders should be cautious and trade-off in adjusting the number of independent directors on the board to avoid a potential compromise in governance quality.

In addition, the evidence provided in this study offers potential theoretical and empirical insight for future studies. In terms of theoretical expansions, the evidence suggests that future studies may improve their theoretical grounds by using other theories, such as stakeholder theory, when examining factors influencing dividend pay-out policy. With respect to the empirical expansions, this paper focuses only on listed DMBs in Nigeria; however, future studies can extend the current study by examining the impact of other corporate governance mechanisms on dividend policy in different international governance environments (i.e. developed or other developing economies). Again, further studies can incorporate qualitative methods that could uncover underlying motivations and attitudes of independent directors towards dividend policies. Additionally, exploring the interaction effects of various corporate governance attributes could offer more comprehensive insights.

Finally, the study has a number of limitations including restricting our analysis to only the influence of Independent directors in the listed DMBs. In addition, the study's focus on only listed banks excludes a significant portion of the banking sector, such as smaller or unlisted banks, whose governance structures and dividend policies might differ substantially.

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Financial Inclusion and Financial Literacy: Implication to Persons with Disabilities (PwDs) in Funtua Local Government

¹Bashir Umar Faruk *, ²Abdullahi Ibrahim Haruna & ³Kassim M. Maizare
^{1,2,3} Department of Economics, Federal University Gusau, Zamfara State, Nigeria
*Corresponding Email: bashir.umarfaruk@fugusau.edu.ng

Abstract

Financial inclusion is a global initiative designed to bring on board the unbanked or financially excluded segment of the population into financial sector. The present study examines the nexus between financial inclusion and financial literacy, and possible implication to persons with disabilities in Funtua local government. Quantitative research designed was adopted, and primary type of data is employed which include questionnaire, interview and focus group discussion. Cluster sampling technique is used in the study, where two (2) groups of persons with disabilities are selected; these are blind/visual impaired and physically impaired. The population of the study covers all persons with disabilities in Funtua, while ninety (90) respondents are selected from the two groups to represent the whole population. Table, percentage, OLS regression and Pairwise correlation were employed as methods to analyse the data. The study has failed to established financial literacy as an impediment to the realization of financial inclusion agenda, most especially to persons with disabilities; rather it is the low level of income, poverty and unemployment that contribute significantly to low access to financial services or financial inclusion. Unexpectedly, the study found a high financial literacy among PwDs which was attributed to advancement in communication technology and digital financial economy initiated by government, particular period after Covid-19 lockdown. Therefore, the study recommends that government should create employment opportunities targeting mainly PwDs, this will go a long way in ensuring regular income and poverty reduction. Also the need for Banks to improve on services provision and to overcome all challenges related to network glitches, so as to restore confidence on the Banking system and make their products and service more accessible and attractive.

Keywords: Persons with Disabilities, Financial Inclusion, Financial literacy, Funtua, accessibility, awareness

1. Introduction

Inclusion is a policy designed to promote and ensure provision of equal access to financial opportunities, services or resources to persons that may otherwise be considered as excluded or marginalized, these include persons with disabilities and other minority groups (Mastercard, 2022). It advocates elimination of any form of discriminations against any persons irrespective of their status, race, gender, social and economic positions. Inclusion has since become a key priority of World Bank (Grohmann & Menkhoff, 2020). Therefore, the need for inclusion

of persons with disabilities in achieving a Sustainable Development Goals (SDGs) can never be over-emphasized (Peprah *et al*, 2022). Generally, financial inclusion is a global initiative aims at bringing on board the unbanked or financially excluded segment of the population into financial sector that may enable them to patronize the financial products and services. It targets all potential banking customers into banking and other financial activities, so that the economy would felt their impact and also account for that. Underlying the importance of financial inclusion led to the formation of financial inclusion target by the World Bank and other public and private sector partners, the target plan was encapsulated in what was known as “Universal Financial Access 2022”.

For over one decade, the Nigerian government through the Central Bank has come up with various programs and policies for promoting financial digital economy, among which is the cashless economic policy. However one of the main challenges confronting the full implementation of cashless economy and achievement of high rate of financial inclusion in Nigeria is lack of financial literacy, particular in the North-West states. This implies that financial literacy is an integral factor that harnesses and promotes financial inclusion (Ramakrishnan, 2011). While financial inclusion entails access to financial products and services, financial literacy deals with creating awareness about the financial products and service (Biswas & Gupta, 2016). Beside the fact that financial literacy impact on financial inclusion, the former also serves as both moderator and mediator of financial inclusion (Khan *et al*, 2022).

However, the link between financial inclusion and financial literacy was established in the literature in the recent time, and turns to be a policy issue globally. Khan *et al* (2022) posits that deprivation of adult access to basic financial services affect formal savings and investment, leading to poor financial and economic development of a nation. Studies have established that financial literate persons are more inclined and likely to patronize and use financial products and services compare to financially illiterate persons.

Financial inclusion and financial literature are twin concepts (Biswas & Gupta, 2016) that attract the attention of development bodies and institutions. They have been subjects of discussion among academics, practitioners, policy makers and global communities (Khan *et al*, 2022). Global economy has been evolving most especially in the recent years owing to the large scale transformations or changes in technology and technological related factors that breeds digital financial

economy. Therefore the global financial sector has gradually moving towards digitalization; as a result, countries across the world are struggling to attain high financial inclusion. However, attainment of high financial inclusion depends on the level of financial literacy. Unfortunately, developing countries (Nigeria inclusive) record low financial literacy, due to low level of education and high illiteracy rate. Severely affected are persons with disabilities that tend to suffer most and excluded from banking and other financial activities. Despite the fact that they constitute about 15% of the world population (equivalent to 1 billion persons) having different type of disabilities such as visual, speech, hearing, cognitive, mobility and psycho-social (Mastercard, 2022, Imandjemo *et al*, 2018 and World Bank 2017). Imandjemo *et al* (2018) further submitted that Nigeria has about 4.8 million people living with different types of disabilities, even though the number could be higher than the estimated amount. Therefore, suggested that this significant number could not be allowed to be ignored or excluded from the development efforts. Studies have identified that persons with disabilities are contributing to the world economy, specifically World Bank reported that the exclusion of PwDs has accounted for about 5% and 7% global GDP loss (CBM, 2016), which was estimated at between \$1.71 trillion to \$2.23 trillion annually (Imandjemo *et al* 2018).

Despite the roles they play in the global economy, persons living with disabilities are increasingly marginalized and disperse from participation into the formal financial system. Evidently, the physical disabilities serve as a constraint to effectively access financial products and services by this group of persons. In some cases the difficulty arises from the inability to walk into the financial institutions or bank branches, use of ATM machines, inability to comprehend what is written on the paper or electronic devices as well as their inability to hear or communicate with the financial service providers (Mastercard, 2022). Few of them who can access banking services, hardly perform the financial tasks without the support of others, however such financial services require privacy. In addition, most Banks are not ready to accommodate the needs of such PwDs, owing to lack of financial literacy among others (CBM, 2016, Imandjemo *et al* 2018, Jiya *et al*, 2021, Pepurah *et al*, 2022). Therefore, Banks have developed a discriminating relationship against persons with disabilities in terms of services provision (Goodman *et al.*, 2017). Corroborate this was 2019 UN report, which estimated that about 28% of banks in developed nations and between 8% and 64% of banks in some developing countries are not accessible by PwDs (Mastercard, 2022).

Moreover, there is still a little policy efforts that have practically demonstrated to ensure equal access to financial services be granted to such groups just like their able persons counter-part. This further reveals the extent of indiscrimination against this vulnerable group, even in policy formulation and implementation as well as in their participation in the financial system. This may not be unconnected with the fact that the groups are generally considered unproductive, with low level of income, savings, and limited access to credits in both formal and informal financial system, thereby subjecting them to poverty and marginalization (CBM, 2016, Peprah *et al* 2022), they are equally considered not credit worthy, but tagged as mere beggars and destitute (Imandjemo *et al*, 2018)

Against this background the present study examines the nexus between financial inclusion and financial literacy, and possible implication to PwDs in Funtua local government. Other specific objectives are: To ascertain the level of financial literacy of persons with disabilities in Funtua, Also to investigate the extent of financial inclusion of persons with disabilities in Funtua local government. Therefore the study formulates the following null hypothesis;

H₀: Financial literacy has no influence on financial inclusion

H₀: There is low financial literacy among PwDs in Funtua local government

It is however observed that there is dearth of literature linking financial inclusion and persons with disabilities especially in the core North state of Katsina, due to less significant attention given to this vulnerable segment of the population. Moreover, studies on financial inclusion and financial literacy in relation to PwDs are at infant stage. Therefore, the present study is imperative at this juncture, while countries around the world are trying to ensure the attainment of Sustainable Development Goals agenda as well as ensuring that persons with disabilities are not tactically excluded from participating into the productive economic decision and activities. Policy makers and apex bank would find the study useful while drafting appropriate policies interventions and programs target at promoting financial literacy and enhance financial inclusion to PwDs.

However, literature on the nexus between financial inclusion and financial literacy are enormous, but a study by Yeo and Moore (2003) observed that access to formal and informal financial services by persons with disabilities are generally very limited both in developed and developing countries. Adetunji and David-

West (2019) added that in Nigeria people have resorted to use the informal financial institutions for savings than patronizing the formal financial system. Thus, financial inclusion is low in Nigeria compare to other countries in the world. Even within Nigeria, there is wide gap between the North and South regions, with the Southern Nigeria recording high financial inclusion and high literacy rate than the North. Sanni (2019) cited in 2015 Nigeria Financial Survey explained that low access to financial services is due to low financial literacy in the urban and rural areas. Specifically, financial illiteracy is 68.5 per cent in rural areas and 31.1 per cent in urban areas. Furthermore, financial illiteracy among men in the urban areas is 48.5 per cent, for men in the rural areas is 50.3 per cent. The study therefore concluded that low financial literacy have created disadvantageous groups (financially excluded groups) that lack basic financial skills. There is also observed inequality between the North and South regions of Nigeria with regards to financial literacy rate, with the North still lagging behind despite several programmes aim at reducing the rate of financial literacy Subbarao (2010) reasoned that financial inclusion and financial literacy are two complementary factors that ought to work together for the betterment of the financial system. While financial inclusion operates from the supply side, acting as a supplier of the financial products and services that people demand, financial literacy is considered in the demand side by creating awareness to people to understand their demand. However, Ramakrishnan (2011) observed that low financial literacy is a barrier to demand for financial services, meaning that people who are not aware or uncomfortable with the products or services would neglect and pay less attention to them. Studies have established that financial literacy bears a positive relationship with the demand of financial products and services, that as people becomes more financially literate the demand for financial products and services such as ATM debit cards and insurance tend to increase (Chen & Jin, 2017, Grohmann *et al.*, 2018, Khan *et al* 2022). On the demand side factors of financial inclusion, some studies reaffirmed that age, gender, income and region plays an important role in determining the financial inclusion level (Khan *et al*, 2022). Young age groups are generally less financially inclusion than the older age groups. Also low income transmits to low financial literacy, the latter lead to low financial inclusion; this implies that high income groups are more financially literate than the opposite. Biswas and Gupta (2016) empirically verified whether financial literacy has any influence on financial inclusion, the study established that the demographical factors, that is demand side factor; namely occupation, household income, educational background are statistically significant factors

influence financial literacy in Kolkata, India. Financial inclusion index is further found to have a statistical significant relationship with financial literacy.

Pepurah, Avorkpo and Kolo (2022) investigate the impact of disabilities on access to financial services in Ghana using instrumental variable regression approach. The study discovered that disability reduces the chances for people to have access to financial institutions or patronize at least any of the banking product or service. Therefore, the study recommends the need to raise awareness on mobile money and fintech solutions as well as increase access function that can promote inclusion of disabled persons into the financial system.

2. Methodology

Study area

Funtua local government has a population of 225,571 (2006 population census) and 502,110 according to 2016 estimate, covering an area of 448KM². Funtua became a local government area in Katsina state in 1967. It is the headquarters of the Katsina South senatorial district, which comprises of eleven local governments. It is the second largest city in the state after Katsina (Faruk, 2020), occupied majorly by the Hausa and Fulani ethnic groups. The major occupations of the inhabitant are farming, animal rearing and trading. The local government area was well known as industrial and commercial centers since colonial days.

Nature and Sources of Data and Population of the study

The study is of primary nature, as the data was generated from a field survey. The population of the study is the total number of persons with disabilities in Funtua Local Government, which could not be ascertain due to poor record keeping and frequent migration of persons with disabilities, but the population was estimated to be over 200.

Sampling Technique

The study employs cluster sampling technique in choosing the respondents. Where the respondents are classified into two groups namely, the visually impaired and physically impaired. Thereafter a convenience sampling method was employed which involves collecting information from members who are readily and conveniently available to provide the information.

Sample Size

Three things namely, precision, prevalence and design effect in case of cluster sampling determine the size of the samples should be drawn from a population. To have a fair representation of the targeted respondents, both male and female persons with disabilities from each group are selected randomly with special attention to gender of the respondents. Ascertaining the exact number of persons with disabilities may not be possible due to lack of documented figures from the relevant agencies. However, leaders of the associations stated that there are about 70 registered physically challenge/impairs living in Funtua local government area. Same number was estimated for blind/visual impaired, making a total of 140 Persons with Disabilities (PwDs). However, the number excludes other persons with disabilities who have not duly recognized or registered by these associations and who cannot be easily traced. Therefore, the study administered 90 questionnaires.

Data Collection and survey instrument:

The study used mainly primary source of data through a well-structured questionnaire, interview method and focus group discussion. However, a focus group discussion targeted the group members of the association of different disabilities is also observed, specifically the persons with disabilities comprises of blinds/visual impaired and physically impaired only. The questionnaire was adopted from OECD financial literacy questionnaire developed by the International Network on Financial Education (INFE) with few modifications to capture and accommodate the peculiarity of the study area, culture, tradition and other social aspects. The questionnaire comprises of closed ended questions only, while interview and focus group discussion was targeted to the whole members of each association.

Data analysis Technique: The analysis of the data generated preceded the coding of the responses obtained from the questionnaire, this follows by examining the frequencies and percentages of the responses using tables. The data was further analysed using OLS regression model and Pairwise correlation, to enable testing the hypotheses of the study with the application of STATA 12.0 software.

Model Specification

The three indicators of financial inclusion consist of accessibility, availability and usage. Therefore, this study uses number of respondents with Bank accounts, and those carrying out financial transactions as well as those who have borrowed money from Banks as proxy of financial inclusion. Similarly indicators of

financial literacy include: knowledge, awareness and behaviour. Hence, proxy of financial literacy in this study covers awareness or knowledge about banking products and services such as mobile banking, ATM cards, E-Payments/transfer, Bank loans, savings etc. It also comprises of awareness about other financial services such as insurance, mortgage, as well as the customers' confidence about the Banking and financial services. The functional relationship is expressed as

$$\begin{aligned} \text{finInc} &= f(\text{finLt}) \dots \dots \dots 1 \\ \text{finInc} &= \alpha_0 + \alpha_1 \text{finLt} + \mu \dots \dots \dots 2 \end{aligned}$$

Where finInc denoted financial inclusion index, finLt is a proxy of financial literacy, α_0 is the constant term and α_1 is the coefficient of the specified model, while μ stands as the random disturbance.

3. Result and Discussion

This section presents the data, analysis and discussion of results obtained from the administered questionnaire using tables, percentages, OLS regression and Pairwise Correlation. All the ninety (90) questionnaires administered were 100% retrieved due to the involvement of research assistants to directly help the respondents to carefully and diligently filled the designed questionnaires. Moreover, all ethical considerations were upheld consists of explanation about the purpose of the research, the information needed, their approval and consent as well as the confidentiality of the information.

Table 1: Socio-Demographic Characteristics of the Respondents

S/N	Item	Frequency	Percentage
1	Gender		
	Male	49	54.44
	Female	41	45.56
	Grand Total	90	100
2	Age		
	18 – 30 years	48	53.33
	31 – 45 years	22	24.45
	46 – 59 years	12	13.33
	60 years and above	8	8.89
	Grand Total	90	100
3	Marital Status		

	Single	41	45.56
	Married	35	38.89
	Divorce/Separated	6	6.67
	Widow/Widower	8	8.89
	Grand Total	90	100
4	Highest Educational Qualification		
	Primary	14	15.56
	Secondary	20	22.22
	Tertiary	7	7.78
	No Formal Education	42	46.67
	Others (Specify)	7	7.78
	Grand Total	90	100
5	Nature of Disability		
	Blind/Visual Impair	47	52.22
	Physical Impairment	43	47.78
	Others	-	-
	Grand Total	90	100
6	Source of Income		
	Civil Servant	1	1.11
	Business	27	30.00
	Farming	15	16.67
	Street Begging	42	46.67
	Others (Specify)	5	5.56
	Grand Total	90	100

Source: Extract from the administered questionnaires, 2024.

Table 1 above shows the Socio-Demographic characteristics of the respondents who are mainly persons with disabilities from Funtua Local government, in the table majority of the respondents are Male (49) accounted for 54.44%. In terms of age, those within the age bracket of 18-30 years (48) representing 53.33% have dominated other categories; also on the marital status, single respondents were 41(45.56%) as the majority compared to others. However, on the educational qualification those with no formal education constituted the majority with 46.67% or 42. This alone has portrays the high rate of illiteracy rate among PwDs in the study area, although most of the respondents have no formal education but have attended Islamic religious schools and acquired Islamic knowledge. Still there are few visually impaired/blind respondents who have attended various training and skill acquisition centers, school for deaf and blind Malumfashi, Katsina State as

well as rehabilitation centers located in Bakori Local government in Katsina state and Lagos State.

Similarly, out of the total respondents, majority are blinds/visually impaired who constituted 47 (52.22%), while the remaining 43(47.78%) are physically impaired/challenges. Also street begging represents the major source of income of the respondents going by the highest percentage of 46.67% or 42 total number of respondents. Although the study observed that the practice of street begging is prevalence to blind/visually impaired persons compared to physically impaired respondents. However, few of both blind and physically impaired combined street begging and small scale business such as; netting, tailoring, welding, selling firewood, groundnut processing, drying and selling grinded maize and groundnut oil, as well as selling readymade caps, Islamic medicine, and some engage in shoe making among others. Therefore, Persons with physical disabilities are more prone to have more entrepreneurship skills and engage in small scale businesses capable of generating more income compare to blind/visually impaired counterpart

Table 2: Questions on financial inclusion and financial literacy

Questions	Options	Frequency	Percentage
Do you have a bank Account?	i. Yes	51	56.67
	ii. No	39	43.33
	Grand Total	90	100
Which type of Bank Account?	i. Savings	47	52.22
	ii. Current	3	3.33
	iii. Recurrent	0	0.00
	iv. Fixed Deposit	0	0.00
	v. Others(Specify)	0	0.00
	vi. None	40	44.44
	Grand Total	90	100
What were the reasons you Opened the Account?	i. Saving Money	26	28.89
	ii. Request for Loan	1	1.11
	iii. Received money from Gov't/individuals	26	28.89
	iv. Others (Specify).....	0	0.00
	v. Not applicable	37	41.11
	Grand Total	90	100
How frequent do you use/save money in the	i. Don't save/Never	41	45.56
	ii. At least one in a month	9	10.00

account?	iii.	Less than once in a month	8 21	8.88 23.33
	iv.	I put money as and when I can	11	12.22
	v.	No money added since account was opened	0 90	0.00 100
	vi.	Others (Specify)		
	Grand Total			
Reasons for not having Bank Account?	i.	I have no money to put in	20 3	22.22 3.33
	ii.	No Bank in the area		
	iii.	No point-benefit received in cash	1 1	1.11 1.11
	iv.	No-point-paid in cash		
	v.	Concerned there may be too many charges	0 5	0.00 5.55
	vi.	Tried to open but was refused	2 7	2.22 7.78
	vii.	Lengthy Processes	51	56.67
	viii.	Not Important to me	90	100
	ix.	Not Applicable		
	Grand Total			
Do you have confidence with the Banking service?	i.	Yes	71	78.89
	ii.	No	19	21.11
	Grand Total			
Did you make any attempt to open an account or carryout any financial Transaction	i.	Yes	71	78.89
	ii.	No	19	21.11
	Grand Total			
Are you aware about Banking products and services such as ATM card, Mobile Banking, E-transfer/payment, Western Union, Loans, Savings etc?	i.	Yes	71	78.89
	ii.	No	19	21.11
	Grand Total			
Are you aware about other financial products and services such as accident and	i.	Yes	61	67.78
	ii.	No	29	32.22
	Grand Total			

life insurance, mortgage, credit card etc?				
Do you face any	i.	Yes	18	20.00
discrimination when	ii.	No	43	47.78
opening an	iii.	Never Try	29	32.22
account/operating a bank account?	Grand Total		90	100
Any barrier to access	i.	Yes	22	24.44
the financial product	ii.	No	44	48.89
and service?	iii.	Never try	24	26.67
	Grand Total		90	100
Have you ever	i.	Yes	7	7.78
borrowed money from	ii.	No	83	92.22
Bank?	Grand Total		90	100
If ever borrowed,	i.	Housing Loan	2	2.22
what was the type of	ii.	Business Loan	3	3.33
credit/loan?	iii.	Training/education	0	0.00
		Loan	0	0.00
	iv.	Vehicle Loan		
	v.	Personal Loan for		
		household items or day	2	2.22
		to day living expenses	83	92.22
	vi.	Not applicable	90	100
	Grand Total			
In the past three years,	i.	Yes	3	3.33
have you been refused	ii.	No	8	8.89
a loan or credit or any	iii.	Not asked for any credit	79	87.78
other financial	Grand Total		90	100
service?				
If you were refused,	i.	No	5	5.56
do you know why you	ii.	Yes, explain;	2	2.22
were turned down?	iii.	Not applicable	83	92.22
	Grand Total = 90		90	100
Over the past couple	i.	Yes	43	47.78
of years, have you	ii.	No	47	52.22
been anywhere for	Grand Total		90	100
taking advice about				
money matters from				
Bank or any financial				
adviser or social				

worker?

Source: Response from the administered questionnaires, 2024

In table 2, most of the respondents constituted 51 or 56.67% acknowledged having Bank accounts, only 39 or 43.33% do not have Bank accounts. However, those with Bank accounts majority of them operate saving account (47) or 52.22% as against very few with current account (3) or 3.33%. Similarly, majority of those who opened Bank accounts did that purposely for either saving money or to be receiving money from individuals, business or government which accounted for 26 or 28.89% each. On the frequency of saving money, majority of the respondents (41) or 45.56% don't save money, this follows by those who put money in their Bank accounts as and when they can, constituting of 21 or 23.23% respondents.

Majority of those without Bank accounts attributed that to lack of money to put in (20 or 22.22%), due to their low income level, followed by those who claimed that Bank account is not important to them representing 7 or 7.78% of the total respondents.

On the issue of confidence in the Banking service, majority of the respondents 71 (78.89%) consisted of those with and without bank accounts expressed their confidence on the banking services in general as against 19 or 21.11% who have no confidence on the banking services. Again on whether the respondents made any attempt to open an account or carryout any financial transaction, most of them 71 or 78.89% have responded with "yes" option.

There seems to be high awareness about Banking products and services such as Mobile Banking, E-transfer/Payment, Western union, ATM cards, loans, savings etc, with majority of the respondents 71 (78.89%) indicated that there are very much aware about those banking products and services as against few respondents (19) or 21.11% who claimed unaware. In the same vein, 61 (67.78%) respondents are also aware about other financial products and services such as insurance, mortgage, credit card etc. Despite that the level of awareness is high, but none of the respondents ever use or enjoy services such as insurance and mortgage.

An issue of concern is whether PwDs face any discrimination when opening an account or in the process of operating the Bank account due to their disabilities, majority of the respondents 43(47.78%) affirmed no discrimination against them, in fact most of them claimed to have been receiving special treatment when

visiting the banking hall or at ATM centres for any transaction, only 18 (20%) respondents experienced discriminations. Further, most of the respondents 44 (48.89%) have indicated absence of any barrier in accessing financial products and services, only 22(24.44%) claimed to have barrier in accessing financial products and services.

Usability/accessibility of banking product and service such as borrowing from the Bank is observed to be low considering the fact that majority of the respondents 83 (92.22%) never borrowed money from the Banks, only 7 (7.78%) respondents have ever borrowed facilities from Banks. Few who borrowed have used the money for Business (3 or 3.33%), housing purchase (2 or 2.22%) and/or cater for day to day or purchase of household items (2 or 2.22%). This finding supports studies by Yeo and Moore (2003), Adetunji and David- West (2019) who established that there is low patronage of formal financial system by person with disabilities both in developed and developing countries.

On whether they were ever refused a loan, credit or any financial services, the table shows that though large number of the respondents (79 or 87.78%) have never asked for any loan or credit from Banks, few who have sought for a loan indicated that Banks and other financial institutions never refused (8 or 8.89%) to borrow money or credit to them, despite that 3 respondents (3.33%) emphasize that they were refused a loan by Banks. However, majority of latter (5 or 5.56%) viewed that the reason for the refusal were not known to them, while 2 (2.22%) respondents attributed it to their disabilities and financial status. Other possible reason put forward by Imandojemo *et al* (2018) is that PwDs are considered not credit worthy, therefore tagged as mere beggars and destitute with low financial standard. Therefore this present study is in line with Peprah, Avorkpo and Kolo (2022) who viewed that disability reduces the chances for people to have access to financial institutions or patronize at least any of the banking product or service.

Lastly, the table 2 indicated that 47 (52.22%) respondents explained that they don't seek advice for any money related matters from friends, Banks or any financial adviser, only 43 (47.78%) of the respondents stated that they usually seek for advice on financial related matter.

Despite the successes recorded in the area of financial literacy (in form of awareness) among PwDs in Funtua local government, an extract from the focus group discussions and interview conducted with the targeted respondents through their different groups or Associations has revealed that there are many challenges

and difficulties face by PwDs when accessing the financial products and services. These include: refusal by some Banks to issue ATM cards most especially to blind persons, but only allowed them to cash- over -the -counter, which they pointed out that, situations usually arise that may require them to demand for cash even at night for personal and emergency needs which pose a great challenge to many PwDs. More often they face difficulties in operating Bank account which hinder them from patronizing and using Banking products and services. Also account opening requirements like electricity bills are usually unavailable which discourage them from opening an account with the Bank. Similarly, distances to Bank locations create a lot of inconvenience considering their physical challenges. Others are network failure/glitches that usually discouraging accessing such Banking product and service, delay in issuing ATM cards, debiting/dispensing errors, difficulty in withdrawing money from the ATM machines. Also religious perception about some financial products and services such as insurance, interest payment on loan collected from Banks are among the enormous challenges and difficulties face by PwDs.

Regression Result

Table 3: Result of OLS Regression

Dependent Variable: Financial Inclusion

Variable	Coefficient	Standard Error	t- statistics	Prob-value
C	327.20	258.4696	1.27	0.426
FL	-4.20	3.810512	-1.10	0.469

R-squared = 0.5485

Adj R-squared = 0.0970

F-statistics = 1.21

Prob (F) = 0.4691

Root MSE = 31.113

Source: Authors' computation using STATA 12.0

The result in table 3 above indicates that there is negative and statistically insignificant relationship between financial literacy and financial inclusion to PwDs in Funtua local government. The outcome is not surprising considering the fact that most of the respondents interviewed seem to be financially literate, due to high level of awareness about financial products and services resulted from improved technological especially in the area of mobile communications and the changes in the global trend towards digital economy. However, the accessibility of such financial products and services are very low among persons with disabilities due to low source of income, unemployment, poverty and absence of standard, sustainable and reliable occupations among others. The finding

contradicts studies by Sanni (2019) who established that low access to financial services is due to low financial literacy in the urban and rural areas and also that of Ramakrishnan (2011) who observed that low financial literacy is a barrier to demand for financial services. Contradict further are the studies by Chen and Jin, (2017), Grohmann *et al.*, (2018) and Khan *et al* (2022) who portray that a positive relationship between financial literacy and demand of financial products and services.

However, the goodness-of-fit indicted that about 55% variation in financial inclusion is explained by changes in financial literacy included in the regression model. The joint coefficients of the model are found to be statistically insignificant indicated by high probability value that is above 5% significant level.

Table 4: Pairwise Correlation

Variable	FinInc	FinLt
FinInc	1.0000	
FinLt	-0.7406	1.0000

Source: Authors' computation using STATA 12.0

The Pairwise correlation further indicates a strong negative correlation between financial literacy and financial inclusion which further supported the OLS regression result.

Hypotheses testing

From the result obtained the study accepts the first null hypothesis and concludes that financial literacy has no influence on financial inclusion to PwDs in Funtua Local government. Also having found high financial literacy rate, the study rejects the 2nd null hypothesis and concluded that there is high financial literacy rate among PwDs in Funtua Local government.

4. Conclusion and Recommendations

From the foregoing discussions, it can be conclude that although financial literacy supposed to impact positively on financial inclusion, also financial literacy has improved in the recent years due to the changes in the global trend towards digital economy and advancement in communication. However, irregular income, unemployment, poverty, illiteracy rate, traditional and religious beliefs couple with physical and mental health challenges has imposed restrictions in the utilization of those financial products and services. Consequently, this leads to

high financial exclusion of persons with disabilities in accessing and using the financial products and services. Based on the findings from the study, it is recommended that Banks need to improve on services provision and to overcome all challenges related to network glitches, so as to restore confidence on the Banking sector and make their products and services more accessible and attractive. Bank should also create a desk officer to facilitate any transaction to be carryout by disabled person. Banks should also design and introduce special ATM cards with a unique identification code for PwDs. Government can equally undertake a policy action to create employment opportunities for PwDs, this will ensure regular income and reduced poverty level.

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Volunteering in the Achievement of Sustainable Development Goals (SDGs) in Nigeria

¹Ofoma, Chinedu Valentine, ²Hangeior Apollonia A, ³Onyekwulunne Ijeoma Maureen & ⁴Oyigebe Peter Luke

¹Department of Public Administration, Federal University Lokoja, Kogi State, Nigeria

²Department of Public Administration, Joseph Sarwuan Tarka University, Makurdi, Makurdi, Benue State, Nigeria

³Chukwuemeka Odumegwu Ojukwu University, Anambra State, Nigeria.

⁴Department of Political Science, Federal University Lokoja, Kogi State, Nigeria

Correspondencing Email: chinedu.ofoma@fulokoja.edu.ng

Abstract

The emerging issues of governance as well as unforeseen circumstances such as COVID-19 pandemic, Ebola and violent crimes have exposed the inadequacies of state bureaucracy to initiate and execute programmes and projects that will bring about national development. This suggests the place of volunteering in national or global development agenda such as the Sustainable Development Goals (SDGs). Volunteering represents a critical and vibrant system of the society that drives development using the bottom-top approach. This study therefore seeks to advance the understanding of volunteering in the achievement of the Sustainable Development Goals in Nigeria. The paper draws on literature-based analytical historical perspective using secondary data. The findings of the study revealed that volunteering has significantly impacted on SDGs in Nigeria specifically in the aspects of good health, gender equality, economic growth and quality education with the exception of climate action. Challenges of volunteering in Nigeria are also unpacked in the paper together with the establishment and functions of Nigerian National Volunteer Service. The implication of the above is that volunteering is sacrosanct in achieving SDGs in Nigeria. Therefore, the paper recommends that: there is need for volunteering system to be strengthened in Nigeria in order to enable it performs optimally. This requires review of volunteering policy together with the functions of Nigerian National Volunteer Service (NNVS) for better performance; volunteer organization should do better in climate resilience by way of sensitizing the citizens on climate resilience mechanisms rather than proving succor after the occurrence of climate incident; and government in conjunction with volunteer organizations and other relevant stakeholders should decentralize security governance for conducive atmosphere to enable volunteers carry out their duties without fear of being attacked etc.

Keywords: Volunteering, volunteer organizations, Sustainable Development Goals, gender equality, quality education and climate change.

1. Introduction

The 2030 Agenda for Sustainable Development, which comprises of 17 Sustainable Development Goals (SDGs) to end poverty, zero hunger, provide

quality education, good health, combat inequality and injustice, and address climate related issues by 2030 etc, was adopted by world leaders at the United Nations Sustainable Development Summit held on September 25, 2015. Consequently, governments across countries developed strategies with public service being the implementing tool towards achieving these noble objectives. However, the demanding nature of the Sustainable Development Goals (SDGs) has underscored the fact that government alone cannot adequately and satisfactorily put in measures towards the realization of the SDGs. This illuminates the justification for the involvement of volunteers in the efforts to achieve this noble and global course. Selfless service is not a new phenomenon in the history of humanity as individuals, groups and even cooperate bodies have been seen offering services or giving care to individuals and communities for free. This is at best being considered as volunteering in the modern day world. It is contended that volunteering engenders social inclusion and active citizenship which in turn rekindles the spirit of nationhood among the marginalized and poor. Globally, volunteers are the first responders in the time of distress or crisis. They provide critical support through mobilization, financial assistance, medical assistance and awareness creation which in turn localize and deepen the agenda for SDGs. Apparently, the SDGs simply may not be achieved without a wide spectrum of people participating at all times and at all levels. By including more people in local and national planning and action for achieving the 2030 agenda, volunteering and volunteers are already widening the space in which may lead to creating the desired future. Seemingly, it is an essential tool for sustainable development because of its fundamental nature. It enables individuals and communities to take part in their own development.

Citizens develop their resilience, broaden their knowledge, and develop a feeling of civic responsibility by volunteering. Individual and group volunteering strengthens social cohesiveness and trust and produces outcomes that are sustainable for people and for people alone (United Nations Volunteers, 2020). The role of volunteers or volunteer groups during the COVID-19 pandemic across the globe is a recent development that serves as a pointer to the foregoing. This opinion is strengthened by the submission by Nesbit, et al (2018) that volunteering has continued to gain recognition globally partly because of the increasing dynamics and uncertainties in human setting. For instance, during the COVID-19 era, people were able to cope with the pandemic due partly to the activities, services and assistance from volunteers. The definition of volunteering has been expanded to include providing assistance in both public administration

and services. Volunteering is no longer viewed only from cultural perspective, but has been adopted either as an approach or strategy to solve emerging social issues among other reasons. Volunteers offer numerous services ranging from health to poverty alleviation services. Volunteering promotes higher trust among citizens, the development of solidarity and reciprocity values that are necessary for stable communities, and the creation of more integrated communities (Attah & Anam, 2017).

This therefore informed the idea behind this study that seeks to explore volunteering in the achievement of the Sustainable Development Goals in Nigeria. Meanwhile, the paper specifically seeks to find answers to the following research questions:

1. What is the impact of volunteering on healthcare in Nigeria?
2. What is the correlation between volunteering and promotion of gender equality in Nigeria?
3. Does volunteering impact on economic growth in Nigeria?
4. What is the effect of volunteering on the promotion of quality education in Nigeria?
5. What is the relationship between volunteering and climate resilience in Nigeria?

To this end, this paper is organized into four main parts. First, this section of the study centres on methods, while the second part of the paper focuses on literature review; then results and discussions. The final part of the study is concluding remarks which are in consonance with the findings

2. Literature review

2.1 Conceptual Definitions

Volunteering and Sustainable Development Goals

Volunteering is defined as any action that involves spending time, without payment, doing something that seeks to help the environment or someone (individuals and groups) other than, or in addition to, immediate relatives (Smith, 1998 cited in Burgham & Downward, 2005). It is viewed as an inherently selfless and significant activity (Benson & Wise, 2017; Gellweiler et al., 2018; Hoyer et al., 2019; Nichols, 2003). It has been recognized as an important factor in the implementation of development strategies especially the Sustainable Development Goals. The nexus between volunteering and Sustainable

Development Goals makes a special and new contribution to literature on development agenda. This draws an attention to the opinion of Stephanie, Kamal, Joy, Nia, Oluwafunmi and Seth, (2021) that volunteering as a concept in social development refers to the act of providing service out of choice or free will for the benefit of a larger society by an individual, group, or organization without necessarily anticipating a financial gain in full understanding and appreciation of being a volunteer. The government has backed volunteering as a necessary civic duty, a way to fight social exclusion, and a way to encourage self-help for community development, since government cannot do it alone. It is an engagement built on free will, dedication, and solidarity with the goal of advancing human development by assisting in the provision of economic and social services, encouraging inter-personal reciprocity, and promoting societal cohesion. People have the chance to participate in humanitarian endeavours via volunteering. Volunteering takes place at various levels such as citizen, group and organization but all aim at national development.

The complex nature of modern governance has further exposed the significant relationship between volunteering and the Sustainable Development Goals. The manifestation of this is the inability of public bureaucracy to provide the needed services to the people which will engender development. While supporting this submission, Herwartz and Theilen (2021) observe that as globalization advanced, public and private mainstream service sectors began to struggle to satisfy the rising social needs of a more diversified society. Public funding and other resources for long-term service provision become unstable as a nation or a small region moves through various stages of economic cycles and experiences back and forth shifts in its prevailing ideology. Such situation has already resulted in a decline in public institutions such as NGO (Stevenson & Wolfers, 2011; Gibelman & Gelman, 2001). In addition to religious and development organizations, more players have entered the area of volunteerism. Local non-profit organizations (NPOs), communities, and private enterprises have all contributed significantly to funding, organizing, and promoting volunteerism. More so, volunteers' role in service delivery has evolved from that of a complement to the labor force to that of active participants in co-production (Musso, et al., 2019) or even co-governance (Chenge, 2019).

This significant gap in action is what volunteering has come to fill. In Nigeria, communities in the rural, peril-urban and metropolitan areas all benefit greatly from volunteers. They help during natural disasters and humanitarian emergencies

by providing assistance in addition to their resources and experience. Volunteering supports gender and social inclusion, active citizenship, lifelong learning, improving employability, community connection and reducing crime. Good volunteering has the ability to transform and makes the volunteers feel good. The lives of the elderly, pensioners, and individuals with disabilities are improved by volunteering as well. Also, organizations that utilize volunteers gain from their efforts because they frequently rely on volunteer support for their development and growth (Nigerian National Volunteer Service & Office of the Secretary to the Government of the Federation, 2020). Volunteering is crucial to solving a variety of regional and national problems, including gender inequality, food poverty, youth unemployment, socio-cultural disparities, urbanization, and environmental problems such as climate change. By supplying a significant pool of human resources, volunteering makes a significant contribution to regional and national economy. Also, it improves the "quality of life," which may have impact on investment and job growth. Volunteering provides access to native expertise as well as a pool of people, material, and financial resources that can be used by governments to implement better programmatic and policy interventions. In order to directly participate in their own development and have an impact both locally and nationally, citizens and communities need to have access to skills and opportunities to volunteer. Volunteering, in general, is a vital tool for maintaining peace and advancing a country (Nigerian National Volunteer Service & Office of the Secretary to the Government of the Federation, 2020).

Volunteer groups have contributed in various aspects of Sustainable Development Goals such as poverty reduction, quality education, sanitation, gender equality and economic growth among others. For instance, National Youth Service Corps members through community service responsibility carry out activities related to environmental sanitation, attitudinal change, sports and sensitization. As observed by Uzoagu (2019) in Okereke and Oluka (2020), volunteering also plays a significant role in social cohesiveness, personal growth, and serving as a real tool for addressing societal issues. Its capacity to assist the government with the skills, energy, knowledge, and experience it needs to carry out better public programs and achieve its policy goals cannot be overlooked. International, state, and domestic organizations have heavily leaned on the volunteer sector to offer, maintain, and expand an ever-growing range of services to individuals, groups, and local communities in order to fulfil the diverse political, economic, and social goals. These services include community-building initiatives, informal and formal education training programs, health and welfare assistance, social care, chances

for physical exercise, technology and infrastructure advancements, capacity building, financial assistance, and political sensitization (Nicholas, Geoffery & Niki, 2021). Without a wide spectrum of people participating at all times, at all levels, it is simply impossible to achieve the SDGs. Volunteering promotes civic involvement, social inclusion, camaraderie, and a sense of ownership over the outcomes of development. It is significant that volunteering has a knock-on impact. It motivates others and pushes the social changes needed for the SDGs to become ingrained in local communities. Volunteers can increase capacity and offer technical assistance in all theme target areas. Through domestic, South-South, South-North, and North-South exchanges, they provide essential services, assist in talent transfer, promote the sharing of best practices, and provide vital international and local experience. By making their expertise available to public institutions and vulnerable populations, corporate volunteers can play a special role in this area. Volunteers contribute to the goal of leaving no one behind by making an effort to connect with everyone, including the most remote or marginalized members of society (United Nations Volunteers, 2020).

2.2 Challenges of Volunteering in Nigeria

Insecurity: Insecurity is one of the major problems of modern day volunteering in Nigeria. Today, the Nigerian society is bedevilled with so many security challenges such as banditry in the Northwest, Boko-Haram in the Northeast, farmers/herders conflict in the North Central and secessionist agitation in the Southeast among others. Ejiofor (2022) infers that Nigeria has experienced increase in criminal activities such as cattle rustling, kidnapping and looting collectively called armed banditry. Similarly, Ofoma (2022) observes the existence of a set of violent young people tagged “Unknown Gunmen” in the Southeast who are responsible for the security concerns in the region. Virtually, no part of Nigeria is currently safe especially the rural areas where most volunteering activities/services are badly needed. Most vulnerable people in the country are found in the hinterlands but these existential threats hinder the willing volunteers from reaching out to them for service delivery. Some volunteers are foreigners who do not know much about the terrain they are deployed to. So, in an event of security concern, they become agitated, uncomfortable and by extension discouraged in providing these selfless and important services to the individuals or communities.

Prevailing distrust among the Nigeria populace: arguably, the Nigerian society has in recent time been faced with disunity and total lack of trust among the

citizens including ethnic and religious groups. This situation has manifested in all aspects of the society resulting to allegiance to ethnic or religious group rather than the country. It has also affected volunteering in the country as so many volunteers have been resisted as well as volunteering services or projects rejected by communities in dire need of those services or projects because of disbelief. Ordinarily, volunteering is supposed to build trust among the people. As argued by Putnam (2000), the causal arrows between civic involvement and social trust are all intertwined like well-tossed spaghetti, and civic engagement and social trust are mutually reinforcing. Volunteering fosters trust because civic engagement has a good socialization effect. This opinion is at variance with the situation of volunteering vis-a-vis trust in the country. Nigeria volunteering state rather corroborates with the submission of Delhey and Newton (2003) that trust and measures of civic involvement of citizens are typically only tangentially related, and in other nations, trust and civic engagement are not related at all.

Paucity of infrastructure: Certain volunteering services are driven by infrastructural facilities such as power supply, good road network, wireless network and digital tools. These critical infrastructures are lacking in most communities where volunteering services are needed. Chioke et al (2021) in Okoh, Onwe and Ofoma (2022) observed the bad condition of road leading to Ugbo Oghe, Ugbo Ezeji, Ugbo Owa in Enugu East Local Government Area of Enugu State. Also, ICT infrastructure in Nigeria's 36 states and 774 local government areas, which has a very huge population, is only available in urban areas at exorbitant prices that are only affordable to the middle and upper classes of society. As a result, many rural and suburban areas are unable to fully participate in the emerging information economy (Ifijeh, Iwu-James & Adebayo, 2016 in Ofoma, 2021). This inadequate infrastructure has far reaching negative effect on volunteering service delivery to the people especially the rural dwellers. The effort in providing these critical infrastructures to communities by certain volunteers or volunteer organizations is an indication of their lack in the country. This particular challenge of ICT infrastructure for instance has great implications on the operation of volunteer organizations such as Jummai Aduda Organization whose main duty is advocacy, sensitization and awareness creation using social media platforms such as Facebook, WhatsApp, Twitter and Instagram etc. Reaching out to people especially those in the hinterlands for enlightenment becomes very challenging if not impracticable.

2.3. Nigerian National Volunteer Service as a Government effort towards promoting volunteering

In its desire to promote volunteering in the country and encourage Nigerian citizens to provide volunteer services as supports to government's efforts, the federal government in 2003 established the Nigerian National Volunteer Service. This was also in recognition of the country's pool of human capital, technical competence and investment potentials that could speedily drive developmental processes especially at the grassroots. The Nigeria National Volunteer Service is a volunteer management organization set up by the federal government to support efforts at national development through motivating, utilizing, managing, and successfully deploying the services and activities of both domestic and international volunteers who are Nigerians. Its mandate includes coordinating the processes of volunteering in the country as a mechanism to address developmental issues such as poverty, divisiveness and parochial interest in tribe, religion and politics against national interest. The functions of the Service are to: develop strategies to encourage volunteering for social progress and nation-building through organizing workshops and sensitization seminars across all six geopolitical zones; establish state-level offices and desk offices in local government areas; enhancing the capacity of NGOs and volunteers to provide information about volunteer management; work with corporate organizations in Nigeria to create corporate social responsibility initiatives that will motivate companies to support volunteers in their volunteer activity; and establishing suitable laws and policies that specify the obligations of volunteers and set guidelines for their selection, management, and support (Nigerian National Volunteer Service, 2023).

Since its inception, The Nigeria National Volunteer Service has been involved in certain activities such as formulation of policy on volunteering and coordination of volunteering activities and operations in the country. For instance, as part of programmes marking the International Day of Volunteers, Jummai Aduda Organization (a volunteer organization) in conjunction with United Nations Volunteers and Nigerian National Volunteer Service visited and donated Long Lasting Insecticide Treated Nets and Pharmaceutical Drugs to Primary Health Care Centre in Igu Community, Bwari Area Council of Federal Capital Territory, in order to reduce the death rate of children and adults in the area on account of malaria. However, a lot needs to be done especially in the areas of galvanizing Nigerians into volunteering services. Also, the contributions and activities of informal volunteers are largely unknown. This category of volunteers builds on

principle of self-organization to support developmental efforts put in place. There are a lot of individual volunteers funding education of the needy who are not their relatives. Some visit hospitals on monthly basis to take care of hospital bills of people they have not met before. Certain individual volunteers have also provided accommodations for non-relatives on charity basis. All these call for urgent attention and action on the part of the Nigerian National Volunteer Service.

2.4. Empirical discourse

Dirar, Berhanul, Getachew and Azadi (2016) interrogated financial product development and members' voluntary saving behavior in saving and credit cooperatives in Tigray: A case study in Endamohoni Woreda. The general objective of the study was deconstruct the financial product development and members' saving attitude in saving and credit cooperative societies Endamohoni Woreda district in Tigray, Ethiopia. The study used random sampling and structured questionnaire together with focus group discussion. The study revealed that age, educational level, marital status and number of dependents among others have significant impact on voluntary savings of members of SACCO. It was also indicated that the SACCOs provide inadequate financial products to their members. However, the study revealed that the members have access to other formal financial institutions, outside the ones given to them by SACCO. Drawing on these findings, the study suggested that SACCOs and other relevant authorities should consider the above factors during policy formulation so as to improve voluntary saving of members of SACCO.

Amadasun (2020) conducted a study to convey the experience of Nigerian social work students concerning their field practice education and training. It adopted semi-structured interview with graduating social work students using one-on-one interviews as the basis. The findings of the study revealed that despite experiencing a sense of professional satisfaction and pride as a result of their fieldwork education, the students nevertheless faced a number of difficulties. The conclusions of this study, even though they only involved a cohort of social work students, could have wider ramifications for social work education nationwide. As a result, recommendations were made for social work educators who serve as disseminators of social work information, skills, and values to ensure that students have an enjoyable and stress-free practicum experience.

Hansen and Slagsvold (2020) interrogated an army of volunteers? Engagement, motivation and barriers to volunteering among the baby boomers. The study

fundamentally aimed to interrogate various parts of boomers 'participation in and motivation for voluntary work. Utilizing data from the third (2017) wave of the Norwegian life-course, aging and generation study (n=2,993, age 53-71), the study revealed that a significant number of people were engaged as volunteers and a sizable number of non-volunteers have demonstrated their interest in becoming volunteers. It was also shown that there was irregular volunteering and there was insignificant number of volunteers carrying out their duties on weekly basis. The study also suggested that boomers can be mobilized when non-profit organizations accommodate more people with self-interest and put in place flexible forms of participation. As a panacea, the study advocated for a paradigm shift towards a more reflexive form of volunteering.

Richard, Holly and Simon (2021) investigated volunteers in the sport for development and peace sector: antinomies, liminality, and structural relations. The broad objective of the study was to improve the knowledge of modern sport for development and peace industry, particularly with regard to volunteers and volunteering in low- and middle-income countries (LMICs). Being a part of a larger cross-cultural research study on the global SDP sector, the paper draws on significant interview- and fieldwork-based research into SDP in three different locales (Kosovo, Rwanda, and Sri Lanka). The findings reveal the need for further study on volunteering, in other SDP sites, sports, or broader social and development sectors including education, community and youth work, leisure and recreation. It majorly recommended for more effective partnership between volunteers and educational institutions.

Adebola, et al (2022) examined the willingness and motivations towards volunteering during COVID-19 pandemic: A cross-sectional survey among final year medical students in Lagos, Nigeria. It was primarily a descriptive cross-sectional study carried out among final year medical students of two government owned universities in Lagos state. Data collection and analysis were done using web-based and SPSS respectively. The findings of the study revealed that there is high level of willingness among the final students to volunteer during COVID-19 pandemic. It was also revealed that students of Medicine and Surgery were more willing to volunteer during the COVID-19 pandemic. The study recommended among others that measures should be adopted to translate willingness to actual participation in the public health emergency system.

Boulianne and Steen-Johnsen (2023) conducted a study on the role of digital media towards political and civic engagement with special reference to the correlation between websites and social media and volunteering. Utilizing survey data gathered in 2019 and 2021 in USA, UK, Canada and France, the study revealed that information coming from the websites of volunteering organizations have stronger effect on volunteers' mobilization than social media. Notwithstanding, the study recommended for the adoption of multi-method (which will include both websites and social media) approach in communication.

Arguably, the above peer-reviewed papers are relevant to the subject under study as they underscored the place of volunteering in modern society using various cities or countries as their point of interests. However, it could be contended that none of the studies investigated the nexus between volunteering and sustainable development goals precisely in Nigeria. Accordingly, this particular paper is motive in that direction.

3. Methodology

This is a literature-based analytical historical study which naturally draws on secondary data. Essentially, the paper focused on peer reviewed papers on volunteering and Sustainable Development Goals. In searching for relevant and current literature, terms such as volunteering, volunteer, Sustainable Development Goals, gender equality, healthcare, economic growth and climate change were used. Information pertaining to the activities, projects and services of volunteer organizations was critical to the study and they were obtained from the websites of the volunteer organizations such as Nigerian National Voluntary Service, Red Cross Society of Nigeria, Women Environmental Programme, United Nations Volunteers, Voluntary Service Overseas, National Graduate Volunteer and Jummai Aduda Organization. Importantly, the Digital Object Identifier (DOI) and Uniform Resources Locators (URL) of the publications were provided for easier trace. Data gathered from the above sources were painstakingly analysed after adopting formal inclusion and exclusion criteria so as to create a consistent and valid results of the subject under study. It was on this premise that irrelevant literature were discovered and discarded.

4. Results and Discussions

Impact of volunteering on healthcare in Nigeria

The findings of this study demonstrate that volunteering has significant effect on healthcare in Nigeria. This result is strengthened by the submission by National

Graduate Volunteers (2022) that the door to door campaign in local languages against malaria and other diseases is a pointer to the immense contribution of volunteering in the Nigerian health sector. Volunteers are at the forefront of the crusade against female genital mutilation. They are found in every nook and cranny of the country exposing the ills of female genital mutilation. Promotion of nutrition is not left out in the scheme of activities carried out by the volunteers in the country. This result is supported by “A 3-Day Capacity Building Training for Journalists in Abuja” organized by Women Friendly Initiative. The training which was organized with the support of USAID palladium aimed at accelerating sub-national advocacy for implementation of adolescent and youth-friendly health services and the national strategic plan of action for nutrition (National Graduate Volunteers, 2022). The finding is further supported by Abdur (2020) while arguing that volunteering activities in the health sector of the country are known to be widespread especially during the COVID-19 pandemic. To aid in the fight against the transmission and treatment of the Corona-Virus pandemic, Jack Ma, the CEO of Ali Baba and a Chinese businessman, donated medical supplies to the Federal Government of Nigeria on March 27, 2020.

As part of its activities in assisting the government to curtail COVID-19 in Nigeria, the Nigeria Red Cross Society through its Saving Lives and Livelihoods initiative worked to ensure that at least 70% of the Nigeria population got vaccinated against COVID-19 (Nigeria Red Cross, 2022). Its involvement in managing COVID-19 through awareness campaign and distribution of face masks is revealing. Most volunteers are first responders in emergency situations. In March 2020, the federal government received a gift from the United Bank for Africa (UBA) amounting to 5 billion Naira (about \$13 million), which was meant to fund the construction of intensive care units, beds for isolation centers, and facilities for up to 450,000 daily patients to have direct access to medical advice (Aisha, 2020). The Union Bank and 54gene, a US-based genetic research organization, worked together with the support of Atlas Mara to fund the Covid-19 testing capacity in Nigeria to 1,000 per day (Onu, 2020).

Volunteering and gender equality in Nigeria

The result of this paper reveals a significant relationship between volunteering and gender equality in Nigeria. The activities carried out by different volunteer individuals, groups and organizations both local and foreign suggest the significant impact of volunteering on this critical component of SDGs. While lending credence to this submission, the Women Environmental Programme

(2023) observed that Women Environmental Programme in its quest to ensure that gender equality is given its rightful place in the country in 2017 came up with a project titled “Ensuring Effective Implementation of Programme, Policies and Legislations, that Contribute towards Achieving Gender Equality in Nigeria by 2030”. Its cardinal objectives were to advocate for policies and legislations geared towards encouraging women’s participation in decision-making as well as addressing challenges undermining women’s empowerment and involvement; and guarantee effective execution of projects and programmes by enhancing the capacity of CSOs, budget monitoring and awareness creation; This noble project was financially supported by the Kingdom of Netherlands. It was a five project which was implemented in Benue and Zamfara states targeting lawmakers, their Aides, States Executives, Civil Society Organizations, Religious and Traditional leaders (Women Environmental Programme, 2023).

This result is also in tandem with the assertion that, in 2022 a programme titled “Gender and Climate Justice: From Local Action to National Policy (Parallel Event)” was organized by Women Empowerment Programme aimed at educating local women on ways of protecting forests together with climate adaptation in agriculture. Ideas on gender-responsive climate and forest policies were exchanged. It is obvious that the above activities and projects of these volunteer groups have contributed in promoting gender equality in the country. The women folks have become more aware of their fundamental human rights and ways of protecting them. The capacity building exercises have not only led to adequate knowledge of fundamental human rights of the women, but have also resulted to intellectual growth needed for critical decision making in the country.

Volunteering and economic growth in Nigeria

The findings of the study also suggest the significant impact of activities of volunteer individuals, groups and organizations on economic growth in the country. Supporting this result, Women Environmental Programme (2017) inferred that the skills acquisition programmes, grants, soft loans and implementation of economic infrastructure by volunteers have spurred economic growth in Nigeria. In keying into the Federal Girls and Women Initiative in Nigeria (G-WIN), Women Environmental Programme organized training community-led total sanitation (CLTS), leadership and conflict resolution, slab construction and facility maintenance for rural women and girls in four pilot states of Abia, Bauchi, Plateau and Osun. Consequently, sixty (60) women and girls were trained. To reduce the devastating effect of security challenges in the

country, Women Environmental Programme designed a project titled “Connecting Women and Youth in Violent Extremist Prone Areas Through Empowerment and Skills Acquisition in Benue State” The project was carried out as part of a collaboration, with WEP acting as the Principal Recipient and four (4) additional organizations acting as Sub-Recipients. The Sub-Recipients are the Foundation for Justice, Development, and Peace, the Gender and Environmental Risk Reduction Initiative, the Angel Support Foundation, and the Center for Development and Social Justice (FJDP) (Women Environmental Programme, 2017). The project consisted of five programmes which include; preventing the recruitment and radicalization of in-school youth with the goal of helping to prevent the recruitment and radicalization of 16,000 in-school youth (in primary, secondary, and tertiary institutions) between the ages of 15 and 30 in the Ado, Agatu, Kwande, and Logo Local Government Areas of Benue State through awareness-raising, guidance and counseling, monitoring, and the development of innovative life skills; giving livelihood support to out-of-school, unemployed, and unskilled youth precisely to 268 out-of-school, unemployed, and unskilled youth between the ages of 18 and 35 in the local governments by the end of the project's second year; disarmament of armed 55 young people within the age bracket of 18 and 35 years in the area so as to provide an atmosphere needed for their demobilization and reintegration; to stop the ongoing conflict between farmers and herders in the above local government areas as well as expose other individuals with concealed identity creating confusion between the two groups; and restoring peace between the conflicting groups. This project was extended to North-western part of the country precisely Katsina state with direct and indirect beneficiaries are 26, 474 and 52, 948 respectively (Women Environmental Programme, 2017).

Volunteering and quality education in Nigeria

Result of the study also highlights that education has significantly impacted on volunteering in the country. This particular finding is in congruence with the observation by Voluntary Service Overseas (2017) that volunteers and volunteer organizations have made concerted efforts towards promoting quality education in Nigeria. In the wake of the shocking kidnappings and Boko Haram insurgency in Nigeria, Georgetown University, under the direction of the Institute for Women, Peace and Security (IWPS), organized a meeting in Washington, D.C. in August 2014 with representatives of a large number of the multinational corporations operating in Nigeria to promote the need for safe schools and to encourage cooperation and collective actions against these vices through volunteering

services. The Institute held a conference in September of the same year to promote the necessity of girl child education in Nigeria and beyond. This undoubtedly sparked cooperation between the government and private entities to increase enrollment rates for girls in the northern part of the country. In its project titled “Lab on wheels: Bringing science to Northern Nigeria” which aimed at closing the science gap in Nigeria which made the country to rank 131 out of 139 countries in math and science education, Voluntary Service Overseas lunched a mobile van equipped with lab resources and a certified teacher trainer to travel between 15 schools, serving about 7,500 students and 60 instructors. The Organization also provided top-notch instruction and mentoring in learner-centered methodologies and deployed these recruits to the rural areas to teach English, math and science (Voluntary Service Overseas, 2017).

Volunteering and climate resilience in Nigeria

Unlike the above findings, this particular result shows that volunteering has made insignificant impact on climate resilience. This specific submission is strengthened by the assertion by the Nigeria Red Cross Society (2022) that the Society in its efforts to support the government in providing succor to the affected persons launched a ₦10.6 Flood Emergency Appeal. Most importantly, the Nigeria Red Cross Society initiated an emergency appeal to generate 13 million Swiss Francs, which will be used to support up to 500,000 people with an emphasis on search and rescue, health care, water, sanitation, and hygiene promotion. The Society also promised to deploy Emergency First Aid Teams and do quick needs assessments among others (Nigeria Red Cross Society, 2022). This suggests that the efforts of volunteers and volunteer organizations have not impacted significantly on climate resilience or adaptation in Nigeria. Just like the governments’ approach, the services, assistance and care given by volunteers to victims of climate related events in the country seem to be reactive measures rather than proactive. This explains why climate change especially flooding has continued to be devastating in the country. Robust advocacy on climate resilience strategies by volunteers and volunteer organizations to communities appear to be lacking. The focus on palliative measures by way of donation of food items, cash and mattresses can only assuage the suffering of the people which will certainly reoccur even probably in a more devastating manner in another season. This submission is in consonance with the observation by Ofoma, Suleiman and Ejem (2023) that the persistent flooding incident in Nigeria has led to destruction of livestock, crops and seeding stores among others.

5. Conclusion and Recommendations

This study was framed within the context of volunteering in the achievement of Sustainable Development Goals in Nigeria. The result on good health shows that volunteers and volunteer organizations have played critical role in promoting good health among Nigerian citizens. This has manifested in the provision of pharmaceutical equipments, mosquitoes nets against malaria, sensitization campaigns against harmful traditional practices that have negative health implications. The paper also probed into volunteers and promotion of gender equality in the country. As revealed above, the activities and services of volunteers and volunteer organizations have impacted significantly on the promotion of gender equality. The advocacy for women inclusion in government, fundamental human rights, promotion of girl child education and empowerment of women and girls affected by violent crimes such as Boko-Haram and armed banditry point to this development.

The study also demonstrates the significant relationship between volunteering and economic growth in the country. Several projects have been executed by volunteer organizations such as Red Cross Society of Nigeria and Women Environmental Programmes aimed at equipping the people with the needed skills. This has enhanced the employability skills of the people and by extension enabling them to get jobs. Grants were in some cases offered to the people after the skills acquisition programmes to enable them start up what they have learnt. All these have contributed to economic growth of the country especially in the face of current challenge of unemployment with the government appearing overwhelmed. The correlation between volunteering and quality education was also dissected and it was shown that the projects executed by volunteer organizations such as “Lab on wheels: Bringing science to Northern Nigeria” have significantly impacted on the promotion of quality education in Nigeria.

Notwithstanding the above, the result on volunteering and climate action was rather insignificant as efforts made by the volunteer organizations whose activities were interrogated have not impacted significantly on climate related issues. Building strong resilience and adaptative capacity against climate events seems to be the best way of solving the problems of climate change. Sadly, the activities of volunteers probed have been fundamentally on provision succor to the victims of climate events rather helping them build effective resilience in the event of reoccurrence. Apart from provision of items and cash, there is need for volunteers and volunteer organizations to organize an effective sensitization programmes

aimed at educating the people on environmental sanitation and drainage system etc. On the whole, volunteering has impacted significantly in the achievement of Sustainable Development Goals in Nigeria.

Drawing on the above findings as well as conclusion, this paper suggests as follows:

1. There is need for volunteering system to be strengthened in Nigeria in order to enable it performs optimally. This requires review of volunteering policy together with the functions of Nigerian National Volunteer Service (NNVS) for better performance.
2. Volunteer organization should do better in climate resilience by way of sensitizing the citizens on climate resilience mechanisms rather than proving succor after the occurrence of climate incident.
3. Government in conjunction with volunteer organizations and other relevant stakeholders should decentralize security governance for conducive atmosphere to enable volunteers carry out their duties without fear of being attacked.
4. Governments (central and federating units) through their authorities such as National Orientation Agency, Ministries of Information should design a programme aimed at building trust among the citizens.
5. There should be adoption of public-private partnership model aimed at providing infrastructural facilities for volunteers in the country.

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Strategies for the Implementation of Environmental Protection Regulations towards Sustainable Waste Management in Oyo State

Amin AMIN^{1*}, ABDULRAUF Ambali² & ISIAQ Abdulmuhit Temitope³

¹Department of Public Administration, Kwara State Polytechnic, Ilorin, Nigeria

²Department of Politics and Governance, Kwara State University Malete, Nigeria

³Department of Human Kinetics and Health Education, Ahmadu Bello University, Zaria, Nigeria

*Correspondence Author: aminaminolohunoyin@gmail.com, Phone: 08068704786

Abstract

The pursuit of effective strategies for implementing environmental protection regulations towards sustainable waste management in Oyo State is a critical challenge. The state amidst its burgeoning population and economic activities, grapples with the generation of substantial waste, emphasizing the urgency for robust waste management strategies and the absence of comprehensive and well-executed waste management initiatives in the state poses a serious threat to the ecosystem, public health, and overall environmental sustainability. Therefore the study assessed strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State, Nigeria. The study unit was drawn from the Oyo State Ministry of Environment and Natural Resources, Oyo State Waste Management Authority, Mottainai Recycling Limited Ibadan, and the Oyo State Local Government Environmentalist. The population for this study was 369, while the sample size was 191 derived using Krejcie and Morgan (1970) sample size determination formula. An in-depth interview was conducted to complement respondents' opinions. Findings from the study showed that Oyo State has approved the establishment of dumpsites, awareness campaigns and educational programs focused on environmental conservation in the state. The study also revealed that there is implementation of penalties and fines for improper waste disposal. The study recommends that the Oyo State Government should establish a recycling plant to facilitate the conversion of waste into valuable resources and enhance robust public awareness and education campaigns, including the strengthening and enforcement of waste management regulations with stiff penalties for violations, to deter illegal dumping and improper waste disposal.

Keywords: Environmental Conservation; Environmental protection, sustainability, waste, management, Oyo State

1. Introduction

In the contemporary global landscape, the intricate balance between human activities and environmental health has become a paramount concern (World Bank, 2020). Rapid urbanization, population growth, and industrialization have led to a surge in waste generation, posing significant challenges to sustainable

development and environmental preservation (UNEP, 2019). As the world grapples with the consequences of inadequate waste management, there is an increasing recognition of the urgent need for comprehensive strategies that integrate environmental protection and sustainable waste management practices (Hoorweg, Bhada-Tata, & Kennedy, 2013). The significance of waste management extends beyond the local scale, resonating globally as nations strive to fulfil their commitments to environmental sustainability and climate action.

Safeguarding the environment involves preventing its degradation, a pressing concern exacerbated by factors like population growth, technological advancement, and excessive consumption. These elements have collectively led to detrimental consequences for the environment, posing risks to both human and wildlife well-being. The pursuit of environmental conservation aims to preserve the planet's biodiversity, fostering a symbiotic relationship between nature and humanity. This collaboration allows nature to continue its vital role in sustaining the well-being of humans, animals, and the earth itself. Recognizing the pivotal role, the environment plays in supporting healthy living and life's existence on earth is essential. An in-depth examination of global environmental protection initiatives since 1970 underscores the active participation of the United States Environmental Protection Agency (EPA) in safeguarding both the environment and public health (United Nations Environment Programme, 2021).

The implications of poor waste management stretch far beyond unsightly landfills; they encompass environmental degradation, ecosystem disruption, and potential threats to human health (UNEP, 2021). The pursuit of effective strategies for implementing environmental protection towards sustainable waste management in Nigeria, specifically within Oyo State, is a critical challenge. Nigeria faces environmental degradation issues due to factors like population growth and rapid industrialization, leading to inadequate waste management practices (World Bank, 2020). Oyo State, amidst its burgeoning population and economic activities, grapples with the generation of substantial waste, emphasizing the urgency for robust waste management strategies (Oyo State Ministry of Environment and Water Resources, 2021). The absence of comprehensive and well-executed waste management initiatives in the state poses a serious threat to the ecosystem, public health, and overall environmental sustainability. A thorough examination of existing environmental protection initiatives, waste management practices, and identification of barriers is essential to address this issue effectively (United Nations Environment Programme, 2021).

This approach aims to develop tailored strategies that consider the unique challenges faced by Oyo State in achieving sustainable waste management and environmental protection goals. Therefore, the main objective of the study is to examine the strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State. Based on the objective the following research questions are formulated; What are the strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State?

The paper is structured as follows; introduction, literature review, methodology, results and discussions, lastly conclusion and recommendations

2. Literature Review

2.1 Conceptual Discourse

Strategy

Strategy can be defined as a systematic plan or methodology crafted to achieve particular objectives or goals. It involves making purposeful decisions and allocating resources efficiently to tackle challenges, leverage opportunities, and realize desired results (Thompson, Peteraf, Gamble, & Strickland (2020). Strategies can be developed at different levels, including organizational, business, or individual levels, and may encompass various domains such as marketing, operations, finance, or broader business expansion. A well-executed strategy typically entails thorough analysis, strategic planning, implementation, and ongoing monitoring to adapt to evolving circumstances and optimize outcomes over time. Strategies serve as guiding frameworks to align actions with long-term objectives and increase the likelihood of success (Thompson et al., 2020).

Implementation

Implementation is the act of translating plans, decisions, or strategies into practical actions or practices (Bryson, 2018). It involves the execution of initiatives, allocation of resources, assignment of responsibilities, establishment of timelines, and monitoring of progress towards achieving set objectives. Successful implementation requires adaptability to changing conditions, overcoming obstacles, and addressing unexpected challenges to ensure the desired outcomes are realized (Bryson, 2018).

Regulation

Regulation encompasses the rules, statutes, and mandates formulated by governmental or authoritative entities to oversee, manage, or influence diverse facets of society, industry, or conduct. These regulations are crafted to uphold public welfare, safeguard consumer interests, preserve order, foster equitable competition, or attain particular societal objectives. They span various domains such as finance, healthcare, environmental protection, transportation, and labour, among others. Regulatory frameworks typically comprise legislative enactments, administrative guidelines, standards, and enforcement measures to ensure adherence and advance the desired aims (Nolan, 2019).

Environmental protection

Environmental protection is the concerted effort to conserve and safeguard natural resources, ecosystems, and biodiversity for the benefit of current and future generations, ensuring ecological equilibrium. It encompasses strategies aimed at pollution mitigation, waste reduction, energy conservation, and the promotion of sustainable practices to address environmental threats such as climate change, habitat loss, deforestation, and biodiversity decline (UNEP, 20210).

Waste management

Waste management encompasses the organized handling, collection, transportation, processing, recycling, and disposal of waste materials generated by human activities. It entails a range of strategies and practices aimed at minimizing the adverse environmental and health effects of waste, promoting resource efficiency, and decreasing the volume of waste destined for landfills or incineration. Waste management involves activities such as waste segregation, composting, recycling, landfill management, waste-to-energy conversion, and hazardous waste treatment. Its overarching objective is to sustainably manage waste, conserve resources, safeguard public health and the environment, and contribute to the transition towards a circular economy (EPA, 2023).

2.2 Theoretical Review

Theory of Planned Behaviour (TPB) by Icek Ajzen (1985) is a well-suited theory to examine the implementation of environmental protection regulations for sustainable waste management in Oyo State. TPB suggests that people's intentions to perform behaviour are influenced by three key factors:

- i. Attitude: The individual's perception of the behavior's favorability. In this case, this would be the resident's or relevant actor's (e.g., waste collector)

- view on how beneficial following the regulations is for the environment and their community.
- ii. Subjective Norm: The perceived social pressure to perform the behaviour. This would be the resident's or actor's perception of how important following the regulations is to their community and how others view compliance.

- iii. Perceived Behavioral Control: The individual's belief in their capability to perform the behaviour. It's the resident's or actor's perception of having the knowledge, resources, and infrastructure to comply with the regulations (e.g., accessible recycling bins, and clear guidelines).

The present study can use TPB to analyze: Residents' attitudes towards waste segregation, composting, and proper disposal methods as outlined in the regulations. The influence of community leaders, religious figures, and environmental groups on residents' behaviour (subjective norm). The effectiveness of government initiatives in providing infrastructure and education to support compliance (perceived behavioural control). By examining these factors, the study can identify areas where regulations need to be better communicated or where additional support is needed to improve waste management practices in Oyo State. By applying TPB and considering these additional aspects, the study provides valuable insights for policymakers in Oyo State to develop effective strategies for implementing environmental protection regulations and achieving sustainable waste management.

2.3 Empirical Review

Okoji, Adeyemi, and Olawuni (2023) evaluated community perceptions regarding waste management practices in the Ilorin metropolis, Kwara State, Nigeria. The improper collection and disposal of municipal wastes have resulted in various environmental challenges, including the obstruction of sewers, and drain networks, and the pollution of water bodies. The results indicated a statistically significant difference in residents' perceptions of waste management practices based on gender. However, there was no statistically significant difference based on marital status, education, and religion. The study recommends public enlightenment campaigns among residents and urban dwellers to promote proper solid waste practices, management, and disposal. However, the study fails to discuss environmental protection policies.

Amin, Raji and Salawu (2023) investigated the effects and obstacles associated with public policy in waste management for environmental security in Kwara State. The findings indicated that public policies on waste management contribute to the efforts of officials to deter fraudulent activities. The study revealed that most respondents expressed that waste management regulations streamline staff operations. Financial constraints and security concerns emerged as significant

challenges hindering the effective implementation of waste management in Kwara State. The paper recommended that the State Ministry of Environment and Forestry increase the deployment of environmental personnel to the State Environmental Protection Agency and allocate more capital to enhance its capabilities. Providing security for environmentalists is crucial for enabling them to carry out their duties effectively. Strengthening environmental laws across the state is advised to enforce sanctions against those violating environmental sanitation practices.

Salawu and Amin (2023) scrutinized Kwara State's environmental protection policies and strategies aimed at establishing sustainable waste management systems, adopting the theory of sustainable development. The findings indicated a notable public awareness regarding the significance of environmental protection and waste management in Kwara. The study unveiled the presence of a single approved dumpsite in the state and highlighted concerning low compliance with environmental and sanitation laws. The study recommended the establishment of recycling and treatment plants by the Kwara State government. Additionally, there was a suggestion to augment the allocated funds for environmental conservation.

Samuel and Olamide (2016) evaluated environmental sanitation and solid waste management in Ibadan North Local Government, Oyo State, Nigeria. The findings revealed that effective management of environmental sanitation and solid waste necessitates collaboration among agencies at the state and local government levels, alongside the involvement of private entities. Furthermore, the research illustrated that residents in Ibadan North local government area exhibited positive attitudes toward certain elements of environmental sanitation, while concurrently expressing negative perceptions regarding particular aspects of solid waste management. It is noteworthy that the scope of the article was confined to Ibadan North local government area.

Lishan, Bo, Tong, Liang, and Ouwen (2023) focused on the promotion and sustenance of public participation in waste separation policies within Shanghai, China. The research disclosed that the implementation of these policies resulted in a 5.3% increase in residents' satisfaction with waste management, accompanied by a notable 6.1% rise in willingness to participate. It emphasized that waste

generation can stem from environmentally inefficient resource utilization, with potential adverse consequences, underscoring the imperative to establish and advocate for a close alignment between environmental policies and waste management. It is noteworthy that the referenced article, although valuable, but neglected to address environmental protection policies, unlike the current research, which specifically explores the strategies of environmental protection policies in the context of waste management in Oyo State, Nigeria.

Armijo, Ojeda and Ramírez (2018) conducted a study centered on characterizing solid waste and assessing the recycling potential within a university campus. The research disclosed that Campus Mexicali I produces one ton of solid waste daily, with more than 65% of this waste being recyclable or possessing the potential for recycling. These findings suggest the practicality of instituting a segregating and recycling program within the university campus. Furthermore, the study highlighted that, considering existing conditions such as the number of recycling companies and their capacities, the local market can absorb all recyclable wastes generated.

Ijaiya and Joseph (2014) explored the reevaluation of environmental law enforcement in Nigeria. The study revealed significant challenges, including limited constitutional provisions for environmental protection, conflicts, and overlapping roles in environmental management, an overly legalistic approach by the courts, and a deficiency in mandatory disclosure of information. The research advocated for the advancement of private and public interest litigation, the introduction of procedures to enhance public participation in Nigerian environmental protection, the establishment of mechanisms to address environmental emergencies, and the creation of dedicated environmental courts.

Fagbohun (2012) provided insights into Nigeria's pursuit of environmental governance through interviews. The study underscored the tangible political, economic, and social costs associated with corruption. Specifically, the research highlighted that environmental damage stemming from practices like bribery, extortion, unfair policies, and other corrupt activities constitutes a significant and expensive consequence. Recognizing the profound impact of corruption on the environment, there is a widely accepted belief that heightened transparency and increased public participation play pivotal roles in enhancing the quality of decisions related to environmental issues. These revelations offer an avenue for

intervention, emphasizing the importance of transparency as a powerful tool for promoting conservation, preservation, and environmental justice.

Troschinetz and Mihelcic (2009) delved into the subject of sustainable recycling of municipal solid waste (MSW) within developing countries. The study unveiled that the average rate of MSW generation was 0.77 kg/person/day, with recovery rates spanning from 5% to 40%. The findings highlighted a significant correlation between stakeholder involvement and the three dimensions of sustainability—environment, society, and economy. The factors driven by all three dimensions, such as waste collection and segregation, the MSWM plan, and the local recycled-material market were particularly emphasized, indicating the need for high levels of collaboration with other factors.

Donnini, Rodrigues, Saide, and de Mattos (2007) conducted a study centred on the recycling potential of urban solid waste designated for sanitary landfills in Brazil. The research uncovered that approximately 90% of the waste held the potential for recycling, while only 10% required landfilling. A socioeconomic analysis of waste generation indicated that low-income neighbourhoods tended to dispose of relatively less packaging and more food waste, shoes, and construction debris compared to middle and high-income areas, potentially linked to lower purchasing power and education levels. The study also observed that more aluminium and uncoloured polythene terephthalate were discarded during warmer months, likely due to increased consumption of canned and bottled beverages.

3. Methodology

The study unit of the population of this study was drawn from the Oyo State Ministry of Environment and Natural Resources, Oyo State Waste Management Authority, Mottainai Recycling Limited Ibadan, Oyo State Local Government Environmentalist. According to Krejcie and Morgan's (1970) sample size determination table, in a population of three hundred and eighty (360-379), the appropriate sample size is one hundred and one (191) respondents. The population for this study was 369, while the sample size was 191. Out of the 191 questionnaires, one hundred and eighty-eight (188) were retrieved and analyzed, using the Statistical Package for the Social Sciences (SPSS) version 21. Data were analyzed, using a 5-point Likert scale with “1 = Strongly Disagreed, 2 = Disagreed, 3 = Undecided, 4 = Agreed, and 5 = Strongly Agreed”. An interview was also conducted to complement respondents' opinions. The key informant interview was conducted among the staff of the Oyo State Ministry of

Environment and Natural Resources, staff of Oyo State Waste Management Authority, MD/ CEO Mottainai Recycling Limited Ibadan, the Oyo State Environmentalist and residents.

4. Data Presentation and Analysis

Table 1: Strategies for the implementation of environmental protection policy in Oyo State

S/ N	STATEMENT S	SD	D	U	A	SA	Total	Aggregat e Response
1	Oyo state is implementing initiatives such as awareness campaigns and educational programs focused on environmental conservation.	5 (2.7%)	8 (4.3%)	7 (3.7%)	101 (53.7%)	67 (35.6%)	188 (100%)	Agreed
2	The state has approved the establishment of dumpsite.	2 (1.1)	4 (2.1%)	2 (1.1%)	68 (36.2%)	112 (59.6%)	188 (100%)	Strongly Agreed
3	The state government and NGOs are collaborating on joint initiatives.	1 (.5%)	10 (5.3%)	13 (6.9%)	100 (53.2%)	64 (34%)	188 (100%)	Agreed
4	There is implementation of penalties and fines for improper waste disposal.	4 (2.1)	10 (5.3%)	1 (.5%)	50 (26.6%)	123 (65.4%)	188 (100%)	Strongly Agreed
5	There is an establishment of recycling programs and waste separation initiatives.	13 (6.9%)	15 (8%)	16 (8.5%)	112 (59.6%)	32 (17%)	188 (100%)	Agreed

6	Engaging local communities and stakeholders in the decision-making processes.	7 (3.7%)	23 (12.2%)	7 (3.7%)	125 (66.5%)	26 (13.8%)	188 (100%)	Agreed
7	Introduction of waste-to-energy technologies including Anaerobic Digestion, Incineration, etc.	20 (10.6%)	41 (21.8%)	9 (4.8%)	90 (47.9%)	28 (14.9%)	188 (100%)	Agreed
8	Enforcement of source-based waste segregation such as Household, Commercial and Industrial.	23 (12.2%)	25 (13.3%)	8 (4.3%)	68 (36.2%)	64 (34%)	188 (100%)	Agreed
9	Encouragement and promotion of the reduce, reuse, recycle (3Rs) approach	49 (26.1%)	23 (12.2%)	12 (6.4%)	74 (39.4%)	30 (16%)	188 (100%)	Agreed
10	The state employs information and communication technology (ICT) to create a database on construction waste.	1 (.5%)	24 (12.8%)	1 (.5%)	141 (75%)	21 (11.2%)	188 (100%)	Agreed

Source: Researcher's Field Survey, 2023

On whether or not Oyo State is implementing initiatives such as awareness campaigns and educational programs focused on environmental conservation, data from the table show that 53.7% +35.6% = 89.3% agreed that Oyo State is implementing initiatives such as awareness campaigns and educational programs focused on environmental conservation. The finding aligns with the input from 2 respondents at the Oyo State Waste Management Authority. According to them, in addressing market sanitation issues, meetings are organized with key figures

such as the market, the Babaloja, Iya loja, and various stakeholders. During these meetings, the purpose is clearly communicated – emphasizing the urgent need for improved cleanliness in the market. The authority's express concerns about the market's current state and stress the importance of implementing measures such as registering with a waste consultant. Although, waste consultants are assigned to them, compliance has been an issue, leading to efforts in convincing and engaging with the Babaloja and Iya loja. However, the authorities express a sense of urgency, emphasizing that certain commodities in the market cannot be properly cleaned or cooked if hygiene measures are not enforced. Respondent 2 from the Oyo State Waste Management Authority further details a strategy introduced by the state government – the use of jingles. These jingles play a vital role in creating awareness among the public about the significance and risks associated with improper waste disposal. Notable examples include; the Baba Sabiko jingle and *Imo Toto* on BCS TV, which have significantly expanded the reach of the awareness campaign. Additionally, the authority conducts house-to-house campaigns and collaborates with the environmental tax force for security reasons. Market sanitation initiatives are implemented every Thursday, involving meetings with the Babaloja, Iya loja, and other stakeholders. Residents are encouraged to register with the waste consultant (Mottainai) to facilitate the efficient removal of their waste twice a month.

Equally, respondent 3 from Mottainai Recycling Limited Ibadan says that: The Oyo State Government conducts radio advocacy and awareness campaigns facilitated by Iya and Babaloja Bodija. Additionally, there is active community engagement involving meetings with community leaders and landlord associations. During these engagements, discussions center on promoting cleanliness and safety in the environment. Positive outcomes are observed, particularly within the Hausa community at Sabo and Ojo, where effective sensitization efforts have taken place. Furthermore, awareness initiatives extend to Okada and Micra riders, as well as transporters, with the reception of the ideas being well-received.

This discovery aligns with Mu's (2020) assertion that environmental awareness and education serve as effective tools in mitigating environmental issues and fostering public engagement in environmental governance. This correlation is also consistent with the findings of Bjorkland and Pringle (2001), who emphasize that environmentally aware and empowered youths can be pivotal agents of change for the enduring protection and stewardship of the environment. Furthermore, the

result echoes the conclusions drawn by Simmons and Martin (2002), indicating that environmental education plays a role in enhancing residents' awareness of green consumption and encouraging enterprises to adopt green production practices. In a prior investigation conducted by Jazat, Akande, and Ogunbode (2023), it was asserted that environmental education plays a pivotal role in fostering responsible behavior by equipping individuals with the essential knowledge, attitudes, values, commitments, and skills necessary for effective problem-solving. The beneficiaries of environmental education not only develop a caring attitude, but also exhibit curiosity and concern for the environment, reflecting in their acquired skills, attitudes and behavior.

On whether the state has approved the establishment of the dumpsite, observations from the table also show that $59.6\% + 36.2\% = 95.8\%$ of the respondents strongly agreed that the state has approved the establishment of the dumpsite. The finding is similar to respondent 1 from the Oyo State Ministry of Environment and Natural Resources who says that: In our beloved state, there are currently four approved dumpsites strategically located in key local governments across Oyo state. These include the Awotan dumpsite in Ido local government area, the Lapite dumpsite in Akinyele local government area, the Ajankanga dumpsite in Oluyole Local government area, and the Abaeku dumpsite in Onaara local government area. Among these, the Awotan dumpsite is considered the most optimal in Oyo state. This finding is consistent with the perspective of respondent 3 from Mottainai Recycling Limited Ibadan, who emphasizes that while the Oyo State Government has approved four dumpsites, there is a pressing need for additional sites to enhance effective waste management practices. Similarly, respondent 5 from Oyo State Local Government Environmentalist concurs, stating that all four approved dumpsites, particularly the Awotan dumpsite are nearing full capacity. The respondent suggests that the Oyo State Government should introduce landfills to create more space and provide an opportunity to convert waste into wealth.

The discovery aligns with the observations made by Yusuf, Adewoye, and Sawyer (2022), who noted the existence of an officially approved dumpsite in Kwara State, encompassing the Ilorin metropolis. However, they emphasized the need for improved management of this dumpsite to ensure safe and responsible waste disposal practices. In a study conducted by Udoh and Inyang (2016) waste collection challenges were reported in the study area, including issues such as a singular dumpsite causing routing problems, the use of a single type of waste

receptacle for all waste categories, inadequate consideration of bin sizes for overpopulated areas resulting in open receptacles, and waste overflow creating breeding grounds for rodents, fleas, and vermin. This finding resonates with a prior investigation by Temitope (2017), revealing that Oyo State has four approved dumpsites. The Ajakanga dumpsite, established in 1996 and located at Old Ijebu Road in Oluyole Local Government Area, Ibadan, is an open dumpsite spanning 10.034 hectares, operated by the Oyo State government. Another dumpsite, Lapite, established in 1996 at Moniya, Oyo Road in Akinyele Local Government Area, is still operational and classified as a built-up urban settlement. The Aba-Eku dumpsite, established in 1985 and situated at Olunloyo, Akanrakan Road in Ona-Ara Local Government Area, and the Awotan dumpsite, established in 1987 and located at Apete, Akufo Road in Ido Local Government Area, contribute to the waste disposal infrastructure in Oyo State.

On whether the state government and NGOs are collaborating on joint initiatives, the table reveals that $53.2\% + 34\% = 87.2\%$ of the respondents agreed that the state government and NGOs are collaborating on joint initiatives. The result is in line with Hushie (2016) and Dholakia (2013), acknowledging the positive impact of NGO-government collaboration on environmental and health improvements. This collaboration has notably contributed to the development of programs aimed at controlling and preventing various diseases, including cholera, communicable diseases, malaria, and tuberculosis across diverse communities. W.H.O (2001) concurred, recognizing the inevitability of NGO collaboration with the public sector in healthcare provision activities, especially for impoverished individuals, specific vulnerable groups, suburban populations, disabled individuals, and the elderly. Ejaz, Shaikh, and Rizvi (2011) assert that NGOs possess heightened capacities to identify societal issues and priorities compared to governments. NGOs establish more effective communication channels with communities to discern their needs and priorities, and solutions proposed by NGOs are readily accepted by society members.

On whether there is implementation of penalties and fines for improper waste disposal, the table reveals that $65.4\% + 26.6\% = 92\%$ of the respondents strongly agreed that there is implementation of penalties and fines for improper waste disposal. The result is similar to respondent 1 from Oyo State Ministry of Environment and Natural Resources that: The Oyo state established an environmental tax force. The officers are stationed in strategic places to monitor those who are dumping waste illegally because some people are dumping their

waste on road media. The violator is charged to court and pays a fine according to the judgment. The violator can be taken to prison if he/she fails to settle the fine. In addendum, respondent 3 from Mottainai Recycling Limited Ibadan, Oyo State Ministry of Environment and Natural Resources states that: Environmental officers are tasked with removing and apprehending polluters who resist compliance, dealing with violators by taking legal action, including court proceedings. Offenders below the age of eighteen face community service penalties such as cleaning streets, while those eighteen and older undergo legal judgment and fines, with specific penalties for flat tipper offenses that spread waste. The environmental task force, along with health officers, starts their duties before 7:00 a.m. To enhance their effectiveness, the public is provided with contact numbers of officials for reporting environmental issues promptly. Despite these efforts, public commitment to environmental protection and waste management in Oyo (Ibadan) is inadequate, with the city having earned a reputation as "the dirty city" in areas like Eleyele and Challenge. Miranda (2013) notes that the National Environmental Standards and Regulations Enforcement Agency (NESREA) in Nigeria is responsible for enforcing environmental standards and regulations, conducting research for environmental protection, and educating the public on proper waste disposal methods. Hakeem and Joseph (2014) emphasize that the Harmful Waste Act prohibits the illegal disposal of harmful wastes, with offenders facing severe penalties, including life imprisonment and asset forfeiture.

However, Ijaiya and Joseph (2014) argue that existing punishments for noncompliance are inadequate, and injured parties are not adequately compensated. Some environmental offenses are administratively punished rather than through corrective or criminal measures. The enforcement of environmental laws in Nigeria faces challenges, including a lack of modern technology, according to Fagbohun (2012).

On whether there is an establishment of recycling programs and waste separation initiatives, the table also reveals that $59.6\% + 17\% = 76.6\%$ of the respondents agreed that there is an establishment of recycling programs and waste separation initiatives. The finding is in line with respondent 3 from Mottainai Recycling Limited Ibadan states that: The Oyo state government has initiated various recycling programs and waste separation initiatives, although the state currently lacks a recycling plant. Despite this, the awareness around turning waste into a valuable resource has grown significantly, becoming a means of survival for many

residents. Previously, the prevalent practice involved the activities of Hausa scavengers, commonly known as Bola or Aluminium. These scavengers, permitted to operate, contribute to waste reduction, particularly items like Ankara (lasting 200 years), cloth (lasting 500 years without rust), and nylon, thereby lessening the load on dump sites. While organic waste typically goes to the dump site, the government encourages waste sorting at the source, as a 240-liter waste bin equates to a drum.

However, the absence of a functional recycling or treatment plant in the state remains a challenge. This observation aligns with Jenny and Tim's (2021) acknowledgment that commendable initiatives aimed at mitigating environmental damage, such as recycling plastic packaging into clothing or repurposing unused bread into beer, have gained popularity. Additionally, Pradipta and Harminder's (2018) previous study underscores the priority placed on recycling urban waste for sustainable environmental management in both developed and developing countries. Jacob, Kris, and Mengiseny (2021) further support the importance of waste segregation in the waste management chain, facilitating effective Reuse, Recycling, and Recovery (RRR).

On whether there is engaging local communities and stakeholders in the decision-making processes, the table also reveals that $66.5\% + 13.8\% = 80.3\%$ of the respondents agreed that there is Engaging local communities and stakeholders in the decision-making processes. The finding is in line with respondent 3 from Mottainai Recycling Limited Ibadan states that: Inclusive stakeholder consultation serves as the linchpin for addressing environmental protection and waste management, fostering a sense of belonging among stakeholders. This approach aligns with the findings of Mekonnen, Amanuel, and Terje (2022), who emphasize that the success of projects, especially those involving environmental decision-making, hinges on the active participation of stakeholders across all levels. The involvement of stakeholders is paramount for ensuring sustainability and environmental security. Richardson and Razzaque (2006) note that stakeholder participation in environmental decision-making enable citizens to exercise their democratic rights through the collective engagement of ordinary people, the media, environmentalists, academics, and scientists. Borghi, Macha, Kamuzora, and Mtei (2020) contended that involving stakeholders across the policy development cycle—encompassing problem identification, agenda setting, policy formulation, adoption, implementation, and evaluation—is crucial. This engagement is essential for understanding the diverse needs of various groups and communities, including

civil society organizations and donors with differing priorities. It contributes to promoting equity in policy outcomes. Lavee and Sagie (2007) argue that involving various parties can lead to innovative strategies, including recycling initiatives and circular economy models.

On whether there is the introduction of waste-to-energy technologies, the table also reveals that $47.9\% + 14.9\% = 62.8\%$ of the respondents also agreed that there is the introduction of waste-to-energy technologies including Anaerobic Digestion, Incineration, etc. The finding is similar to Moshood, Olawale, and Temitope (2022) emphasized that the adoption of a waste-to-energy system holds the potential to mitigate the adverse environmental impact resulting from waste generation. Additionally, it enables the production of renewable and sustainable energy, aligning with the principles of a circular economy. Evangelisti, Lettieri, Borello, and Clif (2017) highlighted the significance of integrating waste-to-energy (WtE) technologies into the energy/waste management system to ensure sustainable waste management and enhance the diversity of the energy generation mix. The utilization of municipal solid waste (MSW) for producing value-added products and energy carriers, such as biogas, syngas, hydrogen gas, and bio-oil, positions it as a promising renewable energy resource. UNEP (2019) reported that a significant portion of waste, ranging from 30% to 90%, is disposed of in landfills or dumpsites in Africa. Notably, plastic waste can be transformed into oil, and wood or woody biomass can yield syngas and char, as indicated by Chen et al. (2014).

On whether there is enforcement of source-based waste segregation such as Household, Commercial and Industrial, data from the table also show that $36.2\% + 34\% = 70.2\%$ of the respondents also agreed that there is Enforcement of source-based waste segregation such as Household, Commercial and Industrial. The result is in line with respondent 3 from Mottainai Recycling Limited Ibadan, which states that: The Oyo state government actively promotes waste sorting at the source, encouraging residents to segregate their waste for subsequent conversion into valuable resources. Initiatives for waste separation are implemented, allowing waste collectors and scavengers to operate and facilitate the segregation of waste into distinct categories, promoting reduction, reuse, and recycling. This approach aligns with the findings of Maletz, Dornack, and Ziyang (2018), who highlight waste segregation as a crucial step in the transition toward a circular economy. Troschinetz and Mihelcic (2009) emphasize the dependency of sustainable recycling programs, among other factors, on effective waste

segregation. Johnson *et al.* (2013) affirm that waste segregation substantially contributes to effective waste management. Stoeva and Alriksson (2017) suggest that waste segregation's impact on hospital waste management can enhance energy recovery from waste and improve the recycling process.

On whether there is encouragement and promotion of the reduce, reuse, recycle (3Rs) approach, the table reveals that $39.4\% + 16\% = 55.4\%$ of the respondents also agreed that there is encouragement and promotion of the reduce, reuse, recycle (3Rs) approach. The result is similar to respondent 3 from Mottainai Recycling Limited Ibadan, which states that: Registered scavengers are permitted to operate at the dumpsite daily from 8:00 am to 5:00 pm, contributing significantly to waste reduction. Their activities specifically target items such as cloth (Ankara), which can endure for up to 200 years, and nylon, with a lifespan of 500 years without decay. By engaging in these activities, scavengers play a crucial role in minimizing the volume of waste directed to the dumpsite. Organic waste, on the other hand, typically finds its way to the dumpsite. As an illustration, a standard waste bin has a capacity of 240 liters. To further encourage responsible waste management, the government advocates for waste sorting at the source, emphasizing the potential financial benefits of such practices. According to Armijo De Vega *et al.* (2008) and Donnini Mancini *et al.* (2007), well-planned and managed waste reuse, recycling, and recovery (RRR) initiatives can reduce the volume of waste for disposal by up to 65% of the total generated.

On whether the state employs information and communication technology (ICT) to create a database on construction waste, the table reveals that $75\% + 11.2\% = 86.7\%$ of the respondents also agreed that the state employs information and communication technology (ICT) to create a database on construction waste. The outcome aligns with the input provided by respondent 3 from Mottainai Recycling Limited Ibadan, highlighting that the Oyo state government has integrated technology, specifically Information and Communication Technology (ICT), to compile databases for waste construction and monitoring purposes. The actions of waste collectors are closely monitored using tracking systems, and Closed-Circuit Television (CCT) cameras are strategically installed to oversee both waste collectors and individuals contributing to pollution.

5. Conclusion and Recommendations

The study investigated the environmental protection policies governing sustainable waste management systems in Oyo state. It found that the Oyo State

government treats environmental protection and waste management seriously, addressing them through public awareness campaigns and strict law enforcement against violators. However, the study noted that some members of the public exhibit resistance to compliance. In the present era, global practices demonstrate the conversion of waste into wealth. Therefore, the Oyo State government has the opportunity to align itself with global standards, utilizing daily waste generation as a means to enhance the economic development of the state. The study recommends further that:

1. Oyo state government should establish recycling plant to facilitate the conversion of waste into valuable resources. Recycling initiatives are essential for a circular economy. Incentives for the establishment of recycling facilities, collaboration with existing businesses, and promoting the use of recycled materials in local industries will drive sustainable practices.
2. The government should invest more in cutting-edge technologies to bolster environmental protection and foster sustainable waste management practices. Investing in modern waste collection vehicles and strategically locating waste collection centres across the state will improve accessibility for residents. A robust public awareness and education campaign should be enhanced.
3. The Oyo state government should intensify on legislation and enforcement of sanitary laws. Strengthening and enforcing waste management laws, along with penalties for violations, will deter illegal dumping and improper waste disposal. Allocating funds for innovation in waste management technologies, fostering partnerships between research institutions and private enterprises, and regularly updating strategies based on emerging technologies will ensure continued progress.

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Socioeconomic Factors as Determinants of Crime Rates in Abraka, Delta State

¹AGBAMU, Mercy Etakpobunor (Ph.D) & ²IROGBO, Prosper Uyoyou (Ph.D)

^{1,2}Department of Sociology, Delta State University, Abraka.

Corresponding Email: mercy.agbamu@delsu.edu.ng Phone: 08027594225

Abstract

This study examines the complex relationship between education as a socioeconomic factor and crime rates in Abraka, Nigeria. Employing a cross-sectional research design, structured questionnaires were distributed to participants (n=100) drawn from an ideal sample size of (n=400) from a total population of N=79,963 calculated using the Taro Yamane sample size technique. The study population comprised youths and adult population aged 16-39 years, with varying socioeconomic characteristics. Data analysis was conducted using both descriptive and inferential statistics. From the analysis, the findings revealed significant negative correlations between access to quality education and crime rates in Abraka, underscoring the pivotal role of educational opportunities in mitigating criminal activities. Specifically, the study identified a trend where diminishing interest in formal education corresponded with an increase in crime rates, highlighting the importance of educational engagement in crime prevention efforts. It also found significant positive relationship between unemployment and crime rate in Abraka, suggesting that crime rate in Abraka increases or decreases subject to socio-economic status. Based on these findings, the study recommends addressing educational disparities and enhancing employment opportunities in Abraka. Policymakers are urged to enact comprehensive policies that prioritize socioeconomic development over solely relying on stringent law enforcement measures. By fostering educational advancement and providing pathways to gainful employment, Abraka can effectively combat crime and promote the overall well-being of its residents.

Keywords: Crime Rates; Education; Educational Disparities; Educational Opportunities; Socioeconomic Factors.

1. Introduction

Crime in contemporary Nigeria is a multifaceted issue with various interconnected causes that contribute to its prevalence (Ogunwale, Oshiname & Ajagunna, 2019). Understanding the major factors behind criminal activities is crucial for developing effective strategies (Mamajonova, 2023) to address and mitigate the challenges faced by the Nigerian society (Igbinedion & Ebomoyi, 2017). Several key factors contribute to the high rates of crime in the country (Dikko, Osi & Bello, 2013), including economic, social, political, and cultural aspects (Oyelade, 2019; Aaltonen, Kivivuori & Martikainen, 2011).

Evidence in the literature has long established a connection between crime rates and various socio-economic factors and this relationship has been extensively studied globally (Malik, 2016). Socioeconomic status (SES) encompasses elements such as poverty, unemployment, inequality, and cultural characteristics, which have been linked to both physical and psychological well-being (Chen & Miller, 2013). Quality of life (QOL) is a key dependent influenced by SES, impacting individuals' responses, including education attainment and involvement in crime (Williams et al., 2018). Globally, over 700 million people live in extreme poverty, struggling to improve their QOL through various means (Halkos & Aslanidis, 2023). The global crime rate has been steadily increasing, with a significant portion of the population residing in areas characterized by high criminal activity (Hodgkinson, 2022; Ucko & Marks, 2023). Studies demonstrate a synchronous relationship between SES and crime rates, with improvements in economic growth often coinciding with declines in crime rates (Goulas & Zervoyianni, 2015). Increasing levels of education have shown to significantly reduce conviction rates for property and violent crimes, as well as the likelihood of incarceration (Hjalmarsson & Lochner, 2012; Lochner, 2010). This is coupled with the fact that nations with higher educational attainment tend to have lower crime rates, highlighting the global significance of education in crime prevention (Rakshit & Neog, 2020).

Nigeria faces significant social and economic challenges, with education, unemployment, poverty, and inequality contributing to its crime rate (Oguntunde et al., 2018). High poverty rates, income disparity, and environmental degradation further exacerbate these challenges, particularly in regions reliant on agriculture or affected by oil production (Dan, 2017; Babatunde, 2017). Disparities in education and income levels widen the poverty gap which exacerbates crime rates (Kolawole et al., 2015).

Abraka is currently facing significant socioeconomic challenges, marked by a troubling increase in criminal activities such as cybercrime, ransom kidnappings, and armed robbery, posing a threat to the well-being of the community. This situation is closely linked to the town's socioeconomic conditions, characterized by high unemployment and income inequality, which contribute to criminal behavior as a means of economic survival (Achinulo, 2017). At the core of this issue is the unequal access to quality education, restricting social mobility and potentially leading to higher involvement in criminal activities (Atakpo, 2020; Bell, Costa & Machin, 2022).

Beyond individual consequences, the rising crime rates in Abraka pose a threat to community trust and security, eroding social bonds. Existing policies have struggled to address this multifaceted issue (Osuji, Obubu & Obiora-Ilouno, 2015) and have overlooked the crucial role of education and employment in combating crime. In 2019, the crime rate in Abraka was reported to be 64.3% higher compared to previous years, with property crimes and crimes against persons being the most prevalent (College Factual, 2019). This research primarily focuses on examining the relationship between education and unemployment, both being crucial socio-economic variable, and crime rate determiners in Abraka. Therefore, this study aims to delve into the correlation between crime and socio-economic variables specifically in Abraka, Delta State, Nigeria, building upon existing knowledge on the subject (Asghar, Qureshi & Nadeem, 2016; Igbinedion & Ebomoyi, 2017; Atakpo, 2020; Ajide, 2019; Achinulo, 2017; Bell, Costa & Machin, 2022; Oyelade, 2019).

The objective of this study is to identify the relationship between education as a socioeconomic variable and crime rate in Abraka. Also to identify the relationship between unemployment and crime rate in Abraka. Based on the stated objectives the following hypotheses are formulated:

1. There is a significant relationship between access to education and crime rate in Abraka.
2. There is significant relationship between unemployment and crime rate in Abraka.

Next after the introduction is the literature review, then methodology, result and discussions and finally conclusion and recommendations

2. Literature Review

The relationship between job opportunities, educational disparities, and crime rates in Delta State, Nigeria, especially in the context of Abraka, presents a multifaceted and compelling area of inquiry. This subsection explores the extensive literature surrounding the impact of unemployment, underemployment, and limited access to quality education on criminal activities, as well as the theoretical frameworks that help elucidate these complex dynamics.

2.1 Conceptual Clarification

For the purpose of this study, crime is conceptualized as any act or behavior that violates societal norms or laws, resulting in harm to individuals or communities. It encompasses a wide range of illegal activities, including theft, assault, fraud, and drug trafficking, cybercrimes, among others. The crux is that people resort to crime to alleviate socioeconomic limitations, such as income disparity, unemployment, poverty, among others.

Socioeconomic factors however refer to the totality of social and economic conditions that influence individuals' and communities' well-being and opportunities. Absence of these conditions creates strains that encourage criminality. Some of the socioeconomic factors highlighted include but are not limited to poverty, unemployment, income disparity, access to education and healthcare, social exclusion, and cultural characteristics. SuffICIENTLY, these factors shape individuals' life chances and opportunities and overall quality of life (QOL).

Central to both socio-economic conditions and crime is education, the process of acquiring knowledge, skills, values, and attitudes through formal or informal means. It encompasses formal schooling, vocational training, and lifelong learning opportunities that can boost individuals' personal development, social mobility, and economic advancement. Access to quality education is often considered a fundamental human right and is recognized as a key determinant of socioeconomic status and opportunities for individuals and communities.

2.2 Job Opportunities (Unemployment and Underemployment)

The correlation between elevated levels of unemployment, denoting the condition of individuals capable and willing to work but unable to secure suitable employment, and underemployment, which refers to individuals working in positions below their skill level or seeking full-time employment but settling for part-time roles, has been extensively examined and analyzed (Phillips & Land, 2012). In the specific context of Delta State, Nigeria, characterized by economic volatility stemming from fluctuations in the oil and gas industry, this relationship becomes particularly pronounced. The recurring economic instability in the region has led to persistent challenges of unemployment and underemployment, initially identified by Bowers and Pierce (1980) and Freeman (1996) as cited in Weatherburn, Freeman, and Holmes (2014).

The economic difficulties arising from this instability are closely tied to the availability, or lack thereof, of job opportunities. Confronted with limited prospects for gainful employment, individuals may be compelled to explore alternative means of survival, some of which might involve engaging in criminal activities (Metu, Kalu, & Maduka, 2018). This survivalist perspective, elucidated in these studies, illuminates the harsh realities experienced by communities like Abraka in Delta State, where individuals often navigate a challenging economic landscape, and crime may unfortunately become a consequence of these circumstances. As this study progresses, it becomes evident that addressing the issue of unemployment and underemployment is crucial for mitigating crime and enhancing the overall quality of life in Abraka (Makinde, 2015).

2.3. Educational Disparities

Disparities in accessing quality education can have repercussions on job opportunities, often aligning with one's economic status. Additionally, the level of interest that young individuals express in education plays a significant role in determining their educational attainment. Consequently, the combination of interest in education, its availability, and access to quality education emerges as crucial factors contributing to educational disparities (Bell, Costa, & Machin, 2022). Research by Sampson and Laub (1993) and Lochner and Moretti (2004) has extensively illuminated the profound impact of limited educational opportunities on individuals (Fulks, 2023). According to these studies, when educational possibilities are constrained, it narrows the range of available employment options, thereby increasing the likelihood of individuals turning to criminal activities as an alternative path (Bell, Costa, & Machin, 2022).

The well-documented link between education and crime is a pivotal aspect of criminology. In the specific context of Abraka, where educational disparities are a stark reality, the findings from Sampson and Laub, as well as Lochner and Moretti's research, bear significant relevance (Fulks, 2023). These studies provide evidence that enhancing educational access and quality can serve as an effective strategy in mitigating crime rates by expanding employment options and reducing the temptation of criminal involvement (Arisukwu et al., 2020). As the literature reveals, it becomes evident that addressing the educational gap is not only crucial for enhancing individual prospects but also holds the key to fostering a safer and more prosperous community in the region. This underscores the significance of education as a vital component of any comprehensive approach aimed at reducing crime and improving the overall quality of life (Welsh & Farrington, 2011).

The correlation between education levels and crime rates is a crucial aspect of discussions concerning socioeconomic disparities. In criminological discussions, there is an increasing emphasis on income inequality due to its profound influence on criminal activities. Wilkinson and Pickett's (2009) and Smeeding's (2005) research elucidates the detrimental effects of income inequality on community crime rates. Adekoya (2019) underscores the findings of Wilkinson and Pickett, as well as Smeeding, highlighting the established connection between income disparities and the rise of criminal activities.

This connection is attributed to the emergence of feelings of social injustice, a central element in criminological theories. Merton's strain theory, originating in 1938, suggests that when individuals perceive a significant gap between societal expectations and actual opportunities for success, it can lead to frustration. This frustration may prompt some individuals to resort to criminal behavior as a means of achieving their goals or addressing perceived injustices (Igbinedion & Ebomoyi, 2017).

Examining crime patterns in Abraka becomes crucial in understanding the impact of education on criminal activities. Data from the National Bureau of Statistics for Delta State reveals that crimes against persons, particularly murder and assault, were the most prevalent, accounting for 2,337 cases. Property crimes, including theft/stealing and robbery, constituted 1597 cases, while fraud/cyber-related crimes stood at 345 known cases in 2017. According to Akinyemi, Adeleke, and Adedoyin (2018), research indicates that common crimes such as theft, robbery, cybercrime, and drug-related offenses are predominantly committed by the youth population (Ezekiel et al., 2019).

In line with the paper published by Adekoya (2019) and Welsh and Farrington (2011), education emerges as the centerpiece of the puzzle. Literature has suggested that as education increases in society, although complexity also rises, there is a significant drop in crime rates. It has also been observed that as more people advance in their education, so do their earnings and access to better-paying job opportunities, mitigating incentives for crimes. However, education has shown no significant impact on white-collar crimes.

2.4 Theoretical Framework

The study adopted two theoretical frameworks-- strain theory and social disorganization theory - to explain socio-economic determinants of crime in

Abraka. Developed by Robert K. Merton in 1938, the strain theory provides a valuable framework for comprehending the dynamics investigated in the study regarding the influence of socioeconomic factors on crime rates in Abraka, Delta State, Nigeria. According to this theory, individuals may experience feelings of strain, frustration, and social injustice when there is a significant gap between their societal expectations and actual opportunities for success. In such circumstances, some individuals may turn to criminal behavior as a means of achieving their goals or addressing perceived injustices (Igbinedion & Ebomoyi, 2017).

In the specific context of Abraka, where the study explores the impact of socioeconomic factors on crime rates, strain theory serves as a fundamental framework for understanding the motivations and triggers behind criminal activities. It underscores the fact that a profound disconnect between societal expectations and available opportunities can lead to feelings of frustration and social injustice (Adekoya, 2017). In Abraka, characterized by economic challenges, educational disparities, and income inequality, strain theory becomes highly relevant. It enables a comprehension of how these socioeconomic factors might contribute to criminal engagement as individuals seek alternative means to address unmet needs and perceived social injustices. Acknowledging the significance of strain theory, this study attains a deeper understanding of the complexities of criminal behavior, offering potential pathways for evidence-based policy recommendations to reduce crime and enhance community safety in Abraka (Adegoke, 2021).

The Social Disorganization Theory, which centers on the breakdown of social cohesion and order within communities, holds significant relevance for the examination of the impact of socioeconomic factors on crime rates in Abraka, Delta State, Nigeria. According to this theory, when a community experiences weakened social bonds, the disintegration of community structures, and insufficient social control, it becomes more vulnerable to criminal activities (Abdullahi & Issah, 2016). In the context of Abraka, socioeconomic factors such as high unemployment, educational disparities, and income inequality have the potential to disrupt the social fabric of the community. Limited access to quality education and employment opportunities can result in a sense of alienation and disconnection among residents. This breakdown of social networks and community structures may create an environment where criminal behavior becomes more prevalent (Umar, Johnson & Cheshire, 2018; Akinwale & Aderinto, 2011).

Numerous studies have investigated the correlation between crime rates and socioeconomic factors. Wilson and Kelling's "Broken Windows" theory from 1982 suggests that visible signs of neglect, such as deteriorating buildings, may contribute to crime by implying a community that is overlooked by law enforcement (Newberry & Newberry, 2017). Communities exhibiting signs of neglect have been associated with higher levels of socio-economic disparities (Ren, Zhao & He, 2019). In Abraka, inadequate infrastructure and neglect are pertinent, influencing perceptions of safety and crime rates. This research focuses on various socioeconomic factors, including job opportunities, education, income inequality, and healthcare access, as potential precursors to crime rates (Price, 2016). The crime rate, measured per 100,000 population, exhibits fluctuations in relation to socioeconomic factors (Wang, Kifer, Graif & Li, 2016).

3. Methodology

Abraka is situated in a lowland landscape, and holds a unique geographical position, bordered by significant landmarks such as Obiaruku to the north, Eku to the south, the River Ethiope to the east, and the Niger Delta Basin to the west. This strategic location has historically contributed to its socio-economic importance. Notably, Abraka is distinguished as a university town, home to Delta State University, Abraka (DELSU), which was established on April 28, 1992, with a mission to provide higher education primarily to Deltans and beyond. The emergence of Abraka as a kingdom on May 6, 1978, marks a significant historical milestone, aligning with the establishment of other Urhobo kingdoms. Notably, Abraka stands out among Urhobo socio-political units for maintaining a distinct ancestral heritage, free from significant influence or integration with non-Urhobo communities. Abraka's development trajectory was notably influenced by infrastructural projects, such as the construction of a pivotal road linking Agbor to Sapele through Abraka in 1901. This development spurred population growth and increased commercial activities in the area, shaping Abraka's modern landscape.

The socio-economic fabric of Abraka is diverse, encompassing various activities ranging from tourism to agricultural and mining endeavors. Beyond its academic significance, Abraka serves as a destination for both domestic and international tourists, offering recreational facilities for outdoor activities like canoeing, fishing, swimming, and barbecue. Moreover, the mining of sand stones and plastering sand along the banks of River Ethiope and River Ovwuvwe, along with agricultural pursuits such as maize, okra, and water yam cultivation, are integral

to the livelihoods of Abraka's inhabitants. This economic diversity reflects the resilience and adaptability of the community amidst changing landscapes and socio-economic dynamics.

The research employs a cross-sectional research design to examine the correlation between socioeconomic factors and crime rates in Abraka, located in the Delta Central Senatorial District of Delta State, Nigeria. The structured questionnaire serves as the research instrument, utilizing a 4-point Likert scale to gauge respondents' agreement levels with the listed items. The study absorbs a total sample size of 120, determined through Taro Yamani's sampling technique from a population of 79,963. The recalibrated sample size, obtained by taking a quarter of the ideal size (ideal $n=400$), guides the selection of participants through simple random sampling across districts in Abraka.

Data analysis involves SPSS version 25, encompassing both descriptive and inferential statistics. Ethical considerations are upheld, including obtaining prior approval, securing informed consent, ensuring participant anonymity, and maintaining data security to preserve ethical integrity. The researchers explicitly state no conflict of interest.

4. Results and Discussions

A total of 120 questionnaire copies were distributed, with 107 retrieved for analysis. The data examination unveiled that 25% of participants fall within the 16-19 age group, 35% belongs to the 20-24 age group (the largest category), 15% are in the 25-29 age bracket, and the remaining 25% are in the 30-39 age group. The average age of the respondents is 23.45. In terms of gender distribution, 70% of the participants are male, while 30% are female. Regarding educational attainment, 15% of respondents have "No Education," 30% have completed "Primary Education," and the majority, 55%, have achieved "Secondary Education." In the realm of marital status, 50% of participants are "Single," 45% are "Married," and 5% are "Divorced." In terms of employment status, 50% of respondents are "Unemployed," 40% are "Underemployed," and only 10% are "Gainfully Employed." Regarding the duration of residence in Abraka, 25% have lived there for 2-10 years, 30% for 12-21 years, and 40% for 22-32 years, while only 5% have resided in Abraka for 39 years. The mean number of years of residence for all respondents is 22.

Test of hypothesis

In testing of the hypothesis, three variables were of interest—crime, education and gainful employment. The result of the analysis is present in the table below:

Table 1: Result of Pearson Correlational Analysis Using Two-Tailed Significance Level

Crime Rate	Pearson Correlation	1	-.253*	.498**
	Sig. (2-tailed)		.011	.000
	N	100	100	100
Education	Pearson Correlation	-.253*	1	-.107
	Sig. (2-tailed)	.011		.288
	N	100	100	100
Unemployment	Pearson Correlation	.498**	-.107	1
	Sig. (2-tailed)	.000	.288	
	N	100	100	100

Source: *Field Survey, 2023* *. Correlation is significant at the 0.05 level (2-tailed).

Based on Table 1 (correlation of coefficients run on SPSS), the hypotheses formulated are evaluated as follows:

Decision Rules:

1. If the p-value of the correlation coefficients is less than 0.05 (at the 0.05 significance level), then there is a significant relationship between variables.
2. If the p-value is greater than 0.05, it indicates that this correlation is not statistically significant

Hypothesis 1: There is a significant relationship between access to quality education and crime rate

The correlation between "Access to Quality Education" and "Crime Rate" is - 0.253*, and the p-value is 0.000 (two-tailed).

Decision:

Since the p-value is less than 0.05 (at the 0.05 significance level), this correlation is statistically significant. The negative correlation coefficient suggests that as access to quality education increases, the crime rate tends to decrease. Therefore, the data supports Hypothesis 1, hence hypothesis 1 is accepted.

Hypothesis 2: There is significant relationship between unemployment and crime rate in Abraka

The correlation between "Unemployment" and "Crime Rate" is 0.498^{**}, and the p-value is 0.011 (two-tailed).

Decision:

Since the p-value is less than 0.05 (at the 0.05 significance level), this correlation is statistically significant. The negative correlation coefficient suggests that areas with higher unemployment rates tend to have higher crime rates. Therefore, the data supports Hypothesis 2, hence hypothesis 2 is accepted.

In summary:

- a. Hypothesis 1 is supported, indicating a significant negative relationship between access to quality education and crime rate.
- b. Hypothesis 2 is supported, indicating there is a statistically significant positive correlation (moderate to strong strength) between crime rate and unemployment.

4.1 Discussion of Findings

The results of this study affirm well-established criminological theories and relevant literature, providing insights into the connections among crime rates, education, and gainful employment.

The negative correlation observed between crime rates and education (-0.253) supports Sampson and Laub's theory (1993), which emphasizes the significant role of limited educational opportunities in contributing to criminal engagement. Sampson and Laub (1993) contend that restricted access to quality education limits individuals' chances for social mobility, potentially leading to criminal behavior. Consequently, the negative correlation suggests that addressing educational disparities could be a crucial avenue for reducing crime rates (Asghar, Qureshi & Nadeem, 2016). By creating pathways for educational advancement, policymakers may potentially alleviate the frustration and social injustice that contribute to criminal inclinations (Adekoya, 2017).

However, the unexpected positive correlation between crime rates and unemployment (0.498) indicated in Table 1 prompts a re-evaluation of conventional expectations and finds theoretical support in Merton's strain theory (1938). Merton suggests that when individuals face a significant gap between

societal expectations and actual opportunities for success, it can lead to frustration, potentially resulting in criminal behavior (Asghar, Qureshi & Nadeem, 2016). The positive correlation may indicate income inequality, where a stark contrast between the employed and unemployed populations fosters criminal inclinations (Merton, 1938; Arisukwu, 2020; Bell, Costa & Machin, 2022).

This unexpected finding challenges assumptions about the relationship between employment and crime, with some scholars arguing that high levels of gainful employment may create social disparities, heightening perceptions of injustice and contributing to criminal behavior (Adegoke, 2021; Ajide, 2019). This suggests that merely increasing employment opportunities without addressing underlying socioeconomic inequalities may not be sufficient to reduce crime rates in Abraka.

The correlation between education and gainful employment, though weak (-0.107), implies a limited direct relationship, aligning with the complexity of Abraka's socioeconomic landscape. This finding resonates with broader literature emphasizing the multifaceted nature of crime dynamics and the need for holistic strategies (Oyelade, 2019). While education may influence employment opportunities, other dynamic factors such as economic conditions and market dynamics play pivotal roles in shaping the landscape of gainful employment (Abdullahi & Issah, 2016).

Nevertheless, the study unequivocally establishes that education is crucial in determining crime trends. A more educated community or youth population demonstrates an increased tendency to refrain from committing crimes. This is because, despite the limited relationship between education and gainful employment, education opens up socio-economic opportunities (Achinulo, 2017; Ajide, 2019; Atakpo, 2020; Abdullahi & Issah, 2016; Ajide, 2021).

5. Conclusion and Recommendations

The study underscores the pivotal importance of education and employment opportunities in tackling the increasing crime rates in Abraka. It emphasizes the necessity to rectify educational disparities and improve the quality of education as essential measures to effectively discourage criminal activities.

To address the rising crime rates in Abraka, several recommendations have been made based on the findings:

1. It is vital to prioritize and enhance access to high-quality education, as mitigating educational disparities and improving educational standards can serve as an effective deterrent against criminal activities.
2. Initiatives focusing on enhancing literacy and vocational skills can prove beneficial as well.
3. Allocating resources wisely to address healthcare needs is essential, and strategies for reducing crime should primarily focus on bolstering education and employment opportunities.
4. Given the established correlation between job opportunities and crime rates in Abraka, local policymakers should undertake thorough studies to gain a deeper understanding of the community's needs and establish an attractive salary structure.

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Inventory and Classification of the Existing Geomorphosite Resources for Sustainable Tourism Development in the Kano-Nigeria

**Aliyu Shuaibu MUHAMMAD PhD¹ Ibrahim Badamasi LAMBU PhD²
Saadatu IBRAHIM³ and Isma'il SHEHU⁴**

^{1&3}Department of Geography, Federal College of education, Kano

²Department of Geography, Bayero University, Kano

⁴Department of Urban and Regional Planning, School of Environmental Studies,
Kano State Polytechnic

Corresponding Email: abcgama05@gmail.com

Abstract

Lack of adequate inventory of the existing geomorphosite resources and their classification is among the major challenges of geoheritage development in Kano State. This study aimed to provide an inventory and classification of the existing geomorphosite resources in the state. Information pertaining to potential landscapes was sourced from the Kano State Tourism Master Plan (2007), Kano State Tourism Master Plan and Strategic Plan (2013), oral narration, journals and previous researches were used to collect their coordinates using hand-held Global Position System (GPS) Garmin eTrex H and analyze them based on their functions to local communities. Data were also collected through an interview on issues related to functions of the landscape to the early sellers of the local community. The result indicated that, there are 55 existing geomorphosite resources in the state. Religious and Cultural landscapes are the major classification of geomorphosites in the area. A proper update of potential geomorphosite resources in the state should be done in due course. Government, private sector and individuals should gear up towards developing geomorphosite resources in the state. Government, private individuals and Nongovernmental organization should utilize the existing geomorphosites in the promotion of geoheritage, geo-education and geo-conservation. Government, private individuals and NGO through partnership should put more efforts into the development of geological heritage through the provision of basic facilities necessary for the promotion of the sites.

Keywords: Classification, Geomorphosite, Geoheritage, Inventory and Tourism

1. Introduction

Globally, landscape varied with distinct attributes such as rocks, caves and other natural relief features that attracted different types of tourists owing to their representation of people's history, culture and geo-education. Some are exceptionally beautiful, while others are essential in understanding the evolution of the environment and often form part of the world tourism Industry. The industry is one of the largest and fastest growing industries that play an important role in promoting economic development all over the world (Yan & Jie, 2015), developing eco-cultural and scientific relation opportunities in the host

community. As one of the largest economic sectors in the world, statistics from World Tourism Barometer shows that International tourist arrivals grew by a remarkable 6% in 2018 to reach a total of 1.4 billion and it is expected to continue with the strong momentum of 3% to 4% increase in 2019 as results of favourable economic environment and demand from the major source markets (United Nation World Tourism Organization, 2019). The industry accounts for 9.5% of the total gross domestic product, 1 in 11 of the world's jobs, 5.4% of world exports, as well as 4.4% of global investment (World Travel and Tourism Council, 2014). The growth of tourism also, has facilitated an increase in global income, demand for leisure, ensured competition in the global tourism industry and provides many valuable socio-cultural interactions (Chockalingam & Ganesh, 2010; Sariisik, Turkay, & Akova, 2011). Fundamentally, tourism as an asset depends mainly on eco-cultural resources which have enormous potential for the development of socio-economic activities and sustaining the character of the environment and the host community. With this development many developing countries considered tourism today as the main sources of development and growth for local economies (Hodur, Leistrizt & Wolfe, 2005; Haller, 2012).

Tourism is an asset that depends mainly on natural and cultural resources that both developed and developing nations possessed which are being utilized to promote socio-economic activities and sustain the character of the environment and the host community. These resources have enormous potentials for development and poverty reduction where they occurred and are sustained, though the opportunities are not the same over the space, because of the variations of geographical characteristics.

Nigeria is a custodian of wide, varied and fascinating landscapes (Ayeni, Igbokwe, Onojeghuo, Onojeghuo & Ojiako, 2012) which have enormous potentials for sustainable tourism development amongst which is the Kano State. However, many of these attractions are still largely untapped and even in their raw states; they are still being enjoyed by few, either a very rich visitors in quest of exoticism or adventurous people in search of new challenges and experiences (Ayeni, et al, 2012), students in field work and researchers. These and many factors make the sites not to be fully recognized by the World Heritage Committee of UNESCO with the exception of very few across the country. These valuable resources require careful inventory and classification of landforms that have scientific and additional values in order to achieve meaningful sustainable

development goals for tourism purposes through promoting geomorphological heritage.

Though there are many empirical studies on the assessment of landscape resources for sustainable tourism development from different perspectives and approaches in Nigeria and Kano state in particular. But these studies are limited in spatial scope, as they addressed some parts rather than the entire state and thus excluded Inventories and classification of the existence of landforms that have scientific and cultural values for geomorphosite studies as most of the studies concentrate on identifying the eco-cultural tourism resources and their distribution in the state. These limitations constitute a gap between tourists, landscapes and the local community which thus affect the perspectives of geomorphosites studies in the Kano State. Based on this, it is important to make an inventory of the existing geomorphosites resources and their classification based on their importance to the local community. This can enhance the geographical character of the state, promote geoheritage, geoconservation, geo-education, poverty reduction and rational use of the sites. The study also provides geomorphosites information which can be used for effective marketing of Kano as a Geoheritage Haven State and open up new policy objectives by tourism planners and administrators and other related fields of study as well as to provide an avenue for further research.

2. Materials and Methods

2.1 The Study Area

Archaeological evidence identified in the Kano state from various places such as Challawa, Kukar-Bulukiya, Dala Hills, Santolo and Fangwai indicated that man was actively engaged in iron smelting culture in Kano at about 320 - 380 AD, which make the state to have a long history dating back to over 1,000 years (Mustapha Yakudima, Alhaji, Nabegu, Dakata, Umar, & Musa, 2014). However, in terms of development, towns and cities existed in the state which was surrounded by walls and gates that attracted many people from different parts of the globe, due to its historical and cultural significance.

The state lies between Latitudes $10^{\circ} 30'N$ and $12^{\circ} 37'N$ of the Equator and Longitudes $7^{\circ} 40'E$ and $9^{\circ} 23'E$ of the Greenwich Meridian. It has an estimated land size of 20,280 km² (National Bureau of Statistics, 2010) with a population of 9,401,288 (National Population Commission, 2006). It is some 900 Kilometers from the edge of the Sahara Desert and some 1, 100 km away from the Atlantic Ocean. The state shares boundaries with Jigawa state from the North and East,

from the West and South-West it borders Katsina and Kaduna states respectively. From the extreme South-East it borders Bauchi state (Figure 1).

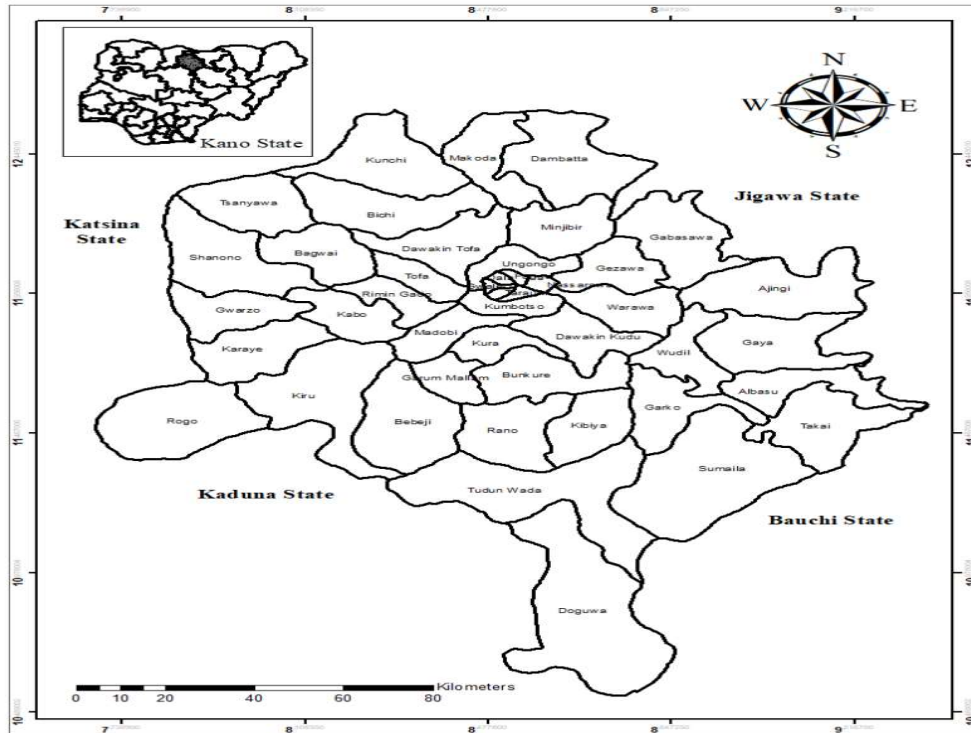


Figure 1: Map of Kano State Showing the Local Government Areas
Source: Cartography Lab, Bayero University, Kano

2.1.1 Geology and Relief of Kano State

Kano State is characterized by Basement complex rocks with elevation ranges from about 400metres (m) at the North-Eastern margin to over 1000m at the highest Southern tip (Olofin, 1987; 2008). The relief of the State as described by Olofin, (1987, 2008; 2014) and Rilwanu, (2018) is part of the Highlands of the Kano region, where the general elevation ranges between 650m to well over 1000m around the highest elevation of 1230m above mean sea level. However, the occurrences of geological processes in the state made it possible for the older granites to produce some isolated hills, inselbergs and dome-shaped structures that provide a good opportunity for tourism, (Barau, 2006 and Rilwanu, 2018). This makes the state house different geomorphic resources of interest for tourism

development, which if properly harnessed will promote geomorphosites studies in relation to geo-heritage, geo-conservation and geo-education.

2.1.2 Climate

Generally, the climate of the study area is the tropical dry-and-wet type, with more dryer than wetter months which is classified by Koppen's as Aw (Olofin, 1987, 2008). The climate of the state produces two dominant seasons in the state; i.e wet and dry seasons. The wet season lasts from May to Mid-October with a peak in August, while the dry season extends from mid-October of one calendar year to mid-May of the next. The commencement and length of the wet season vary between Northern and Southern parts of the state especially around Riruwai and Doguwa in the extreme south (Maryam, Halima & Ummi, 2014) where the length of the season is six months from early May to late September, while in Northern parts it is from June to early September (Kurawa, 2006). The mean annual temperature is about 26⁰C (Olofin, 2008). This makes the state to have the advantage of good climatic condition in influencing the choice of the season to visit the geomorphosites in the state by geotourists and provides opportunities for other types of outdoor activities.

2.2 Types and Sources of Data

Quantitative and qualitative methods of research were employed in the study. The quantitative data include data pertaining to the inventory of the potential landscape for geomorphosites study of the state which was sourced from the Kano State Tourism Master Plan (2007), Kano State Tourism Master Plan and Strategic Plan (2013), oral narration, journals and previous researches were used to collect their coordinates and analyze them based on their functions to the early sellers of the local communities. Data were also collected through visitation to the attraction sites and collecting their pictures and coordinates using hand-held Global Position System (GPS) Garmin eTrex H. The qualitative data were collected through an interview on issues related to the functions of the landscape to the local community.

2.3 Sources of Data

Required data for the study were sourced both from field and documentary sources. The field data were obtained by visiting the locations of the geomorphosites resources and their coordinates were collected using a hand-held Global Position System (GPS) Garmin eTrex H which was exported to ArcGIS

for mapping. The geomorphosites resources were classified based on their functions such as; archaeological, cultural, historical and religious values.

Documentary data on the inventory of the geomorphosites resources were sourced from the Kano State Tourism Master Plan (2007), Kano State Tourism Master Plan and Strategic Plan (2013), Jigawa State Tourism Board, Rock Painting Arts of Birnin Kudu, published and unpublished materials. Interview guide was used to solicit responses on the function of the landscape to the local community.

2.4 Population, sample size and sampling of the study

Landscapes of Kano State such as; hills, rock formations, caves were the target geomorphosites for the study. Based on the researchers' compilations from various sources (published and unpublished documents) the total number of the existing potential landscapes for geomorphosites in the State are 55. Also community leaders (village or ward heads) of all the 55 identified landscapes were used as the population of the study.

In sampling the required sample size of the landscape for the study in the State, all the identified landscapes that have scientific and additional value were purposively considered in the study. Also all the 55 community leaders (village or ward heads) around the identified landscapes were sampled for the study to have a full understanding of the functions of the landscape to the early settlers of the area.

2.5 Methods of Data Collection

The Global Positioning System (GPS) as an instrument was used to collect the quantitative data comprising locational information and other attributes related to geomorphosites resources through field surveying technique to make an inventory of the resources and their classes. Interview schedule with the community leaders to collect data on the function of the geomorphosite resources to the early settlers of the state.

2.6 Methods of Data Analysis

To achieve analysis of the inventory and classification, records of the existing geomorphosites resources were used to generate the coordinates of each destination and were related to their geographical locations. Lines were used to delineating road networks in the Region. The selected geomorphosites were

extracted from the map using on-screen digitization for the query. The overlaid layers were created in ArcGIS for storing and managing Geographic Information.

However, the significance of the sites to the early settlers in the state that were gotten from documentary and oral source were used to create classes/types of geomorphosites and their map in the GIS environment. Microsoft Excel was used to record the data acquired from GPS of the geomorphosites in tabular form which have different preparation to make them compatible with the software utilized for the analysis for easy exporting to ArcGIS 10.3 version for analysis, integration and presentation of the map.

3. Results and Discussion

Inventory, Distribution and Classification of Geomorphosites Resources in the Kano State Identifying and inventorying where available geomorphosites resources are located in the State is the first step to be done for geoheritage, geo-education and geo-conservation for tourism development. Taking into account that Kano State occupies about 20,280 km² size of the country, therefore only those landforms that possess additional value due to human perception in the region are considered in the study. However, since the declaration of Dala hill as geological heritage in the Kano state as a state monument by the state government under the supervision of the Kano State History and Culture Bureau, visitors with different interest from within and outside the country continue to patronize the sites without considering other important landforms that portrayed the culture, history, religious and other values of the early settlers in the state.

Based on the inventorying of the geomorphosites resources found in the Kano State, the result shows that the state is blessed with about 55 (Figure 2) existing geomorphosites resources found in different locations across the state that have the potential to attract different types of tourists. Out of the 55 identified sites located in the Kano state, Bebeji local government area has the highest occurrence of geomorphosites resources in the Kano state. The nature and characteristics of the geological formations found in the state resulted into different types of geomorphic resources that are very well spectacular in shape and unique capable of supporting scientific research, conservation, and preservation practices as well as satisfying the interest of the different tourists.

To appreciate the scenic importance of the resources in the state, Barau (2007a) and Abba and Rilwanu (2018) described the area as a place where the outstanding

The scenery rock shaped in the form of a traditional store (Rumbu) is believed to have a mystic ability of forecasting how good the next rainy season would be. Other important landscapes in the region are; Dashere inselberg (plate 3), Fajewa rock gongs (4) sand dunes (plate 5) and Draughts hill (plate 6).



Plate 1: Tsangaya Hill at Albasu LGA



Plate 2: Rumbun Dutse at Albasu LGA

The Dashere inselberg is located at Rurum town in Rano local government area of Kano state, the site is believed to be a place where the wife of one of the earlier kings of Rano called Dashere lived, due to its beautiful and pleasant flat terrain at the top for resting. The Fajewa rock gongs like other existing rock gongs in the region is the oldest musical instruments that produce sound-like drums used during ceremonial rituals in the ancient periods.



Plate 3: Dasher inselberg at Rano LGA



Plate 4: Rock gong at Fajewa rocks at Takai LGA

In terms of relaxation, the region also provides some important landscapes that were used by the early human in the region for enjoyment and relaxation. The Dara holes (Draughts hill) in Rano local government area of Kano State (plate 6) serve as a good example where carve out holes on a rock was used as a game of ***Dara Joint*** for recreational activities of Kwararrafa and Habe rulers of Rano and later the game was used during traditional ceremonies.



Plate 6: Draughts hill at Rano LGA

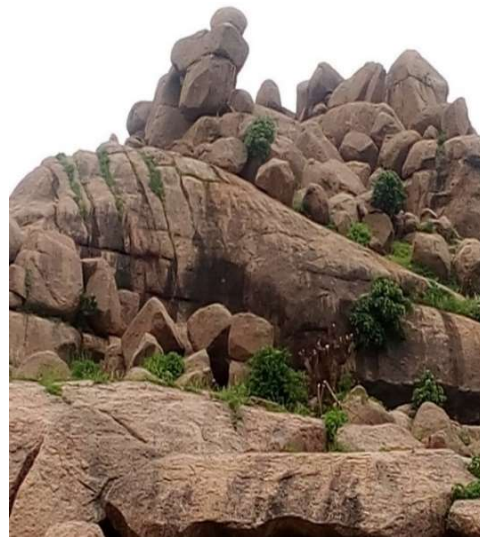


Plate 7: Mainasara Inselberg at Bebeji

In terms of defence, some landforms in the region provide good opportunities to the local community during civil unrest in the past to protect themselves against invaders and today they are worthy of tourism promotion. The Mainasara Inselberg (Plate 7) and Gabosanni rock ranges (Plate 8) in Bebeji and Bichi local government area of Kano State respectively provide an excellent defensive mechanism that forms part of the history of the areas and is good for sightseeing. The Mainasara Inselberg is believed to source its name from the victory that the site gives to the community over invaders during the war period. Findings from oral narration through interview revealed that, *“during war period the hill raised smoke as a signal to the community and it was at the top of the hill that the Emir of Rano died at the battle with Rantan warriors”*. While Gabosanni rock ranges are believed to have been used as a hideout during the war period and also emit smoke as an alert or signal to the community when invaders are coming to the area for them to prepare.

However, among all these geomorphosites, only Dala hill of Kano city (Plate 9) was declared a state monument by the state government under the supervision of the Kano State History and Culture Bureau. The remaining geomorphosite resources are waiting to be recognized either by the Local Governments, States and the National Commission for Museums and Monuments.



Plate 8: Gabosanni rock ranges at Bichi



Plate 9: Dala hill at Dala

The availability of geomorphosite resources and their driven opportunities in promoting tourism in Kano State confirmed the findings of Abba (2007); Barau (2007b); and Abba and Rilwanu (2018) in their studies carried out in some parts

of Kano state, that the area possessed varieties of natural attributes that have excellent inherent value and attractive fascinating sites that satisfy the thirst of the mind and eyes of tourist as well as ideal for earth sciences, mountaineering, sightseeing and recreational activities.

Classification of Geomorphosite Resources

The values of the landforms in the region depend to the large extent on the perceptions of the community on the geomorphosites resources. The differences in perceptions make the resources have enjoyed different recognition by the different community depending on the relationship between landscapes and the community. Based on the available description of the function of the identified geomorphosite resources from both documented and oral sources, 6 classes were identified, namely; Archaeological, Cultural, Defense, Historical, Paleo-Climatic and Religious (Figure 3). Out of the identified existing geomorphosites resources, variation occurred in their concentration (Figure 5) based on the functions of the landscape within the region which formed an important factor for the development of geomorphosites resources based on the values community hold on their local culture, history and social beliefs. The findings of the study are in conformity with the statement of Aldakhil (2007); Abba (2016) and Olayinka, Elochukwu and Okeoma (2018) that people in each region react to socio-cultural connotations of available object in their local environments due to their role in shaping; political, economic and social activities of man. The relationships between man and the physical environment make the global community have enjoyed various forms of unique diversity in geological heritage worthy for an attraction that forms part of the world heritage sites. This is because as posited by Ijeomah, Abere, and Onwuma, (2018) and Enemu, Ijoma, and Mbagwu (2021) that tourism as an activity involves a special relationship between visitors, the industry, the environment, culture using artifacts and souvenir to narrate or portray age-long ancestral interactions with host communities.

Based on Figure (3 and 4) the most frequent types of landscape based on functions its the religious landscape (17) and historical (16). The results indicate that Kano state can be considered a laboratory for the study of the relationship between the religious, history of the early settlers and the landscapes.

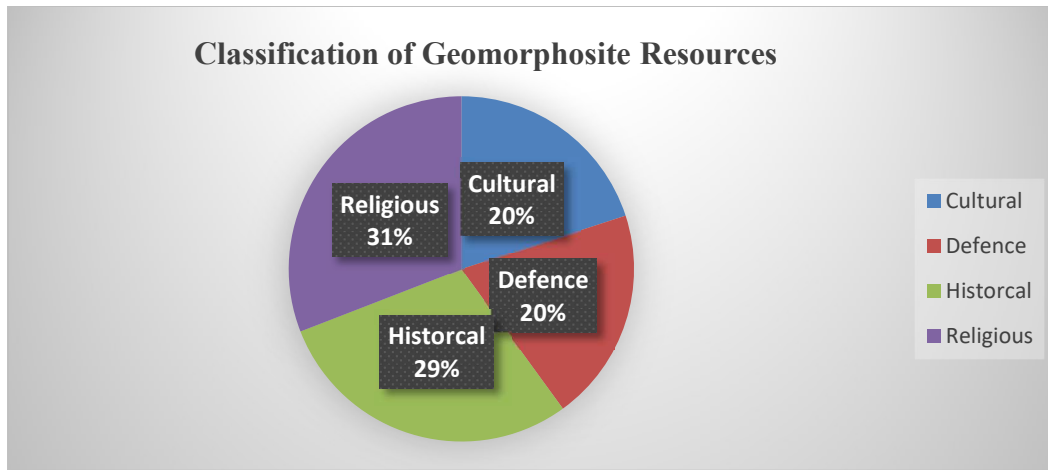


Figure 3: Classes of Geomorphosite Resources in the Kano State

The relationship between the religious, historical heritage and the landscapes of the region's confirmed the assertion of Abba (2016) that the physical environment played an important role in shaping the religious belief and ritual practices of man in the Kano state that form part of their socio-cultural systems.

The results further indicated that, since the early days of the region's settlement, people have had a strong relationship with their landscape and are closely associated with their culture, especially in festivities, beliefs, relaxation and cultural architecture. The man's environment relationship in the state resulted in some geoheritage of the community that are of high interest to the tourist community by providing a memorable experience to the tourist. But today, the findings from the interview with community leaders shows that *"most of the traditional practices served by the religious and archaeological landscapes in the past to the early humans in the region are not in practice, due to influence of modernization and changes in faith that dominate the minds of people in the region"*. The result agreed with the findings of Rabo (2014) that today's dwellers of Bauchi and Jigawa States of Nigeria no longer participate in ceremonies that are linked to the rock paintings, due to the influence of the Islamic religious faith.

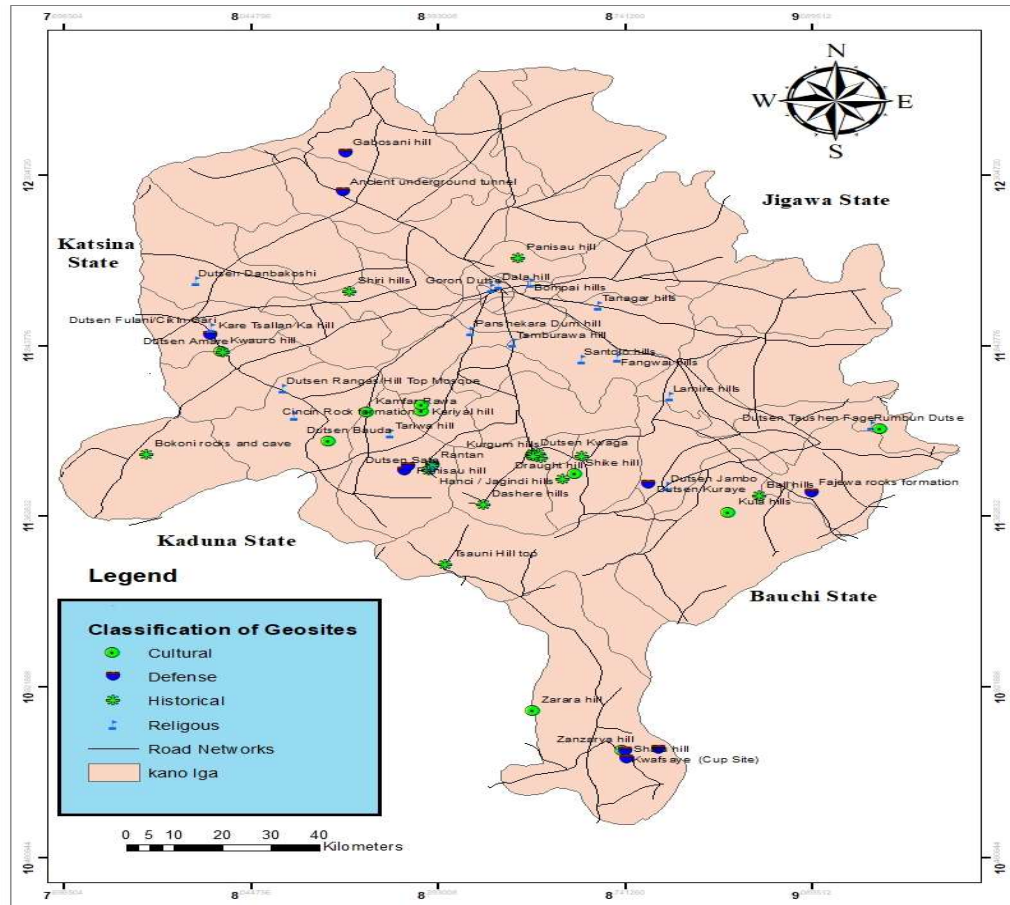


Figure 4: Spatial Distribution of Classes of Geomorphosite Resources in Kano State

Among the inventoried geomorphosites, eleven (11) promote cultural experiences of early humans in the state such as; Shi-Ke, Tsangaya hill, Zanzarya hill, Kamfar Rawa and Dara hill among others. However, another eleven (11) of the landscapes serve as a defensive mechanism to early settlers in such areas like Dutsen Sata, Rantan, Kare Tsallan Ka, Gabosanni, Maisaje and Fajewa rock formations. This indicated that, a number of landscapes in the state are good in promoting the cultural and defensive functions of the early settlers of the state which are good in promoting geo-heritage and geo-education.

4. Conclusion and Recommendations

Following the findings of the study it is observed that the Kano state is blessed with about fifty-five (55) existing geomorphosite resources located in different parts of the state that have the potential to attract different types of tourists. The enormous resources available within the state when properly developed would also serve as a strategy for the promotion of geoheritage, geoeducation, geoconservation and management priorities. Out of the fifty-five (55) identified sites, Bebeji local government area had the highest occurrence of geomorphosites resources in the region. Based on the available description of the functions of the identified geomorphosite resources from both documented and oral sources, four (4) classes were identified, namely; Cultural, Defence, Historical and Religious and the most frequent types of landscape based on their functions are the Religious (17) and historical landscape (16) in the Kano state. Based on the findings, it can be concluded that Kano State is blessed with enormous geomorphosite resources that would attract different types of tourists and serve as a strategy for the promotion of geoheritage, geoeducation, geoconservation and management priorities. From the foregoing the following were recommended:

A proper update of potential geomorphosite resources in the state should be done in due course. Government, private individuals and NGOs through partnership should utilize the existing geomorphosites in the promotion of geoheritage, geoeducation and geo-conservation and should put more effort into the development of geological heritage through the provision of basic facilities necessary for the promotion of the sites.

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An Analysis of Demographic and Occupational Categories at Risk of Diabetes in Metropolitan Kano, Nigeria

¹Hassan, M.B. ²Abdulkarim, I.A., ³Adamu, Y.M. & ⁴Mohammed, M.U.

¹Department of Geography, Federal University Gusau, Zamfara State Nigeria

^{2,3,4}Department of Geography, Faculty of Earth and Environmental Sciences, Bayero University, Kano

Correspondence's E-mail: mohammedbubahassan@fugusau.edu.ng
+2347061037399

Abstract

This study is aimed to analyze the influence of age, sex and occupational categories as risk factors of diabetes mellitus in Kano Metropolitan Kano, Nigeria. The study was conducted from January, 1st 2005 to December 31st 2014 covering the period of about ten years and examined a total of 8126 diabetic case files. Purposive sampling was used in selecting the facilities. A total of four health facilities were identified and selected for the purpose of this study. The facilities are Murtala Muhammad Specialist Hospital MMSH, Muhammad Abdullahi Wase University Teaching Hospital, Sheikh Muhammad NJidda General Hospital and Waziri Shehu Gidado General Hospital. The following data were sourced from the case files: date admitted in to the facility, occupation, sex, age and address. Arc GIS 10.2 software was used to generate the spatial maps. However, Chi-square test was used in testing the hypotheses using Statistical Package for Social Science 20.0. The result indicated that demographic and occupational categories of people at risk of diabetes significantly varied in Metropolitan Kano. Therefore, there is significant difference in the number of diabetes mellitus cases among the age groups. The most affected age groups are from Kano municipal local government and falls within the age group of 56-60 years with total cases of 197 (2.4%). Also, the findings revealed there is significant difference in the number of diabetes mellitus cases between the gender groups, with men having high cases of diabetes mellitus. The study further revealed that there is significant difference in the number of diabetes cases among the occupational categories with house wives accounted for the highest cases of 1946 cases (23.9%), followed by civil servants recorded the least number of 1035 cases (12.7%) in Kano metropolis. The State governments should establish, staffed and fund testing and counseling centers at all levels of primary health care centers across the state. Ministry of health and diabetic association of Nigeria should organize routine public enlightenment programmes specifically targeting the most vulnerable age, gender and occupational groups. However, long term intervention strategy should be directed towards establishing diabetic speciality hospitals in Metropolitan Kano.

Keywords: Analysis, Demographic, Occupational, Diabetes Mellitus, Kano

1.0 Introduction

Diabetes as a non-communicable disease has increased in both developed and developing countries in the last decade. However, great proportions of mortality

from non-communicable diseases especially diabetes mellitus occurred in middle-income and low income countries (WHO, 2016). Diabetes is one among the major factor for cardiovascular diseases and there are reports of rise in prevalence of pre-diabetes in Nigeria. It continued to remain a silent killer especially in the developing nations of the world. Poor knowledge and awareness are the major predisposing factors, which leads to delay in presentation of the diseases at the health facility (Oguoma, *et.al.*2017).

The number of diabetic patients with varying degrees of complications continue to increase significantly, a quite number of admission is largely either as a result of diabetes or diabetes related diseases which can be one of the following diseases such as stroke, hypertension, nephropathy, neuropathy and retinopathy (Adiseshiah, 2005). However, world prevalence of the diabetes was estimated to be 2.8% in 2000. The global prevalence of diseases among adults (aged 20-79 years) was estimated at 6.4% affecting 285 million adults in 2010. It is expected to rise to 7.7% and affecting 438 million adults in 2030. However, from 2010 to 2030, it is predicted to rise to about 69% in developing countries and a rise of 20% in developed countries. However, .36% of the global rise of 154 million people with the diseases is predicted to manifest in countries like China and India (Shaw, *et.al*, 2010). The global effect of the diseases is increasing rapidly especially in developing countries (Mbanya, 2010 and Whiting, *et.al* 2011). Similarly, worldwide about 387 million persons with the prevalence of 46.3% and 8.3% of undiagnosed in the age group of 20-79 years were estimated to have diabetes (IDFA, 2014).

A lot of studies were carried out in relation to diabetes mellitus using the case study of states across Nigeria. For example, Adeleke, *et.al.*(2010) conducted a study on childhood diabetes mellitus in Kano, North Western Nigeria. The study reviewed hospital records of pediatric patients managed for diabetes mellitus at Aminu Kano Teaching Hospital. Ugege, *et.al* (2013) studied childhood diabetes mellitus in Sokoto, North western Nigeria: a ten year review. The study reviewed case files of children aged 15 years and below with childhood diabetes mellitus at the Usman Danfodio University Teaching Hospital (UDUTH) Sokoto. Chijioke, *et.al* (2010) studied pattern among Type-2 diabetic patients in Ilorin, Nigeria. Akinjinmi, (2014) studied the prevalence of diabetes mellitus in Abeokuta, Ogun State Nigeria. Ebenezer, *et.al.* (2003) studied prevalence and risk factorstype-2 diabetes among adult Nigerians in Port Harcourt, Nigeria. Olaitan, (2012) studied patients' knowledge of causes, effects and complications of diabetes mellitus in

Ilorin, Kwara state, Nigeria. This study intends to assess and analyze both the demographic and occupational categories of persons at risk of diabetes mellitus in the study area. This is important because the study explains the spatial and temporal patterns of health and diseases outcomes. Therefore, the objective of the study is aimed at analyzing the demographic and occupational categories at risk of diabetes mellitus in Metropolitan Kano. The specific objectives of this study are to examine the influence of age, sex and occupation as risk factors of diabetes mellitus in Metropolitan Kano, Nigeria. Based on this objective, this study formulated the following null hypothesis.

1. Ho: There is no significant difference in the number of diabetes mellitus cases between the age groups.
2. Ho: There is no significant difference in the number of diabetes mellitus cases between the sex groups.
3. Ho: There is no significant difference in the number of diabetes mellitus cases between the occupational categories.

2.0 Materials and Methods

2.1 Study Area

The area of study comprises of the eight local governments areas of Kano State which include; Nassarawa, Fagge, Gwale, Ungogo, Municipal, Nassarawa, Tarauni, Kumbotso and Dala. Kano metropolis lies from Lat. $11^{\circ} 52'N$ to $12^{\circ} 7'N$ and Long. $8^{\circ} 22.5'E$ to $8^{\circ} 47'E$. It is 472 meters above sea level. Metropolitan Kano is bordered by Minjibir Local Government, on the North East and Gezawa Local Government Area to the East. While Dawakin Kudu Local Government to the South East, Madobi and Tofa Local Government Areas to the South West, lastly Dawakin Tofa Local Government to the North West (Ahmed, 2010). The study area comprises of the urban areas within the sixty square kilometers. While the built up land is contained within forty eight square kilometers (Marafa, 1992).

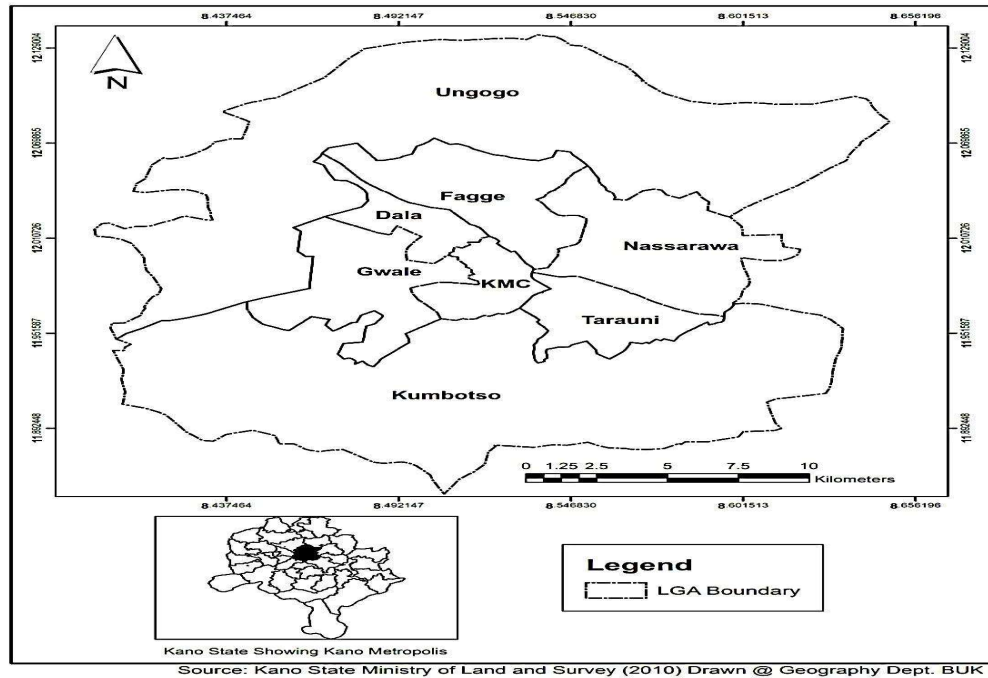


Figure 1: Metropolitan Kano

2.1.1 Climate

Kano is characterized by distinct wet and dry seasons. The climate is coded as Aw according to Koppens classification of climate. The fluctuations of the wet and dry seasons are dictated by the movement of Inter Tropical Convergence Zone (ITCZ). The total annual rainfall ranges from 850–870mm. The average temperature 27°C and ranges from warm to hot throughout the year (Olofin & Tanko, 2002). The wet season last from June–September, while the dry season last from mid-October to mid-May. Long term meteorological records revealed that relative humidity of 50%, evaporation of 1772mm and $8\frac{1}{2}$ hours of sunshine per day (Liman, Abdulkadir & Mohammed, 2014).

2.1.2 Population of the Study Area

Metropolitan Kano is one of the emerging cities in Sub Saharan Africa. It is the largest city in Northern Nigeria. It had a population of about 96,805 persons in 1931. In 1952, the population increased to 130,170. However, in 1963, the population rose to 295,432 (Maiwada, 2000). Additionally, the 1991 census put the population of Kano state to stood at 5,810,340 persons where Metropolitan

Kano had a total of 1,432,255 which represented 24.3% of the population of the entire State (Bala, 2000). However, the 2006 population census, reported Kano State with a total of 9,383,683 persons where metropolitan Kano recorded 2,165,223 persons (NPC, 2006).

2.1.3 Socio economic activities

Kano metropolis is the second largest commercial and industrial centre in Nigeria that has been experiencing rapid growth rate (Nabegu, 2008, in Gambo 2016). Metropolitan as an integral part of the old Hausa city state which enjoyed eminent position of being a foremost center of commerce, Islamic thought and culture (Yarzever, 2014). Although, in the 60s and 70s the predominant occupation was trades and agriculture, however, due to the change in land use, the vast agricultural lands have been converted to commercial and residential areas. This has pushed many people to abandoned agriculture and embraced other means of livelihood (Mohammed, 2006). Additionally, Kano metropolis is characterized with many secondary economic activities and also served as the center of commerce as well as seat of government (Yarzever, 2014). Therefore, Kano metropolis being a center of commerce as well as a seat of government, it is presumably certain that the predominant occupations of the inhabitants are business/trading and civil service.

2.1.4 Culture

Culture of the people especially the types of food and the eating habits exposed many individuals to greater risk and make them more vulnerable to develop diabetes. It is evident that when one examines the usual meal and the pattern of breakfast, lunch and dinner, in most homes in both urban and rural Kano, it is predominantly foods that contain carbohydrates and fats such as rice, maize, millet, guinea corn, wheat and dairy products. It has been part of the culture for many years, which affects the normal functioning of the pancreas and insulin production. Some studies have established association between the risk of Type-2 diabetes and different patterns of food intake (Liese, 2009, Schulze, 2004). High amount sugar in foods has been associated with increased risk of Type-2 diabetes (Villegas, 2007).

2.2 Data Types and Sources

This study used secondary type of data from the Health Records Units of Murtala Muhammad Specialist Hospital, Muhammad Abdullahi Wase University Teaching Hospital, Sheik Muhammad Jidda General Hospital and Waziri Shehu

Gidado General Hospital. Reported, diagnosed and hospitalized patients from January 1st, 2005 –December 31st, 2014 were included in the study. A total number of 8126 case files were analyzed in the study. The data obtained for the study included the date of patient admission into the hospital, sex, age, address and condition of the patient on discharge from the hospital which includes: Discharged home, referred, dead, absconded and discharged against medical advice (DAMA). This data is very reliable because it only included cases that were diagnosed and documented in the health facilities.

2.3 Data Collection Methods

The data were directly sourced from the documented information in the diagnosed case folders from the selected health facilities. At the data coding stage some addresses, were merged as well as treated as a single ward. This resulted from the fact that at the time of admission into the clinic their addresses of place of residences were not captured on the case files. However, on many case files the actual age of the patients was not captured rather the columns showed AD which signified that the diagnosed person is adults. All case files with missing information were coded and treated as others during the analysis. Additionally, only diagnosed persons that died in the health facility were included during the data analysis. However, in order to address the limitation of missing information on the case folders, all missing information were treated as **not indicated** in the final analysis.

2.4 Sampling Techniques

This study used purposive sampling in selecting the health facilities. These include two Specialist Health care facilities and two General Health facilities. This study selected these hospitals because they are the major secondary health facilities with qualified physicians that run free consultancy services for diabetic clinics in Kano Metropolis. The study used purposive sampling because it is convenient for the researchers to locate such facilities.

2.5 Method of Data Analysis

This study captured both demographic and occupational variables which included age and sex. Statistical Package for Social Sciences (SPSS) software version 20.0. was used to conduct the Chi-square test. Chi-square was used to test whether there is significant difference in terms of diagnosed cases among the age groups, gender groups and occupational groups. Therefore, age, sex and occupation were

treated as independent variables, while the number of diabetes cases were analyzed as dependent variables.

Therefore, at 0.05 level of significance and 5% degree of freedom, if the result indicated a significant difference in the number of diabetes mellitus cases between the age groups when p value is 0.00 which is less than 0.05 alpha, we can reject the null hypothesis which stated that 'there is no significant difference in the number of diabetes cases between the age group' and accept the alternative hypothesis and conclude that there is significant difference in the number of diabetes cases between the age groups. Similarly, the 2nd null hypothesis that stated 'there is no significant difference in the number of diabetes mellitus cases between the sex groups' can be rejected and the alternative hypotheses be accepted at 0.05 level of significance if the p value is 0.00. However, the 3rd null hypotheses which stated that 'there is no significant difference in the number of diabetes mellitus cases between the occupational categories can be rejected and the alternative hypothesis be accepted if the p value is 0.00 which is less than 0.05 alpha.

3.0 Results and Discussion

3.1 Demographic Characteristics (Age) and Diabetic Cases

The findings of the study revealed higher diabetes mellitus cases in the following age groups, for example; 56-60 years which accounts for 13.6% of the total cases, 46-50 years (12.7%), while the age group of 36-40 years accounts for 9.9% of the total cases. The most affected age groups are from Kano municipal local government and falls within the age group of 56-60 years with total cases of 197 (2.4%). It is high in the above age groups because they are age groups that are more obese than other age groups. Obesity as a risk factor is more common among the people in the city than in the periphery. This conforms to the study of Almdal (2008) that reported a strong linkage between obesity and type 2 diabetes in men and women. This finding conforms within the age groups 20-79 years as stated by International Diabetes Federation Atlas update (2014). This findings revealed Low cases of diabetes in age groups of (<15) years with 18 cases (0.2%) and the age groups of 16-20 years with 137 cases (1.7%), because diabetes mellitus is very uncommon among children and teenagers. This result conforms with that of Adeleke, *et.al* (2010), Ugege, *et.al* (2013), John, *et.al* (2013). However, variations in the diabetes age groups do exist both generally and within the local government. For example, generally the age group of 56-60 years has the highest diabetes cases of 1104 (13.6%). Variations among age groups do exist at

the level of individual local governments areas. For example, within Gwale local government the age groups of 36-40 and 56-60 years have the same cases of 129 (1.6%). In Ungogo local government the age groups of 46-50 and 56-60 years, accounts for 1.3% generally and within the local government. One of the reasons for these variations in diabetes mellitus among the age groups within a local government area is probably dictated by time of diagnosis or hospitalization. This is because in some patients the disease is detected and diagnosed early while in some patients the disease is detected after the manifestation of the clinical complications such as retinopathy, nephropathy and cardiovascular disease.

These clinical complications may take more than 10 years to manifest. However, the chi-square test revealed a big gap in the number of cases between the age groups in the Kano Metropolitan Wards, because the p value 0.00 which is <0.05 alpha. Therefore, the (H_0) that there is no significant difference in the total number of cases between the age groups is rejected and the alternative hypothesis (H_1) that there is a significant difference in the total number of cases between the age groups is accepted. However, the spatial distribution map that shows diabetes mellitus cases has indicated a significant difference in diabetes mellitus cases between the age groups. This indicated that the age group of people 56-60 years accounted for 13.6% of the total cases of the diseases in the study area. Therefore, in terms of health care planning, government need prioritize more resources to the most affected age group.

Table 1: Age and Diabetes Mellitus Cases in the Eight Kano Metropolitan Local Governments

	Gwale	Dala	Fagge	Kano Municipal	Kumbotso	Nassarawa	Tarauni	Ungogo	Other LGAs	Total cases
Age	%	%	%	%	%	%	%	%	%	%
Age not indicated	.8	1.0	1.5	1.5	.5	.6	.3	1.7	2.2	10.2
<15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
16-20	.2	.1	.1	.4	.1	.3	.1	.2	.2	1.7
21-25	.1	.1	.5	.2	.1	.2	.1	.1	.4	1.9
26-30	.6	.2	.7	.6	.2	.7	.3	.3	.6	4.2
31-35	.5	.4	.3	.6	.4	.4	.1	.2	.6	3.3
36-40	1.6	1.0	1.2	1.5	.6	1.2	.7	1.1	1.0	9.9
41-45	1.0	1.6	.6	1.3	.8	1.1	.6	.7	.9	8.6
46-50	1.5	1.4	1.0	2.0	1.3	2.1	1.1	1.3	1.0	12.7
51-55	1.2	1.2	.5	1.4	1.1	1.0	.6	.7	.9	8.5
56-60	1.6	1.0	1.4	2.4	1.1	2.2	.9	1.3	1.6	13.6
61-65	1.2	.3	.4	1.3	1.0	1.2	.9	.6	.7	7.5
66-70	.6	.5	.6	1.2	.4	1.6	.6	.2	.6	6.3
71-75	.5	.3	.1	.8	.3	.7	.4	.1	.1	3.3
>75	1.0	.4	.5	1.5	.8	1.2	1.1	.3	1.1	8.0
Total	12.3	9.6	9.3	16.7	8.6	14.6	8.0	8.8	12.0	100

Source: Data Analysis 2015

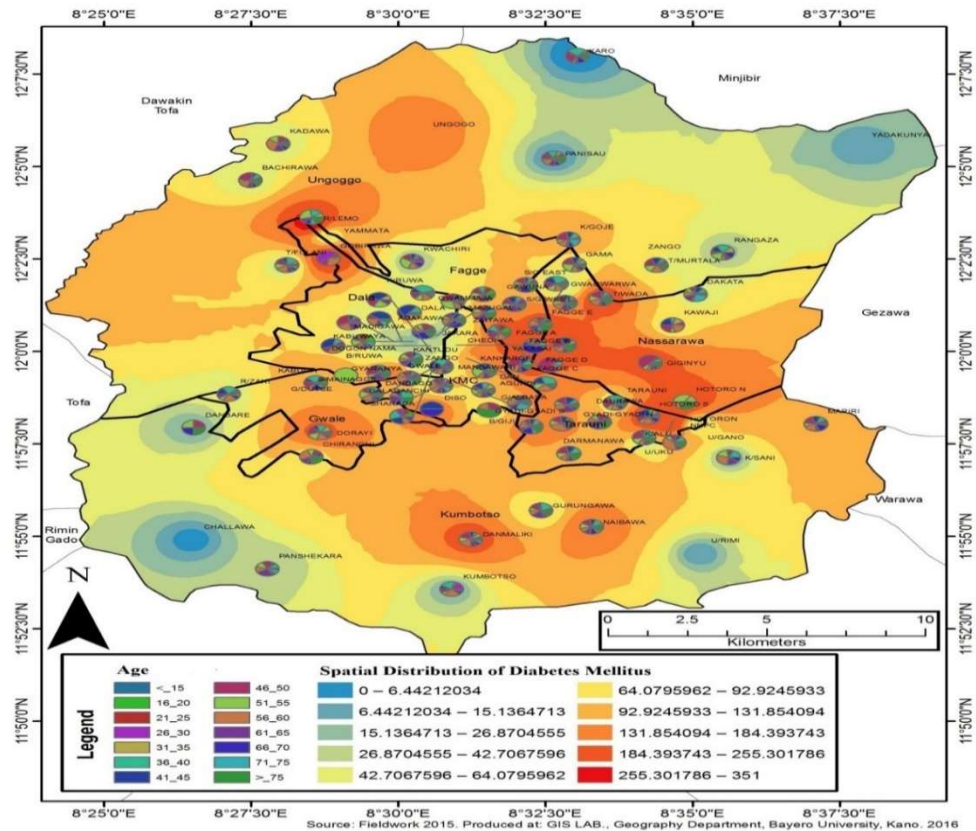


Figure 2: Spatial Distribution of Diabetes by Age

3.2 Gender and Diabetes Mellitus Cases

Table 2 indicated that diabetes are higher in males than in females in the eight metropolitan local governments with the exception of Ungoggo local government where females are more diabetetic than males. The findings revealed high cases of diabetes mellitus in men 4878 cases (60%), while women accounted for 3209 cases (39.5%), while not indicated gender accounted for only 0.5% of the total cases. Kano municipal local government accounted for the highest number of male cases of 763 (9.4%) and the highest female cases of 583 (7.2%). Nassarawa local government accounted for the second highest male cases of 747 (9.2%) and second highest female cases of 438 (5.4%). However, in Ungoggo local government females are more diabetetic 360 cases than males 354 cases. The chi-square test revealed a difference in the number of cases between the gender

groups in the Kano Metropolitan wards because the p value 0.00 is <0.05 alpha.
Therefore, the (H₀)

that there is no significant difference between the gender groups is rejected and the (H_1) that there is significant difference in the number of diabetes mellitus cases between the gender groups is accepted. However, the spatial distribution of gender has shown a wide difference between gender and spatial distribution of diabetes (Figure 3). This difference could be attributed to the fact that males are more enlightened and aware of diabetes and present themselves to the clinics more often than females. This is in conformity with Mohammed, (2011), Chris, *et.al* (2003), John, *et.al*. (2013) and Khan, *et.al* (2014).

Table 2: Gender and Spatial distribution of Diabetes Mellitus Metropolitan Local Governments

	Gwale	Dala	Fagge	Kano Municipal	Kumbotso	Nassarawa	Tarauni	Ungogo	Other LGAs	Total
Sex	%	%	%	%	%	%	%	%	%	%
Sex Not Indicated	.1	.0	.0	.1	.0	.0	.0	.0	.0	.5
Male	6.8	5.3	5.7	9.4	6.1	9.2	5.5	4.4	7.7	60.0
Female	5.4	4.3	3.6	7.2	2.5	5.4	2.4	4.4	4.3	39.5
Total	12.3	9.6	9.3	16.7	8.6	14.6	8.0	8.8	12.0	100

Source: Data Analysis 2015

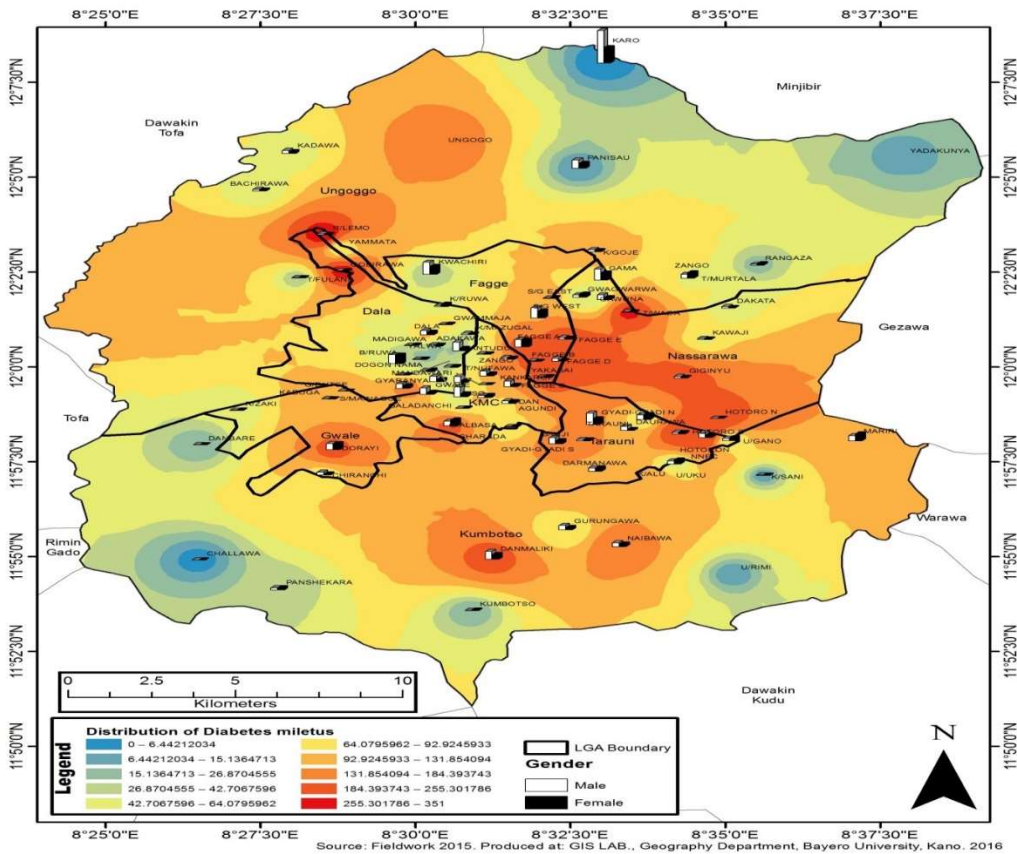


Figure 3: Gender and Spatial Distribution of Diabetes

3.3 Occupation and Diabetes Mellitus Cases

Table 3 indicated that diabetes are higher among occupational groups of house wives with 1946 cases (23.9%) where Kano Municipal accounted for 334 cases (4.1%), Nassarawa local government accounted for 256 cases (3.3%) and Gwale local government accounted for 250 cases (3.1%). Trading and business accounted for 1615 cases (19.9%) out of which Ungogo local government accounted for 249 cases (3.1%) and Dala local government accounted for 206 cases (2.5%), while Kano Municipal accounted for 189 cases (2.3%). Civil servants with total of 1035 cases (12.7%) where Kano Municipal accounted for 209 cases (2.6%), while Nassarawa local government accounted for 198 cases (2.4%). Housewives in Kano Metropolis are more diabetic than any other

occupational category because women do experienced gestational diabetes mellitus which is explained as a type of intolerance of glucose which affects women during pregnancy. Deshpande (2008) reported that most gestational diabetes mellitus become stable after delivery, however, 5-10% of women affected during pregnancy were diagnosed to be diabetic at post pregnancy. This gestational diabetes is risk factors that affects women only and make them to develop diabetes later in life. It is also high among house wives, trading/business, civil servants and pensioners/retirees because these occupational groups are mostly physically inactive and obese. Similarly, sedentary nature of works of businesses/trading and civil servants makes people to be physically inactive and more likely to be diabetic. However, diabetes is low among the occupational groups of driving, crafts and fishing/farming because they participate in physically active occupations. Diabetes is also low among students because children of school age and teenagers mostly have the Type-1 diabetes mellitus which is very uncommon in Nigeria (Adeleke,*et. al* 2010, Ugege, *et. al.* 2013 and John, *et.al*2013).

However, chi-square test revealed a significant difference in the recorded number of cases between the occupational categories in the Kano Metropolitan wards because the p value 0.00 is <0.05 alpha. Therefore, the (H_0) that there is no significant difference in the number of cases between the occupational categories is rejected. Therefore, conclude that there is significant difference in the number of diabetes mellitus cases between the occupational categories is accepted. However, the spatial distribution map has indicated a significant difference in diabetes mellitus cases between occupational categories in Metropolitan Kano. While the core center of the metropolitan Kano has the highest concentration of persons diagnosed with the diseases. This map indicated a significant correlation between physical activity and diabetes. People with less active occupations concentrated at the center of the study area. Therefore, looking at the map, there are fewer number of diagnosed persons with diabetes at the fringes of the study area. This is related to the fact that people at the fringes of the study area engaged in a more active occupations especially farming and crafts (see Figure 4).

Table 3: Occupational Characteristics of Diabetes Mellitus Cases in the Eight Kano Metropolitan LGAs

	Gwale	Dala	Fagge	Kano Municipal	Kumbotso	Nassarawa	Tarauni	Ungogo	Other LGAs	Total cases
Occupations	%	%	%	%	%	%	%	%	%	%
Occupation NotIndicated	3.7	3.1	1.9	5.1	2.2	3.1	1.7	1.2	4.1	26.1
House Wives	3.1	2.5	2.2	4.1	1.7	3.2	1.5	3.1	2.6	23.9
Trading/Business	2.1	2.5	2.5	2.3	1.5	2.2	1.8	3.1	1.8	19.9
Civil Servants	1.6	.7	.5	2.6	1.3	2.4	1.4	.6	1.7	12.7
Penr/Retiree	1.1	.1	.9	1.5	1.6	2.6	1.1	.2	.7	9.9
Driving	.0	.2	.8	.1	.0	.4	.0	.4	.0	2.0
Crafts	.0	.1	.1	.1	.0	.0	.0	.0	.1	.4
Students	.4	.1	.2	.4	.2	.5	.4	.3	.2	2.7
Farming/ Fishing	.0	.0	.0	.1	.1	.1	.0	.0	.5	.9
Corporate Serv.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Other occupations	.2	.2	.1	.4	.1	.1	.1	.0	.2	1.4
Total	12.3	9.6	9.3	16.7	8.6	14.6	8.0	8.8	12.0	100

Source: Data Analysis 2015

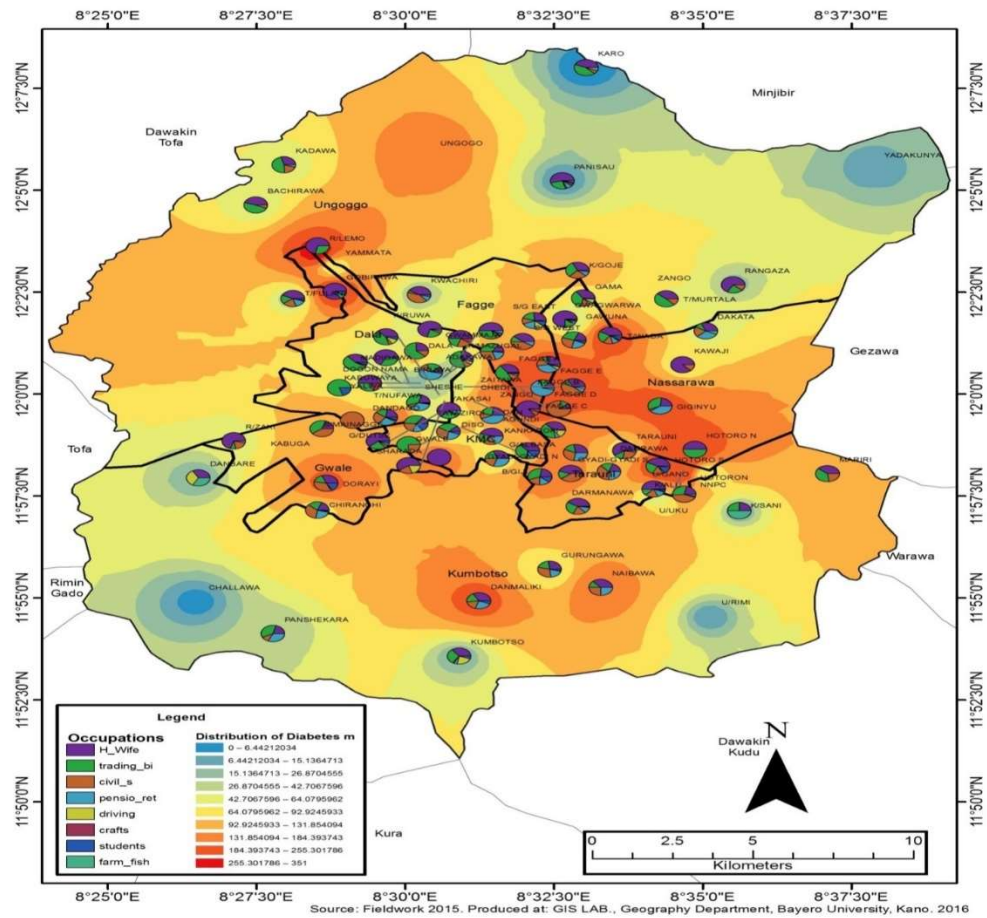


Figure 4: Spatial Distribution of Diabetes Mellitus and Occupation Superimposed

5.0 Conclusion and Recommendations

This study concluded that there is significant difference in the number of diabetes mellitus cases among the age groups, this is because there were more cases among the following age groups of (56-60) years which accounted for (13.6%) of the total cases, (46-50) years (12.7%), while the age group of (36-40) years accounted (9.9%) of the total cases. The most affected age groups were from Kano municipal local government and falls within the age group of 56-60 years with total cases of 197 (2.4%). There is significant difference in the number of diabetes

mellitus cases between the gender groups. The findings revealed that there were higher cases of diabetes mellitus in men 4878 cases (60%), while women accounted for 3209 cases (39.5%). The study also revealed that there is a significant difference in the number of diabetic cases among the occupational categories. Diabetes mellitus cases were higher among the occupational groups of housewives with 1946 cases (23.9%), where Kano Municipal accounted for the highest of 334 cases (4.1%). Trading and business accounted for 1615 cases (19.9%) out of which Ungogo local government accounted for 249 cases (3.1%) while Civil servants accounted for a total of 1035 cases (12.7%). Therefore, on the basis of these findings, the following recommendations were made:

1. There is the need for more awareness campaigns so that people will be aware and conscious of their health conditions.
2. The State governments should establish, staffed and fund testing and counseling centers at all levels of primary health care centers across the state. However, long term intervention strategy should be directed towards establishing a diabetic speciality hospitals in Metropolitan Kano.
3. Ministry of health and diabetic association of Nigeria should organize routine public enlightenment programmes specifically targeting the most vulnerable age, gender and occupational groups.
4. Government and private individuals should establish gymnastic centers with different apparatus in both the general and specialist hospitals where both the staff and the patients can benefit from the exercise as a therapy for prevention and control.

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Women in Climate Change Crises Solutions: Centrality and Empowerment for Resilience

Azu, Victoria N.

Faculty of Social Sciences (Dept. of Political and Administrative Studies)
University of Port Harcourt
Port Harcourt, Nigeria

Abstract

This study examines the crucial role played by women in fighting climate change crises and underscores the urgent need for their empowerment. Recognizing the complex challenges faced by women, including health risks, violence, displacement, and limited access to resources, the study delves into the underlying systemic factors intensifying their vulnerability. While adopting Radical Feminism theory as a lens, we acknowledge the importance of considering intersecting factors such as race, class, and geography in understanding women's experiences. Drawing from a comprehensive analysis of secondary sources, the study explores the ways in which women, despite their vulnerability, emerge as key agents of adaptation and resilience. Through their traditional roles in resource management and caregiving, women often lead efforts to mitigate environmental degradation and develop adaptive strategies in the aftermath of crises. Notably, our findings highlight the relationship between female leadership and effective crisis response, as evidenced by the instantaneous and decisive actions taken by states led by women during the COVID-19 pandemic. In light of these insights, the study proposes plausible recommendations for empowering women in the face of climate change crises. These include the establishment of gender-sensitive projects, support for women in green economies, and the promotion of women's participation in decision-making processes. Moreover, the study emphasizes the importance of integrating gender considerations into resilience-building efforts and increasing funding for initiatives addressing gender-specific vulnerabilities. By amplifying the centrality of women in climate change solutions and advocating for their empowerment, the study aims to foster greater resilience in the face of environmental challenges.

Keywords: Women Empowerment, Climate Change, Climate Crises, Climate Resilience.

1. Introduction

Climate change describes a continuous alteration in temperatures and forms of weather. These changes could be naturally induced, arising from variations in the movement of the sun and or massive volcanic explosions. However, since the period as far back as 1800, climate change has been attributed to various forms of human activities primarily revolving around boiling of fuel remnants (generally referred to as fossil fuel) such as coal, oil and gas. Fossil fuels originate from natural processes on the remains of dead and buried organisms - dead plants and animals. Thus, fossil fuel

is a generic term for non-renewable energy such as coal, coal product, natural gas derived gas, crude oil, etc (European Commission, 2023). Burning fossil fuel results in emission of greenhouse gas which is likened to a blanket enveloping the earth, and trapping the heat from the sun and rising temperatures generally referred to as climate change.

However, carbon dioxide and methane are the major greenhouse gases causing climate change. The alteration of climate arises from the use of gasoline for driving vehicles or coal for heating a building. Other human activities that can release carbon dioxide and methane emission into the atmosphere include land clearing and deforestation, agriculture, oil and gas operations, etc. Thus, energy, industry, transport, buildings, agriculture and land use are among the elements causing greenhouse gases (UN, 2023). Accordingly, climatologists and climate scientists have revealed that in the past 200 years, man has been responsible for nearly all global heating; human activities like the ones mentioned above result in production of greenhouse gases that warm the world faster than anytime at least in the last two thousand years (UN 2023)

Consequently, global climate is in constant change and it is estimated that the variation will continue beyond the 21st century. The degree of climate variation over the next few decades will however be determined primarily by the amount of greenhouse (heat-trapping) gases emitted globally, and on the level of the uncertainties surrounding the earth's sensitivity to those emissions. With significant reductions in the emissions of greenhouse gases (GHGs), global annual average temperature rise could be limited to 2°C or less. However, without major reductions in these emissions, the increase in annual average global temperature, relative to pre-industrial times, could reach 5°C or more by the end of this century (World Bank, 2023). The trending increase in global average temperature, rise in sea level, upper-ocean heat content, land-based ice melt, arctic sea ice, depth of seasonal permafrost thaw, and other climate variables provide consistent evidence of a warming planet.

The plot below shows global average temperature anomalies; from 1880-2022 global average temperature has warmed approximately 1°C annually.

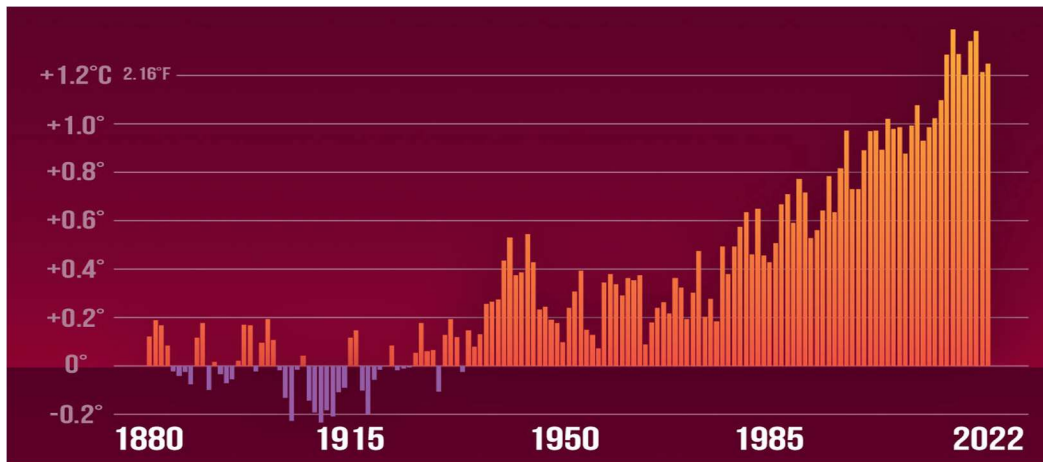


Figure 1. *Global Average Temperature Anomalies (Worldbank, 2023)*

Source: <https://www.climateknowledgeportal.worldbank.org>

Experts have observed that climate change goes beyond just warmer temperatures as erroneously thought by many. They noted that temperature rise is only the beginning of climate change. The systemic nature of the earth connects everything such that, changes in one aspect invariably leads to changes in all others areas. Hence, other consequences of climate change include: intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity (World Bank, 2020).

Consequently, climate change can affect human health, food security, housing, safety and work. Besides, some persons have become more vulnerable to the impact of climate change, such as people living in small island nations and other developing countries. Conditions like increase in sea-level and saltwater invasion have progressed to the point where whole communities were forced to relocate as displaced persons, and prolonged droughts put people at risk of famine. In future therefore, the number of “climate migrants” is expected to rise. Without doubts, the negative impact of climate change has implications for access to natural resources, as limited resources such as land, water, rainfall, forest, timber, etc (on which communities depend for their livelihood) can cause severe hardship, and can tendentially exacerbated conflict. There is thus, a strong connection between climate change and natural resource conflict.

However, the capacity of individuals to cope with climate change related crises situations such as psychological, food and water insecurity, displacement, loss of

livelihood assets, social exclusion and other impacts of conflict, is strongly influenced by their gendered roles and responsibilities especially as it concerns access to and management of natural resources. Invariably, those with little resources will most likely suffer more negative effects—particularly women - the world's dominant poor. In many parts of the world, women still face exclusion from decision-making, formal monetary systems, land ownership, reproductive health care, education and information, undermining their wellbeing as well as that of their families and communities (Haas, UNFPA 2009). Thus, women invariably become more vulnerable to changes in the availability and quality of these resources during and after conflict.

Women's susceptibility to climate issue is mostly attributed to intrinsic inequality, gender related marginalisation, ethnicity, low income and other socio-economic and cultural circumstances. Osman-Elasha (2009) pointed out that seventy per cent of the 1.3 billion people living in conditions of poverty are women. In municipal areas, 40 per cent of the poorest households are headed by women, 50 – 80% of world's food production is dominated by Women, but they own less than 10 per cent of the land. Notwithstanding their vulnerability, women have remained the unexploited resource in efforts to cope with climate change and reduce the emission that causes it. As visionaries, managers, leaders, educators and caregivers, women are exclusively positioned to help curb the damaging effects of a changing climate. (UNFPA 2009)

Against this background, the aim of this paper is to examine the centrality of women in climate change crisis, focusing on vulnerability, catalyst to climate crises management and the need for empowerment required for solutions. This paper is structured to cover introduction, review of literature, methodology, result and discussion, conclusion and recommendations.

2. Literature Review

Climate Change

Climate change refers to the longstanding changes in temperature and weather conditions. This shift might be natural arising from changes in the activities of the sun, or volcanic explosions, since 1800 however, human actions have been the main driver of climate change, basically arising from burning of fossil fuel, such as coal, oil and gas. Climate change is affecting the equilibrium of the ecosystem that sustain life and biodiversity, and impacting health. It equally leads to more life-threatening weather condition, such as intense and/or frequent hurricanes,

floods, heat waves and droughts, and also lead to rise in sea level and coastal erosion resulting from warming ocean, melting of glaciers, and loss of ice sheets. (UN Climate action; 2023). The Encyclopaedia Britannica – Science & Tech (2024) describes climate change as periodic modification of earth's climate brought about by the changes in atmosphere, as well as interactions between the atmosphere and various other geologic, chemical, biological, and geographic factors within the earth system. As the world seeks solutions to climate change, In 2015 world leaders met in Paris and endorsed a major treaty to practicalise the following suggestions solutions to climate crises: reducing and eventually getting to zero the level of greenhouse gases emission; increasing the natural ability of forests and oceans to absorb carbon dioxide, countries to diversify their economies away from fossil fuel, investment in renewable energy such as solar, wind, wave, tidal and geothermal power, shift to sustainable transport: electric vehicles, reduce air travels to reduce greenhouse emission as well as environmental pollution, use of heat pumps, heat homes in green ways such as insulating walls and roofs, use of heat pumps instead of oil and gas boilers, improve farming and encourage vegetable diets while avoiding meat and dairy products, restore nature to reduce more carbon, deforestation/forest protection, safeguard the oceans, reduce production of plastics which comes from oil and utilizes intense carbon to produce (Greenpeace, 2023)

Climate Crises

The International Rescue Committee (2023) views climate crises as severe problems caused by or likely to be caused by changes in the planet's climate. This includes weather extremes and hazards, acidification of ocean and rise in sea level, loss of biodiversity, food and water uncertainty, health hazards, economic distraction, dislodgment and violent conflicts. Thus, climate crises denote a severe interruption of the natural earth climate pattern, orchestrated by changes induced by man. Climate crises occurs when there is an increase in greenhouse gas emitted into the atmosphere resulting from human activities such as burning of fossil fuels, deforestation, agricultural activities, industrialization; leaving severe environmental and social impact. To address climate crises requires promoting global cooperation for lasting solutions and resilience. The problem of climate crises can also be addressed by reverting to renewable energy sources such as the solar energy, wind, etc; and promoting climate finance etc, the committee noted.

However, the activities that lead to climate change and climate crises are all necessary for human existence and happiness. It therefore becomes difficult to

reconcile between the hazards associated with climate crises and the benefits from natural gas, industrialization, agriculture, use of automobile etc. Although it has been suggested above that a shift to non-renewable energy sources may provide a panacea to climate crises, but it is not to be expected that the global community will easily or automatically abandon these activities in totality, considering the gain of humanity from these sources. Besides that, even if the west manages to make this shift, the economic conditions of developing countries pose severe impediments against this shift owing to paucity of finance, poor political will, technological backwardness, environmental issues etc.

Climate Resilience

The Climate Dictionary (as cited in UN Climate action; 2023) refers to Climate resilience as the capacity of a community or environment to anticipate and manage the impacts of climate change, such as extreme weather conditions, rise in sea level and famine, to minimize their damage, recover and transform as needed after the initial disaster. Climate resilience requires preparing and adapting to the effects of climate change. It further explained that the best way to safeguard societal wellbeing, economic activity and the environment; is for people, communities and governments to be equipped to deal with the unavoidable impacts of climate change. Equipment in this context should be in form of tackling what may be the possible challenges to reliance which include adequate funding of climate policies and program implementation, training people to acquire relevant skills and competence, possessing the right psychological disposition to expect and resist climate change impact, diversifying their sources of livelihood, building more disaster response and recovery capacities, enhancing climate information and early warning systems, working on long term planning etc. Thus, a true resilient society is one based on equity and climate justice that prioritises support for people and communities most susceptible to climate impacts or least able to cope with them. (Intl Rescue Commission; 2023).

Women Empowerment

The European Institute for gender equality (EIGE) (2024) describes women empowerment as the ‘process by which women gain power and control over their lives and acquire the ability to make strategic choices’ EIGE identified five components in women empowerment which include: women sense of self-worth, their right to have and determine choices, access to opportunities and resources; right to have power to control their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just

and economic order, nationally and internationally. However, the major obstacle to women's access to resources has been cultural practices and norms on gender role assignment. In most parts of the world men are traditionally ascribed the superiority position, while women are naturally regarded as subservient, and having no traditional right to own or inherit natural resources such as land, waterfront, forest, extractive minerals etc. The cultural role and classification basically determine one's relationship with these resources.

In many countries especially in Africa, women hardly enjoy the opportunity to occupy sensitive political positions to qualify for a voice in decision making on resources allocation and management. Besides cultural consideration, the violent political process prevalent in developing societies has been a major barrier to women access to resources; it discourages women from actively participating in politics. Thus, women naturally assume that climate resilience is an entirely government prerogative and men's talk, and therefore not encouraged to engage in any major discussion on climate action, or engage in any reasonable profit making venture such as the growth and development of enterprises, improve productivity, keep bank accounts, nor access bank loans due to non-possession of property for collateral, or enter into any contract agreement without approval from their husbands or a male relation. UN Womenwatch (2012) suggests enhancement of financial services that target women to be linked to a robust policy framework that guarantees rural women access to financial services that can empower women. Such empowerment can support women adopt measures to survive climate change.

Women empowerment embodies social, educational, economic, political and psychological or healthy living (Mahila B.Ed College 2023). The institution noted that women empowerment aims at creating a system where women have power and freedom to live their lives, without discrimination or gender based limitations. Thus, policy actions such as training, creating awareness, building self-confidence, expansion of choice, increase access to and control over resources, are among strategies required to transform the structures and institutions that reinforce and perpetuate gender discrimination and inequality. These are important tools for empowering women and girls to claim their rights. (UN Commission on the status of women; 2002). However, factors such as patriarchal, limited access to education, economic inequality, violence and discrimination, traditional gender roles, lack of legal and political support, limited mobility are among the issues inhibiting women empowerment ((Mahila B.Ed College 2023)

Climate change, gender imbalance and social justice

Researchers and climate change scientist are often confronted with the challenge of establishing a link between gender, social equity and climate change, especially the emphasis on how climate change impact women and girls. Thus, UN Women (2022) has decried that climate crisis is not “gender neutral”. Women and girls experience the greatest impacts of climate change, which intensifies existing gender disparities and poses terrible threats to their livelihoods, health, and safety. Globally, women depend more on land and other natural resources, yet have less access to these resources caused by the prevailing social structure. In many areas, women suffer lopsided distribution of responsibility for securing food, water, and fuel. Farming is the most significant employment sector for women especially in low- and lower-middle income countries, in times of famine and unpredictable rainfall, women, as farmers and primary procurers, increase their labour to secure income and resources for their families. This puts additional pressure on girls, who often have to drop out of school to support their mothers manage the increased household burden. UN Women (2022) has described climate change as a “threat multiplier”, implying that it heightens social, political and economic tension in delicate and conflict-affected zones. As climate change exacerbates conflict across the world, women and girls face higher susceptibilities to all forms of gender-based violence, including conflict-related sexual violence, human trafficking, child marriage, and other forms of violence.

Corroborating the impact of climate change on gender, USAID (n.d.) reveals that women are prominent in many sectors. According to the USAID, women produce 60% to 80% of the food consumed in developing countries. Frequent and severe drought, flooding, and pest damage due to climate change is expected to reduce crop yields, which could result in less income and food for the household. In many countries, women perform the primary role of collecting water and firewood. As climate change intensifies scarcity of resources, women and girls are compelled to walk long distances to access water and firewood, this exposes them to various unsafe conditions, affecting productivity in other areas like farming, and available time for schooling and child care. Climate change has the tendency to increase the frequency and severity of life-threatening weather conditions. During and after conflicts, the role of women as care givers is intensified, possibly leading to exhaustion and illness, domestic and sexual abuse after

disaster. Women thus, become more vulnerable to malnutrition, worsened by lack of access to Medicare; climate change can aggravate this situation. Changing temperatures can alter the courses for diseases like malaria, higher sea-surface temperatures are correlated with cholera epidemics, and more frequent droughts and floods will worsen sanitation and hygiene. Thus, women are less likely to survive crises and suffer greater tendency to sustain injuries and body pains; resulting from age-long gender inequalities which have created variations in information, mobility, decision-making, and access to resources and training. As a result, women and girls are less able to access relief and assistance, further threatening their livelihoods, wellbeing and recovery, and creating a vicious cycle of higher exposure in future.



Photo: UN MINUSTAH/Logan Abassi

Source: <https://www.unwomen.org/en/stories/explainer/2022...>

Figure 2: shows a section of women in Haiti displaced by Hurricane in 2016. Despite their plight and despicable condition, they still strive to care for their children and live up to other domestic chores due to their nature of resilience.

Theoretical Framework

This study anchors on the strands of Radical Feminism Theory. Radical Feminism is a feminist viewpoint that seeks to challenge traditional patriarchal power and gender roles. This idea was developed by Kate Millet in her book- ‘Sexual Politics’ where she concisely articulated her position on gender inequality. The ideas expressed in this book heightened much of women's equality movement. In her analysis, she discussed the power that men hold over women in society, and

argued that this oppression is socially orchestrated. She maintained that men's control in society is not fundamentally biological, as they had previously perceived, but rather, a systemic oppression built over time. Radical Feminist thus, centers around the fundamental belief that power within society is fundamentally unequal; and therefore, hold the view that the societal framework should be completely overhauled, male dominance, they believe is the main cause of oppression in the social system, and this could be eliminated by including women in positions of power and eradicating traditional gender roles (Armstead & Teasley, 2021)

Corroborating her idea, Krenshaw (cited in Holt, 2020) in his analysis, supported the patriarchy, but extended his argument to capture other factors that promote social inequality. He highlighted the intersectionality in feminism theory. Intersectionality posits that various dimensions of oppression such as racism, classism, and sexism interrelate to produce a pattern of oppression in which varied methods of discrimination interconnect. Thus, intersectionality implies that different factors such as biological, social and cultural categories, including gender, race, class and even ethnicity interact and contribute to organised social inequality. Accordingly, various forms of oppression do not exist independently, but are interconnected.

Weathers (cited in Holt, 2020) provided a practical idea of intersectionality by drawing attention to the different experiences of white women vs women of colour on the discrimination board. She noted that the working-class women of colour personified the idea of intersectionality in the period of twentieth century. Weather revealed that the first and second waves of feminist movement was majorly engineered by white women, in which the feminist movement was not represented as a whole to include consideration for black women. It was therefore important to always appreciate the fact that white women suffered a different form of discrimination from the working-class women of colour, who in addition to contending with sexism, fought racism and class oppression as well.

Another strand of feminist theory considered relevant for this paper is the Ecofeminism. Ecofeminism is aspect of feminism and political ecology that explores the connection between women and nature. The term was coined by a French feminist writer Francoise d' Eaubonne in her book '*Le Feminisme ou la Mort* (1974) (cited in Miles; 2024) Ecofeminism is a political ideology that is linked to climate change and the global climate crises and its impact on the

environment; it seeks to analyse the relationship between gender and environmental degradation. Proponents of this theory argue that while women are the focus of ecofeminism debate, ecofeminism is not exclusively for women because the overall health of the environment affects everyone irrespective of gender. Nevertheless, ecofeminism points out that the prevailing oppressive patriarchal structure subject women more to the detrimental impact of environmental disasters than men. Ecofeminism thus, seeks equality of all genders. (Studysmarter, 2024).

Amartya and Nussbaum (cited in cmi & ucav; 2020) developed Capability Approach as a framework for understanding the moral significance of social arrangement, evaluated according to the degree of freedom enjoyed by the individuals to achieve a life they value. (The capability theory involves two core normative values: i) the supposition that freedom to achieve well-being is of primary moral importance; ii) freedom to achieve well-being must be understood in terms of people with capabilities. This suggests the real opportunity people have to do and become what they value; without freedom therefore, individuals find it difficult to do or live a life they value. Although Amartya and Nussbaum are the leading scholars of the capability theory, but while Amartya's capability theory focuses on enhancing human freedom, Nussbaum emphasised respect for human dignity (Well; n.d.) Thus, within the framework of gender and climate change, the Capability Approach analyses how the social structure that promote gender inequality can limit the ability of an individual to adapt to and mitigate the impacts of climate change, and to identify strategies for promoting women's agency, capabilities, and well-being in the face of environmental challenges.

Literature Gap

The ideas expressed on the literature reviewed above though explored the critical issues about climate change and its impacts on women; however, little was said about what makes women central in climate action, or the obvious factors explaining their vulnerability to climate crises; the literature was also silent on the specific reasons underlining women empowerment and the institutional strategies as recommendations for empowering women for resilience. This lacuna has been identified in literature and which this study seeks to fill. In other words, this study questions why women are most vulnerable, why should they be empowered and what are the empowerment options.

3. Materials and Methods

This study employed both secondary and primary sources to collect relevant data. Secondary sources include publications comprising of books and online sources, particularly institutional documents on women central role in climate change resilience and the need for empowerment. The study adopted survey method to source primary data through interviews and focus group discussion with selected relevant resource persons. The study adopted the qualitative research design which allowed for exhaustive review, through content analysis of available data, to establish possible trends. The design also aided the study to establish if women empowerment was manifest in the responses obtained. Based on the analysis, recommendations for policy actions were provided.

4. Result and Discussions

Women are vulnerable in climate change crises

This study has noted above that women are the most vulnerable in climate change crises. Logically speaking therefore, to reduce their vulnerability, they need to play active role in managing climate related crises. Thus, Schueman (2023) the author and producer of 'One Earth', pointed out that despite the worldwide persistence of gender inequality, women have remained the key in climate change crisis, being at the forefront and leading the fight to secure our planet. Globally women and girls respond more successfully in times of crises and actively making effort towards creating a more just and sustainable future for all. Despite that, women have remained the most targeted in times of crises. According to him, the susceptibility of women to climate change crises is underscored by the following conditions:

Women bear the burden of natural disaster and violence

On a subdued note, the impact of a warming planet is not equally felt by men and women. According to UN's estimates, 80% of those displaced by climate change are women. These displacements are usually caused by more regular natural disasters which include droughts, floods, cyclones, hurricanes, and wildfires. The situation is worsened by the fact that even after these severe weather conditions, instead of receiving assistance, women still suffer more harm such as rape, intimidation, kidnapping and outright killing. Evidence has shown that violence against women and girls increases in crises periods. Besides, a twenty-one-year study with a sample of 141 countries revealed that more women die from catastrophic events than men. (Schueman, 2023).

Women are more exposed to pollutants

By their natural body composition, women and children are more susceptible to pollution than men. Mercury produced from coal-fired power generators is an astounding example. Research conducted by the American Environmental Protection Agency shows that in the US alone, about forty-eight tons of the poisonous chemical is pumped annually into air, resulting in one, out of every six American women of child bearing age carrying enough mercuries in their blood to put the fetus at the risk of developmental problems, estimating that over 300,000 babies are born each year at the risk of mercury poisoning (Hitt; 2011). A later study approximates the number of babies born with the risk of neurological damage attributable to prenatal mercury exposure. (Schueman; 2023)

Economic standing and gender roles

It is quite disturbing that the world's most economically deprived countries are more susceptible to natural calamities and pollution; and women make up the majority of the 1.5 billion people living on less than \$1 per day. Globally, women in the age range of 25-34 are 25% more likely to live in abject poverty than men. Their traditional roles of gathering water, food, fuel and other household consumables equally expose women more to the negative effects of climate change. These activities to a large extent depend on natural resources and are thus, more predisposed to the effects of environmental degradation orchestrated by increasing global temperature. This can result in heightened cycle of poverty (Schueman; 2023)

Despite these daunting challenges, women worldwide have shown their resilience after environmental catastrophes, improved livelihoods, and thereby creating effective climate solutions.

Empowering women as active leaders in times of crises

The unpleasant situations faced by women in crises periods, make it very imperative to build capacity in them through empowerment, to position them strategic for alleviating their ugly experience. The relevance of empowerment in development process is underlined by the fact that major development institutes such as the United Nations Development Program (UNDP), World Bank, Oxfam and many smaller NGOs have recognised empowerment as an unquestionable goal of development; viewed as necessary ingredient for challenging and transforming unequal socio-economic and political structures. Empowerment, regarded as the weapon for the weak, can best be employed through participatory, grass-roots, community-based NGOs. Thus, by the mid-1990s, majority of the

global development agencies had embraced empowerment as a major roadmap to development; such that while not ignoring their credence to liberal economic policies, the language of participation, partnership and empowerment progressively become key consideration in many development discourses (Parpart, cited in Desai & Potter; 2008).

Besides that, women have been proven as better managers of crises situations. The events of Covid-19 pandemic proved the fact that if women are empowered during disaster and emergency response planning, they showcase unique knowledge and skills that help communities to recover quicker and more effectively. A study of 194 countries showed that pandemic responses were systematically better in women-led countries. For instance, a study of governors in USA during Covid-19 pandemic found that states with female leaders had lower fatality rates (Zenger & Folkman; 2020) as female leaders responded more quickly and thus, recorded half as many deaths from Covid-19 as male-led countries (RHR International, 2022). One may wonder why Covid-19 was brought into the discussion of climate change considering that not much link exists between the two phenomena. However, both of them represent crises of life threatening situations that require quick response, and the notion of quick response revolves around responsive policy framework, human action and funding which are critical in every crises management situation.

On that consideration, during the 2023 celebration of International Women's Day, the UN Women identified five (5) broad reasons why women play active role in climate change action. They include:

1. Climate action requires Joint action of stakeholders

In her articulation of the place of women in climate crises management, UN Women (2023) noted that women and girls constitute about half of the world's population, yet they are often not part of decisions on climate change action. Nevertheless, UN Women maintain that every hand must be on deck in order to achieve the Paris Agreement target of reducing global temperature rise to 1.5 degree Celsius. This implies that both men and women/girls need to be empowered and strategized to be part of every action required to achieve that goal.

Therefore, all categories of women need to participate all levels from climate negotiations to decision room, and to forests and fields, particularly in areas most

affected by the impact of climate change such as African countries with climatic conditions ranging from tropical to arid temperature (McGregor, cited in Desai & Potter; 2008) By including more women in climate change action, especially native women, who have been frontline environmental protectors, and have vital information and know-how that can aid resilience, and reduce emission of greenhouse gas, a more sustainable and equitable future can be secured for all. (UN Climate Change news, 2023). Indigenous women naturally lead an inherently low-carbon life style, advocating an equilibrium between man and his natural environment; their traditional practices have minimal effect on the ecosystem and are responsive to it, thereby promoting self-sustaining bionetworks. (The Climate Dictionary; 2023)

2. Empowering women means better climate solutions

In a similar way, women make up half of the agricultural labour force in developing countries. UN Women argued that women can increase their technological know-how and agricultural yields by 20 to 30 percent if given the same access to resources as men. Besides, UN maintained that increase in output can help address the problem of world hunger, reduce poverty and enhance individual adaptations by 12 to 17 percent, as well as improves total agricultural output by 2.5 to 4 percent, For example, at her re-election, the New Zealand's Prime Minister Jacinda Ardern and her 40% women cabinet, declared a "Climate Emergency"; she noted that the declaration is an acknowledgement of the burden of the next generation if they don't get things right, and do not take action now. They therefore came up with a proposal to make the country's public sector carbon neutral by 2025 (Aljazeera, 2020).

3. Women are central in building climate resilience in communities

Involving women is crucial for building coping strategies in communities. In fact, the UN Women reports that when women are part of the planning process, communities are more likely to develop capacity-building strategies to confront the challenges of climate change.

Besides, women tend to react quicker when communities need to respond to natural disaster, they are better leaders in reducing the risk of disaster, and contribute to post recovery by focusing their effort on salvaging their families from adverse effect of climate change, as well as strengthen their community against future occurrence.

4. The impact of Climate change is not equally felt by all

Although everyone feels the impact of climate change affects everyone, but not at the same level. It is very obvious that the world's most vulnerable suffers the impact of climate change greatly in all countries, and increase existing disparities. Factors such as poverty associated with existing roles, economic conditions cultural norms etc, have subjected women to the burdens and higher risk of the impact of climate change. For example, in many countries, women bear the burden of household energy, food, water and care giving. Thus, the consequences of climate change can increase the problem for women and girls, especially in developing countries where certain structural factors such as economic conditions, unequal access to resources and discriminatory social norms predisposes women to abject poverty, subjecting them to much struggle including travelling a long distance to obtain daily supplies. This condition leaves little or no time for paid work and potentially exposing them to greater risk.

5. Countries consider the importance of women in climate planning

UN women however observed that countries are increasingly empowering women and girls in the climate change process, mobilizing them across various priority sectors with their national climate change action plans to contribute to, and benefit from, climate action.

Within the UN Climate Change process, many countries have shared their experiences in integrating gender across different priority sectors within their national climate action plan. Within the Africa continent, research shows that as at August 2023, 40 out of 41 African countries that submitted updated Nationally Determined Contribution (NDCc) planning and implementation, have included gender consideration in them. Out of this, 25 countries have included gender-responsive action in the area of adaptation, while 12 included gender-responsive action related to migration. In 2022, Nigeria revised her National Gender Policy, and adopted a national action plan on gender and climate change. Malawi also established a National Technical Committee on climate change where the ministry of gender, community development and social welfare is represented. (Jasmin B; UNDP; 2023) Thus, the Gender Action Plan agreed by governments under the UN Framework Convention on climate change (UNFCCC) calls for women's full, equal, and meaningful participation in the international climate process, and to ensure a prominent role for women in decision-making and in climate action.

Thus, it becomes interesting to know that investing in women's empowerment has far-reaching benefits, including environmental conservation, poverty reduction, and achieving the Sustainable Development Goals (SDGs). Addressing climate change from the perspective of gender can equally address the issue of women rights, and thus promote greater gender equality.

However, factors which include among others: structural inequalities, discriminatory laws, limited access to resources and educational opportunities, unequal pay, gender-based violence, etc., have become key challenges to women empowerment.

5. Conclusion and Recommendations

The hallmark of the above study is simply inclusiveness and empowerment. Inclusiveness gives one a feeling of belonging and restores a sense of pride and relevance, while empowerment supports an individual to overcome challenges. Recognizing women in the societal and national scheme of things with necessary empowerment will provoke their nature-giving potentials and in fact spurs them into positive actions. This will enhance the problem-solving capacities women are naturally endowed with, and enable them adapt to crises associated with climate change, and in the long run, women - the earth's untapped resources, will have the opportunity to lend their support and contribute their efforts to transform society for the good of all. It is important to state here that the recommendations provided below should be adopted with respect to the ecological milieu and leanings of each society.

Therefore, the study recommends ensuring gender-friendly project in social protection and livelihoods diversification measures. This requires floating programs to expand livelihoods and increase women representation in natural resource-based sectors, and ensure their tenure rights, natural resource management capacity, and use of approaches based on specific areas; particularly those led by women and indigenous people. This will thus, boost resilience & adaptive capacity in gender sensitive ways. Also to Support women to strive in Green economies (employment & entrepreneurship) which entails encouraging girls' education in Science, Technology, Engineering and Mathematics (STEM); and enhance employment after school. At institutional level the study recommends gender integration through creating sensitive programs that are inclusive as well as to promote women's leadership and decision making capacity,

others are to promote policy and legal frameworks protecting women from violence

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