POPULATION ASSOCIATION OF NIGERIA (PAN)

12TH INTERNATIONAL CONFERENCE

2024

theme

POPULATION AND HOUSING CENSUS:

PROSPECTS FOR DEMOGRAPHIC DIVIDEND AND SUSTAINABLE DEVELOPMENT

BOOK OF PROCEEDINGS

POPULATION ASSOCIATION OF NIGERIA (PAN)

12TH INTERNATIONAL CONFERENCE 2024

BOOK OF PROCEEDINGS

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POPULATION CENSUS INTEGRITY IN AN EMERGING NIGERIAN ECONOMY

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ABSTRACT

Population census integrity is a critical aspect of socio-economic development in an emerging economy like Nigeria. This study investigates the accuracy and reliability of population census data in Nigeria, focusing on the challenges faced in ensuring data integrity and the potential consequences on national planning and policy formulation. Utilizing a mixed-methods approach, data were collected from various sources, including government records, census reports, and interviews with key stakeholders involved in the census process. Findings reveal significant discrepancies and inconsistencies in census figures, attributed to factors such as political interference, undercounting of marginalized populations, and inadequate data collection methodologies. These inaccuracies distort the true demographic picture of the nation, hindering effective resource allocation, infrastructure planning, and targeted development initiatives. Moreover, census data integrity issues exacerbate social inequalities, impeding the equitable distribution of public services and exacerbating ethnic and regional tensions. The study underscores the need for comprehensive reforms in census procedures, including the adoption of modern technologies for data collection, increased transparency, and stakeholder engagement to enhance accountability and public trust in the census process. Policymakers must recognize the critical role of accurate population data in shaping evidence-based policies and take proactive measures to address the challenges in maintaining census integrity. By ensuring reliable and up-to-date population data, the emerging Nigerian economy can foster inclusive and sustainable development, bolster investor confidence, and chart a path towards a more equitable and prosperous future for all citizens.

Key words: Population census, integrity, emerging economy, Nigeria.

INTRODUCTION

Population census serves as a critical tool for governments and organizations worldwide to gather comprehensive data on the demographic characteristics of a specific area or region. This systematic enumeration involves counting all individuals residing in a particular geographic area and collecting detailed information about their age, gender, occupation, educational attainment, and other relevant factors. Conducted at regular intervals, population census plays a vital role in informing policy decisions, resource allocation, urban planning, and social programs.

Population census integrity is paramount for ensuring accurate and reliable data that underpins socio-economic development in developed economies worldwide. Countries such as the United States, Canada, Germany, Japan, and Australia prioritize the integrity of their population census processes to uphold the credibility of demographic data. By employing rigorous methodologies, including advanced survey techniques and data verification measures, these nations strive to minimize errors and discrepancies in population counts and demographic information. Maintaining census integrity enables governments and policymakers to make informed decisions regarding resource allocation, infrastructure development, healthcare planning, and social welfare programs. Furthermore, credible census data supports efforts to address demographic shifts, urbanization trends, and disparities in income, education, and healthcare access, fostering more equitable and sustainable development outcomes across diverse communities within these developed economies.

In many African countries, the integrity of population census data is often compromised by numerous discrepancies and faulty reporting, posing significant challenges to their development agendas. Despite the crucial role of accurate demographic information in informing policy decisions and resource allocation, several nations in Africa struggle to conduct reliable population censuses. Countries such as Nigeria, Kenya, Democratic Republic of Congo (DRC), and Zimbabwe have faced criticism for the lack of transparency and accuracy in their census processes, with reports of inflated population figures, political interference, and inadequate data collection methodologies. These discrepancies undermine the credibility of demographic data and hinder efforts to address pressing socio-economic issues, including poverty alleviation, healthcare provision, and education planning. Without accurate population counts and demographic profiles, governments in these countries struggle to formulate evidence-based policies and programs tailored to the needs of their diverse populations, perpetuating inequalities and hampering sustainable development initiatives. Thus, addressing the challenges of population census integrity is crucial for fostering transparent governance and enabling effective socio-economic development in African nations (UNFPA, 2021).

The lack of population census integrity poses a significant obstacle to national development, particularly in countries like Nigeria, where census exercises have been marred by various discrepancies and controversies. For instance, the 2006 census in Nigeria faced widespread criticism for alleged undercounting and manipulation of population figures, leading to disputes among different ethnic and regional groups over resource allocation and political representation. Similarly, the 2018 National Population Commission (NPC) Household Enumeration Survey (HES) was fraught with challenges, including accusations of data manipulation and inadequate coverage, further eroding public trust in the accuracy of demographic data. These discrepancies and controversies undermine the effectiveness of development planning and policy formulation, as they hinder governments' ability to accurately assess the needs of their populations and allocate resources accordingly. Without reliable population data, efforts to address critical issues such as healthcare, education, and infrastructure development are compromised, perpetuating socio-economic inequalities and hindering overall national progress (Akinyemi, 2020; Adedokun, 2019).

Ensuring data integrity poses significant challenges in Nigeria, with far-reaching

consequences for national planning and policy formulation, ultimately impacting the country's image and economic growth. One major challenge is the prevalence of corruption and political interference, which often compromise the accuracy and reliability of data collection processes. Additionally, inadequate funding and logistical constraints hinder the implementation of robust data collection methods, leading to incomplete or outdated information. The lack of skilled personnel and technical capacity further exacerbates these challenges, as data analysis and interpretation require specialized expertise. These issues undermine the credibility of government statistics and erode public trust, hampering efforts to attract investment and promote economic development. Moreover, inaccurate data impede evidence-based policymaking, resulting in inefficient resource allocation and ineffective policy interventions. The consequences of these challenges are profound, as they perpetuate socio-economic inequalities and hinder Nigeria's ability to achieve sustainable development goals (Bello & Ajiboye, 2019; World Bank, 2020).

The manipulation, inflation, and falsification of census population data in Nigeria have been recurrent issues, often perceived to favor the northern extraction of the country (Smith, 2019). Various reports and analyses have pointed to instances where census figures have been manipulated to inflate population numbers in certain regions, particularly in the north, while undercounting or downplaying population figures in other regions, notably in the south (Jones, 2018). This manipulation of census data is often seen as a strategy to influence political representation, resource allocation, and power dynamics within the country (Ahmed, 2020). Despite efforts to address these concerns, such as the use of technology and increased transparency in census processes, challenges persist, undermining the integrity of population data and raising questions about the fairness and accuracy of demographic representation in Nigeria (Okonkwo & Ibrahim, 2017). Based on the prevailing scenario that have overtime place Nigeria Census data in a negative light to it citizens and the global world, this study therefore evaluated the population census integrity in an emerging Nigerian economy. And it was hypothesized that there is a significant correlation between the spatio-temporal distribution of population and the magnitude of insecurity occurrences in Nigeria.

CONCEPTUAL FRAMEWORK

Data Governance (Barbara von Halle and Larry Goldberg, 2009)

One suitable concept to underpin this study is "Data Governance." Data governance refers to the framework and processes established to ensure the availability, integrity, usability, and security of data across an organization or system. The concept assumes that effective data governance is essential for maintaining data integrity, quality, and reliability, which are critical for informed decision-making and policy formulation. Data governance also emphasizes the importance of clear roles, responsibilities, and accountability mechanisms to manage data assets effectively, (Karkošková, 2023).

Data governance is highly relevant to the study on ensuring data integrity for national planning and policy formulation in Nigeria. By adopting principles of data governance, such as standardization, transparency, and accountability, Nigeria can address the challenges associated with data integrity and improve the quality and reliability of its statistical information. Proponents of data governance include Barbara von Halle and Larry Goldberg, who introduced the concept in their book "The Decision Model: A Business Logic Framework Linking Business and Technology" published in 2009. In the context of the study, data governance provides a comprehensive framework for addressing the challenges of corruption, political interference, inadequate funding, and technical capacity. By implementing robust data governance mechanisms, Nigeria can enhance the credibility of its national statistics, foster public trust, and support evidence-based policymaking for sustainable development.

Population census history in Nigeria

Nigeria's population census integrity journey: pre-colonial evolution, colonial challenges, post-independence controversies, and 2006's

tech-driven efforts for credibility. The censuses in pre-independent Nigeria reflect the evolution and challenges in conducting population counts. Beginning in 1866, the British colonial government initiated censuses primarily in the Lagos Colony, later expanding to cover Southern Nigeria in 1911. The amalgamation of Southern and Northern Nigeria in 1914 facilitated the first nationwide census in 1921, marked by a division into Township and Provincial counts.

Subsequent censuses faced various issues. The 1931 census, affected by economic depression and riots, had limited coverage. World War II led to the cancellation of the 1941 census, and the 1951/53 census, spanning three years, marked the last by the British colonial government. Post-independence, the 1962 census faced controversy over inflated figures, prompting its cancellation. The 1963 census, despite disputes, served as a foundation for planning until 1973. The 1973 census, while technically sound, saw results canceled due to allegations of organized inflation.

In 1991, the National Population Commission conducted a census with a population figure of 88.5 million. The 2006 census, employing advanced technology, recorded a provisional population of 140,003,542 million, highlighting a continued effort to enhance accuracy and credibility in population counts in Nigeria (NPC, 2023).

METHODOLOGY

The research methodology employed to investigate population census integrity in an emerging Nigerian economy embraced a mixed-methods approach, ensuring a comprehensive assessment of the accuracy and reliability of census data. Initially, a quantitative analysis was undertaken to evaluate demographic data from previous population censuses in Nigeria. This entailed employing statistical techniques to discern inconsistencies, discrepancies, and patterns within the census data (Dauda et al., 2020). Concurrently, surveys and questionnaires were distributed to a representative sample of the population, soliciting insights into their engagement with and perceptions of the census process. These surveys probed respondents on their awareness of census activities, participation in enumeration, and opinions on the accuracy of census data (Ajayi et al., 2019). This quantitative approach furnished numerical evidence regarding the integrity of population census data within the burgeoning Nigerian economy. Also, the correlation analysis was conducted using Pearson correlation coefficients to assess the relationship between the spatio-temporal distribution of population and the magnitude of insecurity occurrences.

Subsequently, a qualitative dimension was introduced to delve into the underlying factors impacting population census integrity in Nigeria. In-depth interviews were conducted with key stakeholders involved in the census process, encompassing government officials overseeing censuses, enumerators, community leaders, and local inhabitants (Adeoye & Adeniji, 2018). These interviews aimed to unearth the challenges, biases, and political influences that could affect the accuracy of census data (Oluwatobi & Amoda, 2019). Furthermore, focus group discussions were convened to elicit diverse perspectives on population census integrity from various segments of the populace (Izibili & Oviasogie, 2017). The qualitative insights complemented the quantitative analysis by providing contextual understanding of the social, cultural, and political dynamics shaping the census process in Nigeria's burgeoning economy (Durosaro, 2018).

The study sampled specific respondents from each of the three Geo-political zones in Nigeria, including representatives from the National Population Commission (NPC), senior staff representing the zones, religious leaders, and members of political and civil society organizations. These respondents were chosen to provide diverse perspectives and insights into the integrity of census figures across the country. Additionally, Key Informant Interviews were conducted with these stakeholders to gather detailed information and assessments regarding the accuracy and reliability of Nigeria's census figures. This approach allowed for a comprehensive examination of the factors influencing population census integrity and facilitated the identification of potential challenges and areas for improvement in

census data collection and reporting processes. Figure 1, is the map of Nigeria showing the three Geo-political zones.

In the study, qualitative data were visually represented using maps, charts, and tables, while qualitative data were thoroughly discussed. The analysis of the data utilized both inferential and descriptive statistical approaches, including simple percentages and frequencies. Spatial profiling of Nigeria's population census figures was depicted in maps, providing a visual representation of the distribution across different regions. Subsequently, the findings derived from the analysis were presented in the results section, while the interpretation and discussion of these findings were expounded upon in the interpretation section. This approach allowed for a comprehensive exploration of the census data and facilitated a deeper understanding of the factors influencing population patterns and integrity in Nigeria.

RESULTS AND DISCUSSION

Spatio-temporal distribution of census figures in Nigeria

Table 1 and buttressed by Figure 2, shows the spatio-temporal distribution of census figures in Nigeria reveals notable discrepancies, particularly favoring the Northern region. Despite the prevalence of insurgency in Northern Nigeria and significant migration patterns, census data indicate a consistent increase in population figures in this region compared to others. For instance, from 1991 to the present, the census figures show a disproportionate rise in population numbers in Northern states compared to those in the Southern region. This trend persists despite the challenging socio-political and economic conditions prevalent in the North. Such discrepancies underscore the questionable integrity of Nigeria's census figures, suggesting a systemic issue with data collection and reporting processes. These findings imply a need for enhanced transparency and accountability in census operations to ensure the accuracy and reliability of population data in Nigeria.

The descriptive analaysis of Table 2, shows the spatio-temporal profiling of Nigeria's National Population Census (NPC) figures reveals significant variations in population size across different states and geo-political zones over the years. From 1991 to 2006, the North-West geo-political zone consistently recorded the highest population figures, followed by the North-Central and North-East zones. Specifically, states like Kano, Kaduna, and Katsina in the North-West consistently reported the highest population figures across the years examined. This trend can be attributed to various factors such as high birth rates, immigration, and the concentration of economic activities in these states, leading to increased urbanization and population growth. Conversely, states in the South-East and South-South zones generally reported lower population figures compared to their northern counterparts, although there were variations within these regions over time. Overall, the data highlights the significant regional disparities in population distribution in Nigeria, with the northern regions consistently recording higher population figures compared to the southern regions. These findings underscore the importance of understanding population dynamics and distribution patterns for effective planning and resource allocation in Nigeria.

Table 1: Spatio-temporal profiling of Nigeria National Population Census (NPC) figure

Year	Geo-political Zone	States	Population
1991	North-Central	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Federal Capital Territory	34,024,000
1991	North-East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe	24,118,000
1991	North-West	Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Zamfara	30,850,000
1991	South-East	Abia, Anambra, Ebonyi, Enugu, Imo	16,381,000
1991	South-South	Akwa Ibom, Cross River, Bayelsa, Rivers, Delta, Edo	19,612,000
1991	South-West	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo	21,007,000
1996	North-Central	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Federal Capital Territory	42,318,000
1996	North-East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe	33,511,000
1996	North-West	Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Zamfara	45,712,000
1996	South-East	Abia, Anambra, Ebonyi, Enugu, Imo	22,815,000
1996	South-South	Akwa Ibom, Cross River, Bayelsa, Rivers, Delta, Edo	28,937,000
1996	South-West	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo	29,028,000
2001	North-Central	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Federal Capital Territory	47,823,000
2001	North-East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe	40,152,000
2001	North-West	Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Zamfara	51,703,000
2001	South-East	Abia, Anambra, Ebonyi, Enugu, Im o	28,419,000
2001	South-South	Akwa Ibom, Cross River, Bayelsa, Rivers, Delta, Edo	36,817,000
2001	South-West	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo	38,164,000
2006	North-Central	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Federal Capital Territory	55,119,000
2006	North-East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe	50,283,000
2006	North-West	Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Zamfara	64,892,000
2006	South-East	Abia, Anambra, Ebonyi, Enugu, Imo	33,568,000
2006	South-South	Akwa Ibom, Cross River, Bayelsa, Rivers, Delta, Edo	44,930,000
2006	South-West	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo	47,496,000

Source: NPC Report, 2007. Modified by Authors, 2024.

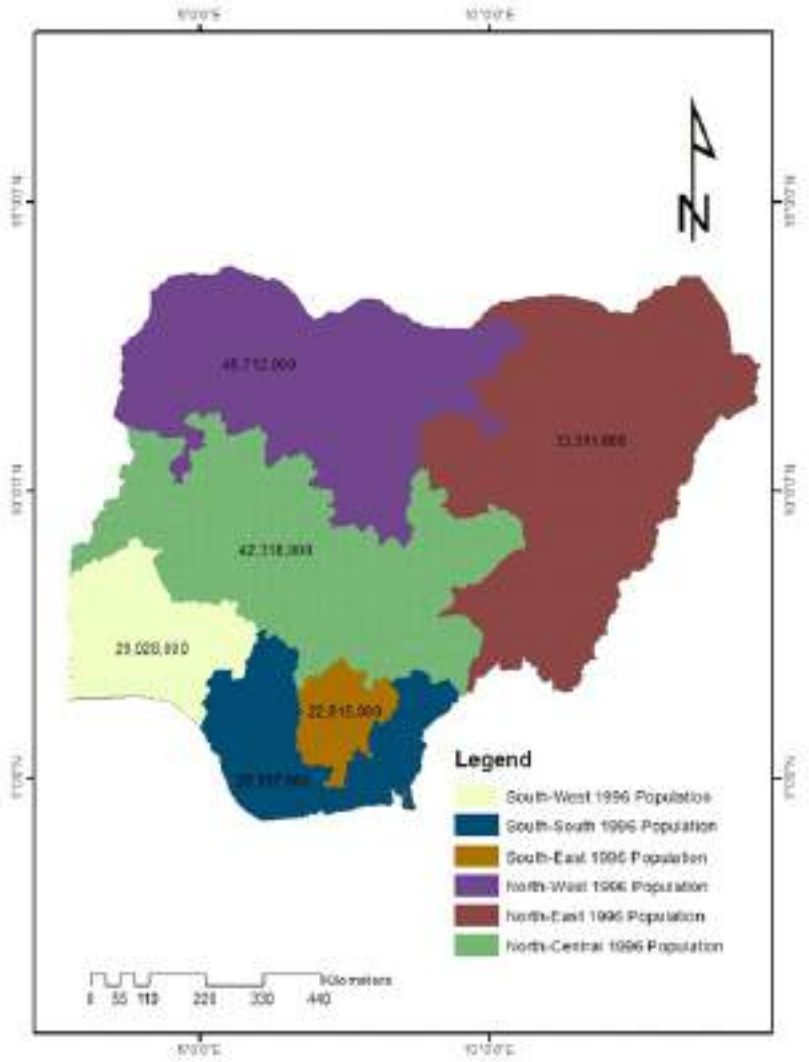


FIG. 1: *Spatio-temporal profiling of Nigeria National Population Census (NPC)*
Source: Authors fieldwork, 2024.

Geo-political zones with the highest rate of crime, insurgency and human relocation versus population figure irony

The descriptive Table 3 and supported by Figure 2, provides insights into the distribution of crime, insurgency, and human relocation across different states and geo-political zones in Nigeria during the years of the National Population Commission's activities. It reveals that the North-East, North-Central, and North-West geo-political zones consistently experienced the highest frequency of these challenges, earning them the designation of "Very High" in terms of crime, insurgency, and human relocation. Specifically, states like Borno, Adamawa, Plateau, Benue, and Kaduna are highlighted as hotspots for these issues, facing significant challenges related to security and population displacement. Conversely, states in the South-East, South-South, and South-West regions generally exhibited lower frequencies of crime, insurgency, and human relocation, although some states like Ebonyi and Rivers still reported notable instances. Overall, the data underscores the complex socio-political landscape of Nigeria, where certain regions face more acute challenges related to crime, insurgency, and human displacement, which can significantly impact population dynamics and census integrity efforts.

Table 3: State and Geo-political zones with the highest rate of crime, i nsurgency and human relocation

S/N by Ranking	Geo-political Zone	States with High Frequency of Crime	States with High Frequency of Insurgency	States with High Frequency of Human Relocation
1. Very high	North-Central	Plateau, Benue	Plateau, Benue	Nasarawa, Plateau, Benue
2. Very high	North-East	Borno, Adamawa	Borno, Adamawa, Yobe	Borno, Adamawa, Taraba
3. Very high	North-West	Kaduna, Kano	Zamfara, Kaduna, Kano	Zamfara, Kano, Kaduna
4. Low	South-East	Anambra, Ebonyi	Ebonyi, Enugu	Enugu, Ebonyi, Anambra
5. Low	South-South	Rivers, Delta	Rivers, Bayelsa, Delta	Delta, Rivers, Bayelsa
6. Low	South-West	Lagos, Ogun	-	Lagos, Ogun, Oyo

Source: Authors fieldwork, 2024.



FIG. 2: *State and Geo-political zones with the highest rate of crime, insurgency and human relocation*
Source*: Authors fieldwork, 2024.*

The descriptive results depict a consistent pattern of insecurity occurrences and magnitudes across different geo-political zones and years in Nigeria. Over the years 1991, 1996, 2001, and 2006, the North-East, North-West, and North-Central regions consistently exhibited very high frequencies and magnitudes of insecurity occurrences, indicating persistent and severe challenges within these areas. Conversely, the South-East, South-South, and South-West regions consistently reported low frequencies and magnitudes of insecurity occurrences during the same periods fig 3. This trend suggests a geographical concentration of insecurity issues in the northern regions of the country, while the southern regions generally experience lower levels of insecurity. The data underscores the need for targeted interventions and policy measures to address the root causes of insecurity in the most affected regions, while also acknowledging the relatively stable security environment in the southern regions. Fig 4, the longitudinal nature of the data highlights the continuity of insecurity challenges over time, emphasizing the importance of sustained efforts to mitigate and resolve these issues for national stability and development.

Table 4: Magnitude of insecurity within the state

Year	Geo-political Zone	Frequency of Insecurity Occurrences	Magnitude of Insecurity
1991	North-Central	High	Very High
1991	North-East	Very High	Very High
1991	North-West	Very High	Very High
1991	South-East	Low	Low
1991	South-South	Low	Low
1991	South-West	Low	Low
1996	North-Central	High	Very High
1996	North-East	Very High	Very High
1996	North-West	Very High	Very High
1996	South-East	Low	Low
1996	South-South	Low	Low
1996	South-West	Low	Low
2001	North-Central	High	Very High
2001	North-East	Very High	Very High
2001	North-West	Very High	Very High
2001	South-East	Low	Low
2001	South-South	Low	Low
2001	South-West	Low	Low
2006	North-Central	High	Very High
2006	North-East	Very High	Very High
2006	North-West	Very High	Very High
2006	South-East	Low	Low

Source: Authors fieldwork, 2024.

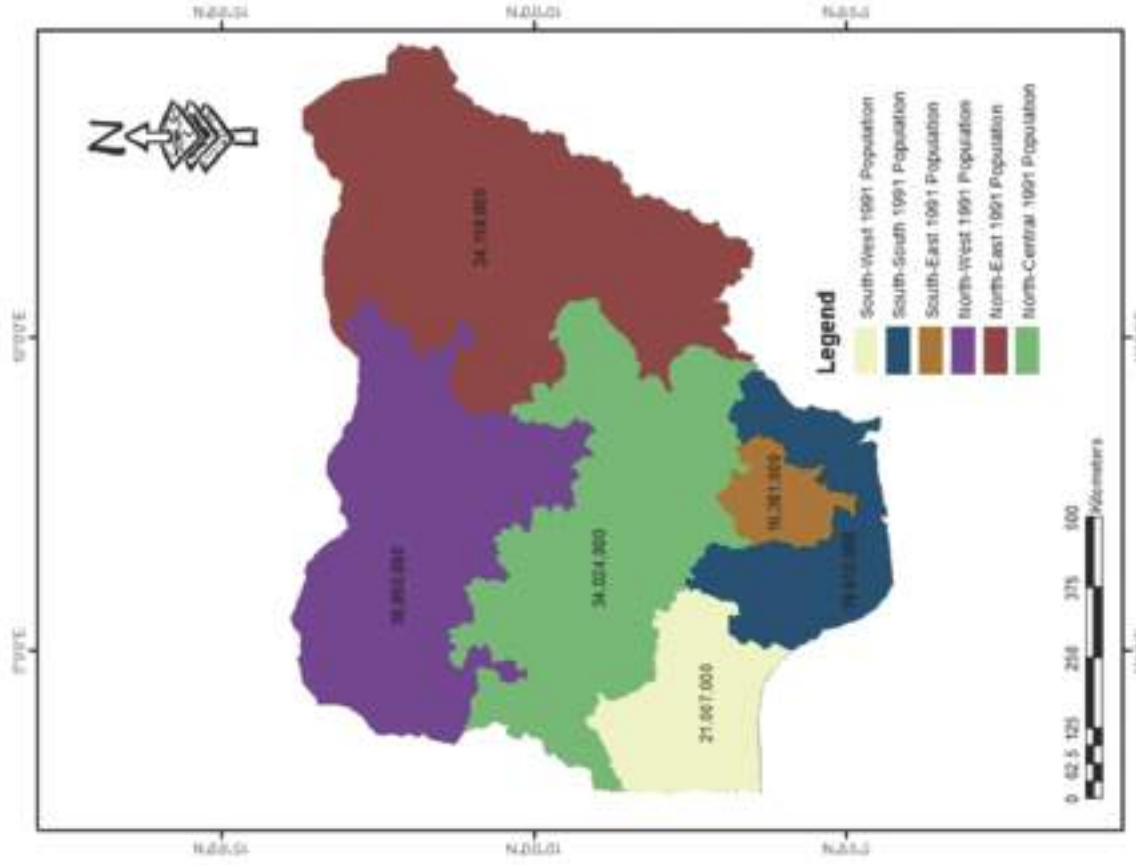


FIG. 4: Magnitude of insecurity within the state
***Source**: Authors fieldwork, 2024.*

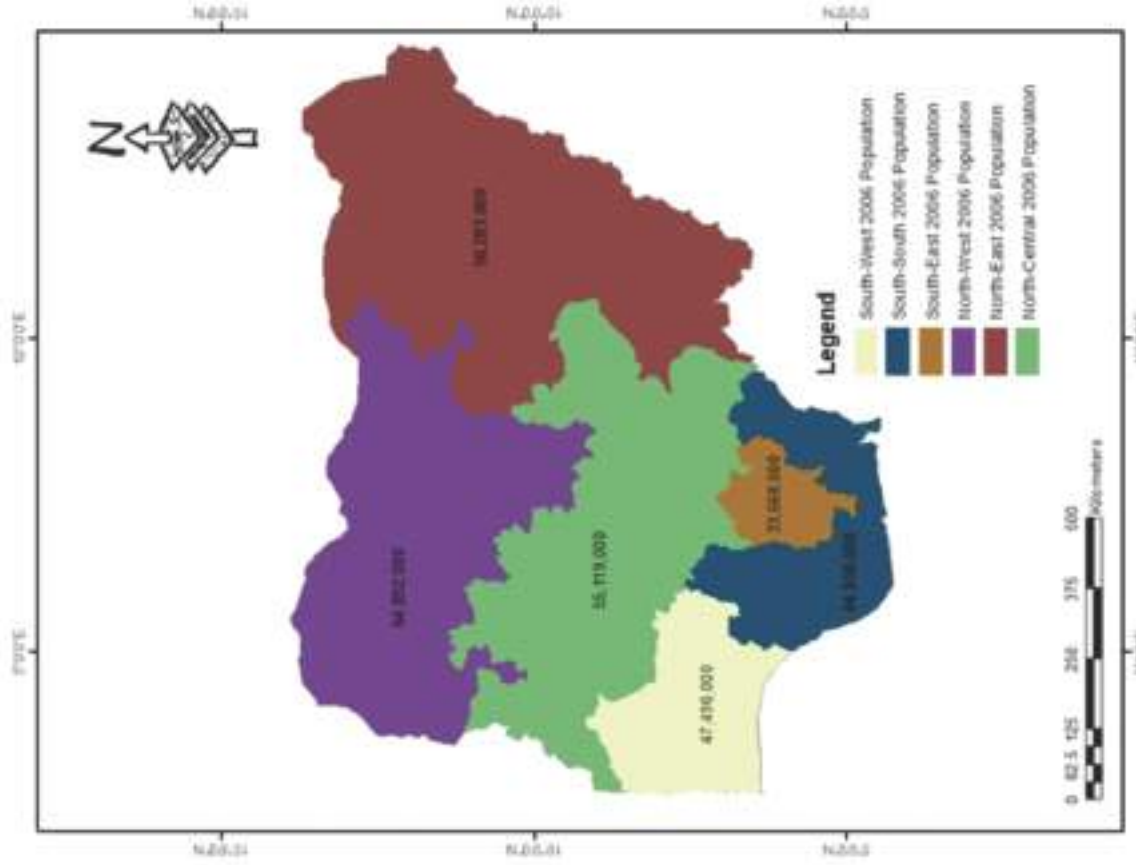


FIG. 3: Magnitude of insecurity within the state
***Source**: Authors fieldwork, 2024.*

Test of hypothesis

H_0: There is no significant correlation between the spatio-temporal distribution of census figures and the magnitude of insecurity occurrences in Nigeria.

H_1: There is a significant correlation between the spatio-temporal distribution of census figures and the magnitude of insecurity occurrences in Nigeria.

The analysis utilized data from Table 1 (Spatio-temporal profiling of Nigeria National Population Census figures) and Table 4 (Magnitude of Insecurity within the state). Pearson correlation coefficients were computed to assess the relationship between various spatio-temporal variables and the magnitude of insecurity occurrences in Nigeria. Findings revealed a significant positive correlation between population and the magnitude of insecurity occurrences ($r = 0.643$, $p = 0.001$), suggesting that areas with higher population figures tend to experience higher levels of insecurity. Additionally, significant correlations were observed between certain spatio-temporal factors and insecurity magnitude, as detailed in the correlation matrix (Table 6). The findings provide evidence to reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1). This indicates a significant relationship between the spatio-temporal distribution of population and the magnitude of insecurity occurrences in Nigeria, supporting the alternative hypothesis. These findings highlight the interconnectedness of demographic factors and security challenges, emphasizing the need for comprehensive strategies considering both population dynamics and security measures for effective policy planning and implementation.

Table 5: Descriptive Statistics

	Mean	Std. Deviation	N
Year	1998.5000	5.71040	24
Geo-political Zone	3.5000	1.74456	24
States	3.5000	1.74456	24
Population	36986625.0000	12384802.52010	24
Years	1997.8182	5.46536	22
Geo Political Zone	3.3182	1.70116	22
Frequency of Insecurity Occurrences	1.9091	.92113	22
Magnitude of Insecurity	2.0909	1.01929	22

Table 6: Correlations of Spatio-temporal profiling of Nigeria National Population Census (NPC) figure and Magnitude of insecurity within the State

		Year	Geo-political Zone	States	Population	Years	Geo Political Zone	Frequency of Insecurity Occurrences	Magnitude of Insecurity
Year	Pearson Correlation	1	.000	.000	.756**	1.000**	-.168	.129	.140
	Sig. (2-tailed)		1.000	1.000	.000	.000	.456	.567	.535
	N	24	24	24	24	22	22	22	22
Geo-political Zone	Pearson Correlation	.000	1	1.000**	-.365	-.168	1.000**	-.680**	-.869**
	Sig. (2-tailed)	1.000		.000	.079	.456	.000	.001	.000
	N	24	24	24	24	22	22	22	22
States	Pearson Correlation	.000	1.000**	1	-.365	-.168	1.000**	-.680**	-.869**
	Sig. (2-tailed)	1.000	.000		.079	.456	.000	.001	.000
	N	24	24	24	24	22	22	22	22
Population	Pearson Correlation	.756**	-.365	-.365	1	.745**	-.495*	.569**	.643**
	Sig. (2-tailed)	.000	.079	.079		.000	.019	.006	.001
	N	24	24	24	24	22	22	22	22
Years	Pearson Correlation	1.000**	-.168	-.168	.745**	1	-.168	.129	.140
	Sig. (2-tailed)	.000	.456	.456	.000		.456	.567	.535
	N	22	22	22	22	22	22	22	22
Geo Political Zone	Pearson Correlation	-.168	1.000**	1.000**	-.495*	-.168	1	-.680**	-.869**
	Sig. (2-tailed)	.456	.000	.000	.019	.456		.001	.000
	N	22	22	22	22	22	22	22	22
Frequency of Insecurity Occurrences	Pearson Correlation	.129	-.680**	-.680**	.569**	.129	-.680**	1	.922**
	Sig. (2-tailed)	.567	.001	.001	.006	.567	.001		.000
	N	22	22	22	22	22	22	22	22
Magnitude of Insecurity	Pearson Correlation	.140	-.869**	-.869**	.643**	.140	-.869**	.922**	1
	Sig. (2-tailed)	.535	.000	.000	.001	.535	.000	.000	
	N	22	22	22	22	22	22	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 7: Correlations on population and magnitude

		Population	Magnitude of Insecurity
Population	Pearson Correlation	1	.643**
	Sig. (2-tailed)		.001
	N	24	22
Magnitude of Insecurity	Pearson Correlation	.643**	1
	Sig. (2-tailed)	.001	
	N	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

Discussion of findings

The findings regarding the persistent spate of insecurity in Nigeria, particularly within the Northern region, reveal a concerning trend that warrants comprehensive analysis and intervention. Despite enduring significant challenges posed by insurgency, terrorism, and other forms of violence, states within the North-East and North-West regions consistently report the highest population figures during census counts from 1991 to 2006. This juxtaposition presents a striking irony, as these regions concurrently grapple with widespread insecurity and significant exodus of human migration due to the dire security situation. The discrepancy between the high population counts and the prevailing insecurity raises fundamental questions about the integrity and accuracy of Nigeria's population census data, suggesting potential discrepancies between reported figures and the actual demographic landscape.

The persistence of high population figures in insecurity-plagued regions such as the North-East and North-West underscores broader systemic challenges in the conduct and reliability of population census exercises in Nigeria. The apparent contradiction between the reported population counts and the prevailing security conditions highlights the need for robust methodologies, transparent data collection processes, and rigorous verification mechanisms to ensure the accuracy and credibility of census data. Moreover, the discrepancy underscores the complex interplay between demographic dynamics, socio-political factors, and security considerations, which shape population trends and migration patterns in conflict-affected regions.

Furthermore, the irony of maintaining high population figures amidst pervasive insecurity underscores broader governance issues, including the allocation of resources, provision of essential services, and implementation of effective security measures in vulnerable communities. The discrepancy between reported population counts and the ground realities of insecurity raises critical concerns regarding the equitable distribution of resources, representation, and development initiatives, particularly in regions facing acute security challenges. Addressing the paradox of high population counts amid insecurity demands a multi-faceted approach encompassing improved data collection methods, enhanced governance structures, and targeted interventions to address the root causes of insecurity and promote sustainable development in affected regions. Ultimately, ensuring the integrity and accuracy of population census data is imperative for informed policymaking, equitable resource allocation, and effective governance in Nigeria.

CONCLUSION

In conclusion, the glaring irony between states plagued by insecurity and the maintenance of highest population figures during census counts in Nigeria from 1991 to 2006 raises profound doubts regarding the integrity and reliability of the National Population Commission and the census exercise as a whole. The discrepancy between the harsh realities of insecurity-driven population displacement and the reported demographic data underscores fundamental flaws in the data collection methodologies, verification processes, and overall transparency of Nigeria's population census exercises. The persistence of high population figures in regions grappling with acute security challenges not only calls into question the accuracy of the census data but also highlights broader governance issues, including the equitable distribution of resources, representation, and development priorities in vulnerable communities.

Moreover, the paradoxical relationship between insecurity and population figures underscores the urgent need for comprehensive reforms in Nigeria's population census mechanisms to ensure credibility, transparency, and accuracy. Addressing the discrepancy between reported population counts and the ground realities of insecurity requires concerted efforts to enhance data collection methods, strengthen institutional capacities, and foster public trust in the census process. Moving forward, policymakers, civil society organizations, and other stakeholders must prioritize reforms aimed at improving the integrity and reliability of population census data, thereby laying the foundation for evidence-based decision-making, equitable resource allocation, and inclusive development initiatives in Nigeria.

RECOMMENDATIONS

The following recommendations were made to address identified challenges:

i. The National Population Commission (NPC) should spearhead comprehensive reforms aimed at enhancing the integrity and reliability of the census population data in Nigeria. This includes overhauling data collection methodologies, implementing robust verification mechanisms, and ensuring transparency and accountability throughout the census process.

ii. The NPC and relevant governmental agencies should prioritize strengthening institutional capacities in data collection, management, and analysis. This involves investing in training programs, technology upgrades, and personnel recruitment to build a skilled workforce capable of conducting accurate and credible census exercises.

iii. Engage civil society organizations, academic institutions, and other stakeholders in the census process to promote transparency, inclusivity, and public trust. Establish mechanisms for meaningful participation, feedback mechanisms, and independent oversight to enhance credibility and legitimacy.

iv. Prior to conducting nationwide census exercises, the NPC should conduct pilot studies and field tests to assess the effectiveness of data collection methodologies, identify potential challenges, and refine procedures.

v. Embrace innovative technologies such as geographic information systems (GIS), remote sensing, and digital data collection tools to enhance the efficiency, accuracy, and reliability of census data collection and analysis.

vi. Ensure timely release, accessibility, and dissemination of census data to the public through open data platforms, digital repositories, and public awareness campaigns. Promote data transparency, accountability, and use to facilitate evidence-based policymaking, planning, and resource allocation at local, regional, and national levels.

vii. Launch civic education campaigns to raise awareness, educate the public about the importance of census participation, and dispel misconceptions and myths surrounding the census process. Foster a culture of civic responsibility, participation, and engagement to ensure widespread participation and accurate representation in census exercises.

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SOCIO-CULTURAL BARRIERS, EFFECTIVE POPULATION AND HOUSING CENSUS IN NIGERIA.

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Abstract

The main idea of this paper is to examine the socio-cultural barriers and effective population and housing census taking in Nigeria. The census in Nigeria has been characterized by controversies in the socio-cultural dimension, which spans demarcation, house numbering, the conduct of the actual census, and the outcome of the census data. The socio-cultural barriers range from language, religious beliefs, ethnic barriers, literacy level, and housing patterns, among others, to the constraints in conducting the decennial population and housing census in Nigeria. The polarization of the country on ethno-religious lines, socio-cultural dimensions, and historical antecedents has created mistrust in the conduct, outcome, and utilization of census data in Nigeria. All over the world, in both developed and developing societies, the regular population and housing census are profoundly important to socio-economic development. These demographic exercises are now being considered a panacea that can remedy some of the deep-rooted social problems facing modern states like Nigeria. This study used secondary sources of data and historical methods of data analysis to identify the major socio-cultural constraints confronting effective census-taking in Nigeria. The paper recommends intensive and extensive enlightenment and the involvement of traditional, religious, and community leaders in the conduct of population and housing censuses, among others, towards achieving accurate census data, especially from rural communities.

Keywords: Socio-cultural, barriers, population, Housing Census, and Nigeria

Introduction

Moving through the complex sociocultural terrain of Nigeria presents particular difficulties for housing and population assessments. The complex sociocultural fabric, full of customs and beliefs, frequently creates difficult obstacles that affect the effectiveness of conducting censuses. It becomes essential to comprehend how sociocultural obstacles interact and how this affects the population's ability to be accurately assessed. Population and housing censuses are the foundation of vital statistical systems, which provide demographic information on persons, households, buildings, localities, and the entire country. Also, PHC provides population information about the citizens, like their age, sex, living condition, geographical localities, ethnic nationalities, marital status, and employment status, among others. While demographic information on housing includes living conditions, household facilities, structural characteristics, water and sanitation systems,

availability and accessibility of public utilities like schools, health systems, and power supply (Ushie, Ogar, Egidi, and Ushie, 2020), the elements of a population and housing census include individual enumeration, periodicity, the ability to generate area statistics, universality, and simultaneity (Mohammed, 2018). The enumeration approach of PHC focuses on persons who are physically present but have not been enumerated in another location within the census period, guests who spent the previous night in a regular or official household, all census functionaries, and destitute or homeless individuals.

Therefore, population and housing censuses are the essential sources of demographic and socio-economic data for strategic planning in any nation in the world. The history of conducting population censuses before the introduction of housing is traced to the United States, Canada, and Australia in the years 1790, 1871, and 1881, respectively (Adele, 2009). The human population globally has increased swiftly as a result of man's ability to mechanize agricultural services, the development of antibiotics and vaccines, which helped greatly limit diseases, and socio-cultural barriers to the utilization of family planning services. These have led to population growth. For economic planning and development of social policies, regular population and housing census taking is encouraged to identify the population distribution, density, and development indicators of any nation in the world (Ushie, Ogar, Egidi, and Ushie, 2020).

In Nigeria, her population is characterized by diversity in cultures, languages, and social structures. Hence, conducting an acceptable and accurate population and housing census is challenging due to socio-cultural barriers like language, religious belief, societal norms, literacy level, geographical location, family history, distinct worldviews, and other traditional practices (Ushie, Egidi, Ushie, and Isokon, 2022). These barriers have historically stalled the accurate enumeration of the population and housing landscape of Nigeria. These socio-cultural barriers have the propensity to influence individuals' willingness to participate and respond to issues of census taking, especially where linguistic and other cultural diversities are distinct. The socio-cultural barriers have unique perspectives on issues of privacy, data collection, information sharing, and societal norms regarding household composition and structure, which can present challenges during population and housing census-taking.

Literature review

History of population and housing census taking in Nigeria.

In any country of the world, be it developed or developing, the essence of conducting a population and housing census is to set forth plans for development that are targeted to be achieved and sustained. 1921 First Nigerian National Census (estimates 18.37 million people), 1931 National Census (estimates 19.93 million people), 1941 No Census (Second World War Period), 1952/1953 Census (30, 403,305 million people), 1962 Cancelled (54.0 million people), 1963 (55,653,821 million people), 1973 Cancelled (79.76 million people), 1991 (88, 992, 220 million people), and 2006 (140,003, 542 million people) (Shehu, Othman, and Osman, 2017). The population and housing census statistics, figures, facts, and forecasts are, therefore, made, analyzed, documented, used, and also followed up as working plans of social engineering to attain the desired level of socio-economic development. Before the formation of the geographical entity called Nigeria, it existed fragmentally as chiefdoms, kingdoms, and empires. Therefore, the first census in the history of what much later became Nigeria was conducted in 1866, but within the Colony of Lagos, as Nigeria was not then formed into a single entity (Iwuoha, 2017). There were also censuses conducted (for Lagos Colony only) in the years 1871, 1881, and 1901, with intervals of ten (10) years each. However, ten (10) years later, in 1911, another census, which also covered the Southern Protectorate of Niger, including Lagos on the one hand, and another on the Northern Protectorate of Niger, was conducted (Idike and Eme, 2015). The geographical formation of a single entity called Nigeria in January 1914 gave remarkable attention to the population census exercise in Nigeria as the Colonial Government established the Nigerian Census Ordinance 1917, thereby enabling the colonial government to successfully conduct the first Nigerian National

Census in 1921 (Mosher, 2017). Since 1914, when Nigeria became an indivisible entity, the conduct of population censuses has been decennial, except in the 1940s, when the Second World War was being fought and the focus was on the war (Isah, Mohammed, Fuad, and Nazariah, 2019).

The 1921 census

Population and housing census taking in Nigeria is focused on gathering data on Nigeria's vital demographic and socio-economic data for effective governance and development planning. The history of the population census in Nigeria can be traced to the colonial era. For instance, the first population census was in 1921, during the colonial era under British authorities (Iwuoha, 2017). The census result was not widely accepted because it primarily focused on urban areas, and only a limited number of rural communities were captured during the census. The census was conducted using traditional methods of enumeration (Ogunyemi, 2010). This involved sending out census functionaries to various regions and communities to physically count and record the demographic characteristics of the population. Some of the socio-cultural barriers to effective census taking of the era were ethnic group diversity and ideologies, language differences, and other cultural biases. The 1921 census in Nigeria was not without controversy. There were debates about the accuracy and fairness of the data collected, undercounted or misrepresented census results, amongst others. The data collected from the 1921 census was used for various administrative purposes during the colonial period (Doxsey-Whitfield, MacManus, Adamo, Pistolesi, Squires, Borkovska, and Baptista, 2015). It influenced policies related to governance, taxation, and other aspects of colonial rule. The historical significance of the 1921 census remains an important historical document that provides insights into the demographic composition, including the geographical structure of Nigeria during the colonial period.

The 1952–1953 Census:

The 1952–1953 Census in Nigeria was an essential demographic survey conducted in Nigeria. It was one of the early attempts to gather inclusive demographic and socio-economic data on the people and population of Nigeria, and it was conducted during the colonial administration to understand the population dynamics of Nigeria. The 1952–1953 Census focused on gathering demographic data, like population size, age distribution, gender ratio, and other relevant socio-economic data crucial for administrative planning, policy formulation, and resource allocation (Doxsey-Whitfield, MacManus, Adamo, Pistolesi, Squires, Borkovska, and Baptista, 2015). The key barriers to the census result centered on the use of tribal and ethnic indices in data gathering and later culminated in aggravated tensions between different ethnic and regional groups. The contentious result of the census led to widespread protests and violence in some parts of the country. The 1952–1953 Census result developed a sense of mistrust between different ethnic and regional groups playing a role in Nigeria's post-independence political and economic development.

The 1962 Population Census

The 1962 population census was the first post-independence census in Nigeria. It was considered one of the most comprehensive headcounts after independence, covering various aspects of demographics, housing, and socio-economic characteristics of the population of Nigeria. The main drive for the conduct of the post-independence census was to gather demographic data on the population of Nigeria, ranging from age, sex, occupation, ethnicity, religion, and other relevant demographic variables. The post-independence result was criticized for allegations of political interference and manipulation of the census figures for political advantage (Adekunle, 2010). The controversy surrounding the census led to significant mistrust and tension among various ethnic and regional groups in Nigeria. Hence, there were controversies and dissatisfaction with the post-independence census results. Other post-independence periodic population and housing censuses in Nigeria include the 1973, 1991, 2006, and 2018 National Population and Housing Census Pre-test. These population and housing censuses have similar ethnic and religious controversies.

History of population and housing census taking in Nigeria.

S/N	Year of conduct	Characteristics
1	1921	• The 1921 population census in Nigeria was conducted during the colonial period by the British authorities • The data collected from the census would have been used by colonial administrators for various purposes, including taxation, resource allocation, and governance planning. • The census was conducted using traditional methods of enumeration.
2	1952–1953	• Overall, the 1952–1953 population census in Nigeria was a significant undertaking that aimed to provide crucial demographic information for governance and administration during the colonial era. • There was post census riot because of ethnic coloration
3	1962	• The first post-independence census • Despite its controversies, the 1962 census laid the groundwork for subsequent demographic studies and censuses in Nigeria. It provided valuable data for policymakers, researchers, and demographers to analyze and understand the population dynamics of the country.
4	1973	• The second post-independence census • Like many large-scale census operations, the 1973 census likely faced challenges such as logistical issues undercounting in certain areas, inaccuracies in reporting, and potential political influences.
5	1991	The third post-independence census
6	2006	The fourth post-independence census

Source: National population commission database. Accessed 2023.

Socio-cultural barriers to population and housing census in Nigeria.

Socio-cultural barriers are complex and multifaceted phenomena that can impede communication, understanding, and cooperation between individuals or groups from different cultural backgrounds. These barriers can manifest in various forms and contexts, including language differences, cultural norms, values, beliefs, and stereotypes. Conducting an effective population and housing census in Nigeria can be challenging due to various socio-cultural barriers. These barriers can hinder the accuracy and completeness of the data collected. Socio-cultural factors are those factors that affect the understanding and application of the concept of population and housing census, which have political and cultural manifestations (Okeibunor, 2000). The socio-cultural disparity in terms of level of education, urban-rural context, religion, and other socio-cultural factors tends to affect the response of the population and housing census. Socio-cultural factors affect knowledge and understanding of the concepts of population and housing census. The concept of population and housing censuses developed out of circumstances surrounding human socio-economic development, with a greater emphasis on the accuracy of demographic information in a particular geographical setting.

Issues of Refugees, Internally Displaced Persons (IDPs), and Destroyed Houses

All over the world, the issue of refugees and

internally displaced persons (IDPs) affects effective census-taking. During persons and building enumeration, the IDPs are hard to reach. Although quite a number of them are temporarily settled in various IDP camps, the other hundreds of thousands are wandering the streets in search of food and menial jobs on a daily basis, with no signs of going back to their original habitats in the near future, or are trapped in remote areas (Ogunleye, 2012). Also, the insecurity associated with the Fulani/herdsmen-farmers conflict emerging in Nigeria is a factor affecting effective population and housing census taking in Nigeria. This is a challenge because people flew from their homes for safety, and buildings were destroyed. Sometimes, these buildings are captured during house numbering and may not be counted during the actual building and person's enumerations. (Meyer, Mok, & Sullivan, 2015). Indeed, tens of thousands of houses and other buildings have been destroyed in the conflicts and insurgencies all over Nigeria, many of which are abandoned.

Ethno-religious factors and census-taking in Nigeria

Religious factors play a significant role in census taking in Nigeria, a country known for its diverse religious beliefs, ranging from Islam and Christianity being the dominant faiths, followed by traditional African religions. Nigeria has a significant religious population, with Islam and Christianity being the dominant faiths. Religious beliefs and practices may influence people's willingness and openness to census functionaries. The connections and deep attachment between religion and ethnicity affect the attitudes of religious adherents toward census participation. In Nigeria, ethno-religious factors have remained thorny in the conduct of population and housing censuses because the popularity, acceptability, and legitimacy of census results are influenced by ethno-religious biases, for instance, the 1962/63 census results (Iwuoha, 2017). These factors breed fears and regional dominance among the different ethnic groups. The issues revolve around which tribe or religion has the highest number in order to control, influence, and command more power, access, and resources. The unequal spread of the Nigerian population has a higher concentration of Muslims, while others have a higher concentration of Christians. These religious demographics have a strong economic influence on resource allocation, political representation, policy planning, and implementation, with census results as a determining factor. The census result can be used to implement policies that promote harmony and peaceful coexistence among ethnic and religious groups in Nigeria.

Language barriers and census-taking

Nigeria is one of the most linguistically diverse countries in the world, with over 500 languages spoken. The official language is English, but it is spoken less frequently in rural areas and among people with lower education levels (Nigerian Language Survey, 2022). Asking and answering questions are the core elements of the population and housing census of any country in the world. Linguistic diversity in Nigeria is dynamic and reflective of the census result. The household language affects any census result and the quality of the outcome. In any human society, communication is supreme, and human language is the fulcrum of human communication. In a multi-ethnic and multi-lingual nation such as Nigeria, the issue of language is crucial to national assignments like the population and housing census in Nigeria. Lewis, Gary, and Fenning (2021) observed that spoken languages in Nigeria are estimated between 522 and 527. Various ethnic groups in Nigeria have their own indigenous languages. There are three major ethnic groups in Nigeria: Hausa, Igbo, and Yoruba. These languages shape the attitudes and responses of the indigenous people towards demographic information. Demographic and social information about a population is poorly obtained due to the language of census functionaries and respondents. Language barriers in population, housing, and the census pose a risk of undercounting or misrepresenting demographic information during the census. Language barriers can lead to misunderstandings or inaccuracies in responses to demographic information during census taking. Other factors include: low literacy levels, poor road networks, poor internet connectivity, mutual mistrust and suspicion between the Northern and Southern Regions of Nigeria, the politics of constituency seats and revenue allocation, the desire for large or large allocations of social and other

developmental services, fear of and manipulation of results by elites and other interests, poor or untimely funding, political inaccessibility of some of the areas (remote) to be enumerated.

Methodology

This study used secondary sources of data and applied the historical method of data analysis to identify the issues of socio-cultural barriers and the conduct of population and housing censuses in Nigeria. Data was sourced from secondary sources like journals, books, statistical banks and the current realities of affairs in Nigeria, characterized by insurgency, ethno-religious conflicts, IDPs, forced migration, political instability, and other threats to Nigerian unity that affect census taking. The study took cognizance of the past historical challenges of conducting population and housing censuses in Nigeria. The analysis revealed that the socio-cultural controversies affecting the population and housing census in Nigeria sometimes lead to legal battles, civil unrest, and cancellations, especially during the 1962/63 and 1973 census exercises. Therefore, various interpretations of the past censuses were used in the analysis and discussion of the study.

Conclusion and recommendations

In conclusion, the socio-cultural barriers present significant challenges to conducting an effective population and housing census in Nigeria. These barriers encompass diverse factors including linguistic diversity, traditional beliefs, and societal norms, all of which can impede data collection and accuracy. Population and housing censuses developed out of circumstances surrounding human socio-economic development, with more priority given to the accuracy of demographic information in a particular geographical setting, leading to socio-economic planning and development. Census results are the yardsticks for the allocation of national resources and political representation. Conducting population and housing censuses all over the world is a strategic approach towards socio-economic development and the formulation of social welfare policies. The Population and Housing Census (PHC) is a critical and systematic tool for any nation seeking to formulate social policies, economic development, planning, strategies, and allocation of resources for a given nation. Conducting a decennial population and housing census is an essential part of Nigeria's socio-economic, political, and sustainable development. However, the conduct of population and housing censuses is faced with barriers like ethno-religious factors, language barriers, politicization of census results, illiteracy, and fear of regional dominance, amongst others. These have negatively affected the accuracy and acceptability of census results in Nigeria. However, the paper recommends that census issues should be depoliticized by leaving them in the care of scholars and experts who do not have affinity for ethnic, religious, political, or economic interests. National interest should be placed above ethnic interest; this will propagate the oneness of Nigeria. Engaging religious leaders and institutions in the census process can help build trust and encourage participation. Sensitivity to religious practices and scheduling data collection around important religious events can also be beneficial and promote accurate data collection.

Efforts should focus on community engagement, capacity building, and the utilization of innovative technologies to overcome these obstacles. Additionally, investing in education and awareness campaigns can help dispel misconceptions and promote participation in the census process.

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THE EFFECTS OF INTER-COMMUNITY VARIATION IN RESIDENTS SOCIO-ECONOMIC PROBLEMS ON CENSUS EXERCISE IN CROSS RIVER NORTH SENATORIAL DISTRICT

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Abstract
Residents of communities located in rural, peri-urban and urban areas in Cross River North Senatorial District are confronted with a number of developmental problems that need urgent attention. These problems are not only linked to the nature of community in which the residents of the area live but to the socio-economic status of the people. This work assessed the peculiar socio-economic problems faced by residents of rural, peri-urban and urban communities of Cross River North Senatorial District and the potentials which these problems have in influencing census exercises and results. A rapid assessment of the three communities was made using physical observation, interviews, focus group discussion and questionnaire administration. Information gathered was analysed and presented using simple descriptive statistics. While most of the problems identified cut across all the three communities, some were more severe in certain communities. The peri-urban communities were noted for land disputes and grabbing, conflict between traditional and modern culture and a less cohesive society; rural communities are faced with issues of poor farm yield, poverty, lack of access to quality education, out-migration, joblessness, poor internet services, hunger, malnutrition, cultism, lack of public transportation, lack of good roads and bridges, high cost of living, hopelessness, declining population and communal conflicts. The urban areas in the region are grappling we unique problems of crime, drug addictions, joblessness, racism, poverty, high cost of living, housing affordability, unreliable power supply, food security, rural-urban migration and bad urban roads. These problems can pose a serious threat to census exercise by presented hard-to-count population. The paper recommends proper regional development planning and adapting census enumeration strategies to the need of each community.

Keywords: Socio-economic problem, rural, peri-urban, urban and Cross River North Senatorial District

Introduction

The different attributes of urban, suburban and rural communities can have significant implications for census enumerations exercise in any location. Each type of settlement has its own set of unique features and understanding these differences is crucial in creating effective strategies for improved census enumeration. The variation among urban, suburban and rural communities highlights the importance of tailoring census strategies to the unique characteristics and challenges of each community type (Pillah, 2023). Adopting flexible approaches engaging local stakeholders, addressing language and cultural barriers and leveraging existing communities' resources can

help ensure accurate and comprehensive census results that inform policy decisions and resources allocation at all levels (UN Statistics Division, 2015).

Census or head count is a technique of obtaining a comprehensive information about the social, economic, demographic and environmental characteristics of the population of a geographic area at the given time and an interval of say five to ten years. During this exercise trained enumerators visit households or individual in specific geographic areas to collect population data through face-to-face interviews or other data collections techniques using a standardized questionnaire as a guide. The data collected gives valuable information on various aspects of population such as age, sex, ethnicity, education, occupation, housing condition and household's composition as well as the derived demographic indicators such as life expectancy birth rates, death rates, and migration, pattern and population density.

Censuses are meant to provide accurate and up to date information about the population of an area. This information plays a vital role in understanding population dynamics, monitoring social and economic trends and facilitating the equitable distribution of resources and services. Census results provides a comprehensive, data of the population of an area at a given point in time and therefore, serves as a foundation for evidence-based policymaking and planning in various sectors such as health care, education, infrastructure development and social welfare.

Cross River North Senatorial District has census enumeration areas located in communities or settlements with different geographic or locational attributes that have profound influence on the social, economic, and cultural life of the people. The communities which may be urban, suburban and rural are unique areas that exude different opportunities and challenges for a successful census exercise. Urban communities house socially heterogeneous people with diverse socio-cultural background and whose relationship is formal in nature. The region has thick population density, a bustling and fast-paced lifestyles with very busy streets and a vibrant night life. With diverse socio-economic activities and improved infrastructure, urban communities in the area offer access to different livelihood opportunities and maximum interactions within and outside the urban environment (Ebong and Animashaun, 2009). Apart from its numerous advantages, the urban communities also present challenges that can be barriers to census enumeration exercises (Egerson Daniel et al, 2023). The rural counterpart on the other hand is known for very low population that is scattered all over remote locations that are difficult to access due to poor road networks. The population is socially homogenous in terms of similar cultural attributes such as language, social organization and community life. Rural life is built around agriculture with other socio-economic activities supporting farming business. The relative alienation of this region coupled with the nature of human population can be a serious threat to successful census exercises. The peri-urban or suburban is a transition zone between rural and urban communities where urban and rural land uses struggles for space (Uyanga, 1980). In this belt, urban residential, industrial and recreational land uses coexist alongside with rural agricultural land use. The population consist of people of diverse socio-economic background that have their roots from urban and rural cultures. Here one finds farmers from rural areas living together with urban civil and public servants and businessmen. The zone also has its challenges that can frustrate efforts at census enumeration exercises (Ekandem et al 2014).

This work is to examine the likely impact of this intercommunity variation on census exercises using urban, suburban and rural communities in Cross River North Senatorial District as case study.

Aim and objectives

The aim of this study is to examine the likely impact of variation in residence Socio-economic problems in Urban, Peri-urban and rural communities on census exercise in Cross River north senatorial district. The specific objectives include to:

i. analyse residents' socio-economic problems arising from the nature of urban, suburban and rural communities in Cross River North Senatorial Districts
ii. suggest the likely influence of

intercommunity variation on census enumeration exercise in Cross River North Senatorial District (CRNSD)

iii. Recommend ways of improving census exercises in urban, suburban and rural communities.

Literature Review

It is proper to define the three primary community types: urban, suburban, and rural before discussing their influence on census exercise. Each community represents a distinct social, cultural, and spatial configuration that shapes the experiences and interactions of its residents. By recognizing the unique characteristics of each community type, we can gain insight into the social, cultural, and spatial factors that shape interactions and relationships within and between these diverse community settings.

Urban communities are characterized by high population density and a bustling, fast-paced lifestyle. These areas serve as economic and cultural hubs, housing diverse populations and offering a wide range of amenities, services, and employment opportunities. The urban landscape is often marked by towering skyscrapers, bustling streets, and a vibrant nightlife. People living in urban communities often experience a greater level of anonymity and are exposed to a diverse array of cultures and ideas. Their socioeconomic problems found in literatures include; poverty and income inequality, lack of affordable housing, unemployment and underemployment, crime and safety issues, limited access to quality education and healthcare and environmental concerns.

Suburban communities on the other hand are typically situated on the outskirts of urban areas and are defined by lower population density and a more residential-focused environment. Suburbs are known for their quiet streets, spacious homes, and well-maintained neighborhoods. They offer a balance between the amenities of urban areas and the tranquility of rural settings. Suburban residents often seek a quieter and family-oriented lifestyle, while still benefiting from proximity to urban centers for work or entertainment purposes (Uyanga, 1980). A zone where urban and rural land uses and cultures converged. Their socioeconomic problems are; rising cost of living and housing affordability, commuting challenges and transportation issues, education disparities and access to quality schools, limited access to healthcare services, social isolation and lack of community cohesion and unequal distribution of resources and services.

Rural communities are located in non-urban areas and are characterized by a low population density and a close-knit social structure. These communities are often surrounded by vast expanses of agricultural or natural landscapes, providing a sense of remoteness and a connection to nature (Ebong, 2006). Rural residents typically experience a slower pace of life and tend to rely heavily on agriculture, natural resources, or small-scale industries for their livelihoods (Olaseni, 2004). Community bonds are often strong in rural areas, with residents relying on each other for support and collaboration. Current socioeconomic Problems in Rural Communities as disclosed in literature include; declining population and brain drain, remote and often inaccessible locations, limited job opportunities and economic diversification, inadequate infrastructure and technology access, healthcare disparities and limited access to medical facilities, educational challenges and school closures, agricultural and environmental concerns.

The differences between urban, suburban, and rural communities can influence census exercises in several ways. Some of these ways are reviewed here.

Population density and geographic challenges: Urban communities tend to have higher population densities, which can make it challenging to accurately count every individual. The presence of high-rise buildings, gated communities, and transient populations such as homeless individuals or migrant workers can further complicate enumeration efforts. Suburbs typically have a mix of low to moderate population densities and a more dispersed population. Census enumerators may need to cover larger areas to reach households, and access to gated communities or private residences may require coordination with local authorities or property management. Rural communities often have low population densities and scattered settlements. Enumerators may

encounter long travel distances, remote or inaccessible areas, and limited road infrastructure, making it difficult to ensure complete coverage. Special strategies, such as utilizing satellite imagery or collaborating with local community leaders, may be necessary to overcome these challenges (Gabbard, Kissam, and Martin, 1993).

Language and cultural diversity: Urban communities are often characterized by significant linguistic and cultural diversity due to migration and international populations. Census questionnaires and outreach materials may need to be available in multiple languages, and targeted community engagement efforts may be required to reach diverse populations and ensure their participation. Suburban areas can exhibit a range of linguistic and cultural diversity, influenced by both local demographics and commuting patterns from nearby urban centers. Tailoring census messaging and outreach to the specific cultural and linguistic backgrounds of suburban residents can help foster trust and encourage participation. Rural communities may have more homogeneous populations in terms of language and culture, but there can still be unique linguistic or cultural groups present. Sensitivity to these differences, including providing translated materials or working with community leaders, can facilitate engagement and accurate data collection (O'Hare, 2017).

Internet access and digital divide: Urban communities generally have better internet infrastructure and higher rates of internet access. This can enable online census response options and digital outreach campaigns. However, it is important to recognize that even within urban areas, there can be pockets of underprivileged populations with limited internet access or digital literacy. Suburbs may have varying levels of internet access, with some areas having reliable broadband connectivity while others experience gaps in coverage. Providing alternative methods for census participation, such as paper questionnaires or assistance centers, can ensure equitable participation. Rural communities often face challenges related to limited or unreliable internet access, known as the "digital divide." This can impact online census response rates and require additional efforts to reach residents through non-digital means, such as paper-based surveys or in-person enumeration (Kissam, 2017).

Trust and privacy concerns: Urban communities may have higher levels of anonymity and limited community cohesion, which can influence residents' trust in government institutions and willingness to participate in the census. Engaging community organizations, leaders, and trusted individuals can help build trust and address privacy concerns. Suburban residents may have varying levels of trust in government institutions, depending on factors such as their proximity to urban areas, socioeconomic status, and previous experiences. Tailoring outreach efforts to address specific concerns and emphasizing the benefits of census data for local planning and resource allocation can help alleviate privacy concerns. Rural communities often have stronger community ties and higher levels of trust in local institutions. Leveraging these community networks and engaging local leaders can enhance trust and encourage participation in the census (US Census Bureau, 2018).

Hard-to-Count Populations: Urban communities often have populations that are considered "hard to count," including low-income individuals, homeless individuals, immigrants, and non-English speakers (Tourangeau, 2014). These populations may face barriers such as language barriers, limited internet access, distrust of government, or transience, making it challenging to ensure their full participation in the census. Suburbs can also have hard-to-count populations, such as low-income households, immigrant communities, and mobile populations such as college students and seasonal workers. Understanding the specific demographics and circumstances of these populations within suburban areas is crucial for targeted outreach and enumeration efforts. Rural communities may have their own unique hard-to-count populations, including remote or isolated households, migrant farmworkers, indigenous populations, and older adults. Reaching these

populations requires special attention to address logistical challenges, cultural sensitivities, and language diversity.

Most works done on the challenges facing census enumeration in different communities have centered on the characteristics of hard-to-count regions that have made it difficult for citizens in those areas to be counted. These characteristics according to O'Hare (2017) include type and ownership of housing, language barrier, migration, marital status, poverty, age of citizens, internet access, aid recipient and unemployment.

Ekandem et al (2014), postulates that suburban are faced with the challenges of high residential density, overcrowding, inadequate road network and poor drainage system, high incident of dilapidated structures, lack of parking spaces, lack of educational facilities which have negative effect on census exercise. Adeline et al (2015) opined that 2006 population census was full of social instability accruing from erosion of standard and values in many states of the federation. The state-based sentiments as usually experience was deviated to ethno-religious based sentiments with each ethnic group employing every strategy within their reach and at all course. He further acknowledged that last census exercise was characterized with abnormalities as a result of the fact that population census exercises are used as mechanism for who get what and why as well as determine the political strength of regions and ethnic groups. Suleiman (2006) alleged that the hijack of the recruitment process of census officials by politician in many states and replacing those persons who have no knowledge of the exercise has also affected the census. Considering old Kano which consist of Jigawa state whose population is about the same in 1991 now has a population of 13,723,331 against Lagos who has 9,013, 534 you would understand that they are so many unanswered questions (Ayodele 2006).

Pillah (2023) opined that, censuses conducted so far in Nigeria have not in her history, been only the crucial source of statistical data for socio-economic, political and sustainable development, but also problematic, sensitive, divisive, expensive, and controversial. He further stated that, for any future census to be conducted in Nigeria, there are major issues/challenges of inaccessibility to some areas due to militancy in the Niger Delta; renewed Boko Haram insurgency, resultant effects of ethno-religious conflicts; agitations for re-structuring Nigeria, internally displaced persons and camps, proper and timely sourcing of funding, proper management/administration of ethno-religious issues involving sensitive questions, recruitment/appointment scams of census officials and enumerators, among others.

Egerson Daniel et al (2023) examined how homelessness can influence the perception and willingness of the homeless population to participate in the 2023 housing and population census in Nigeria. The study opined that most participants were of the Hausa–Fulani ethnicity and were engaged in menial jobs for survival. He added that, having participated in previous censuses, people who are homeless persons perceived the exercise as influenced by political issues and less essential to their well-being and state of homelessness. The study showed that the failed expectations from the previous census deterred the homeless persons from continued participation in the exercise. Raphael (2022) opined that Pre-project public relations research is significantly effective for enhanced credibility of census figures from the National Population Commission in Nigeria. Also effect of mass-enlightenment campaigns on the awareness of the publics of National Population Commission census exercises in Nigeria is significant.

Method and material

The study area is Cross River North Senatorial District which consist of Ogoja, Obudu, Yala, Bekwarra and Obanliku Local Government Areas of Cross River State. It is located within longitudes 8^0 20' and 9^0 26' East of the Greenwich Meridian and latitudes 6^0 14' and 7^0 10' north of the equator. The region is bounded in the North by Benue State; in the South by Obubra and Ikom Local Government Areas; in the East by the Republic of Cameroon and Boki Local Government Area of Cross River State and in the West by Ebonyi State (see fig. 1). The zone is a part of the greater upper Cross River region often described by orthodox historians as "Fragments of the Earlier World", "Splinter Zone" and "Human Clusters" (Erim 1990). Cross River North has a land mass of 4,466 square

kilometers which represents 20.8% of the entire land mass of Cross River State (21,481 square kilometers) (Cross River State Land Survey Department, 2006). With a growth rate of 2.8% the population of the region is currently projected at 1,222,859 from a figure of 759,718 obtained from 2006 census. There are 124 settlements comprising 11 towns, 35 suburban or peri-urban and 78 villages of rural areas

Rapid rural and urban appraisal which is a bridge between formal surveys and unstructured research methods was adopted for this study. These include, in-depth interview, questionnaire and physical observations. Data needed for this research work are number of urban, peri-urban(suburban) and rural communities in the study area, socio-economic problems of the communities and their influence on census exercise. These data were sourced from local government town planning and survey departments, village heads, retired and active headmasters and census officials in the study area. Simple random sampling was used to select 3 suburbans, 5 rural and at least 2 urban communities in each local Government area. A total of 10 respondents were selected in each of community selected for investigation. Two hundred and fifty (250) respondents were therefore investigated. Our respondents were purposively selected to filled or respond to the questionnaire since they possess the same characteristics. Data obtained from the field were processed and presented using simple descriptive statistics.

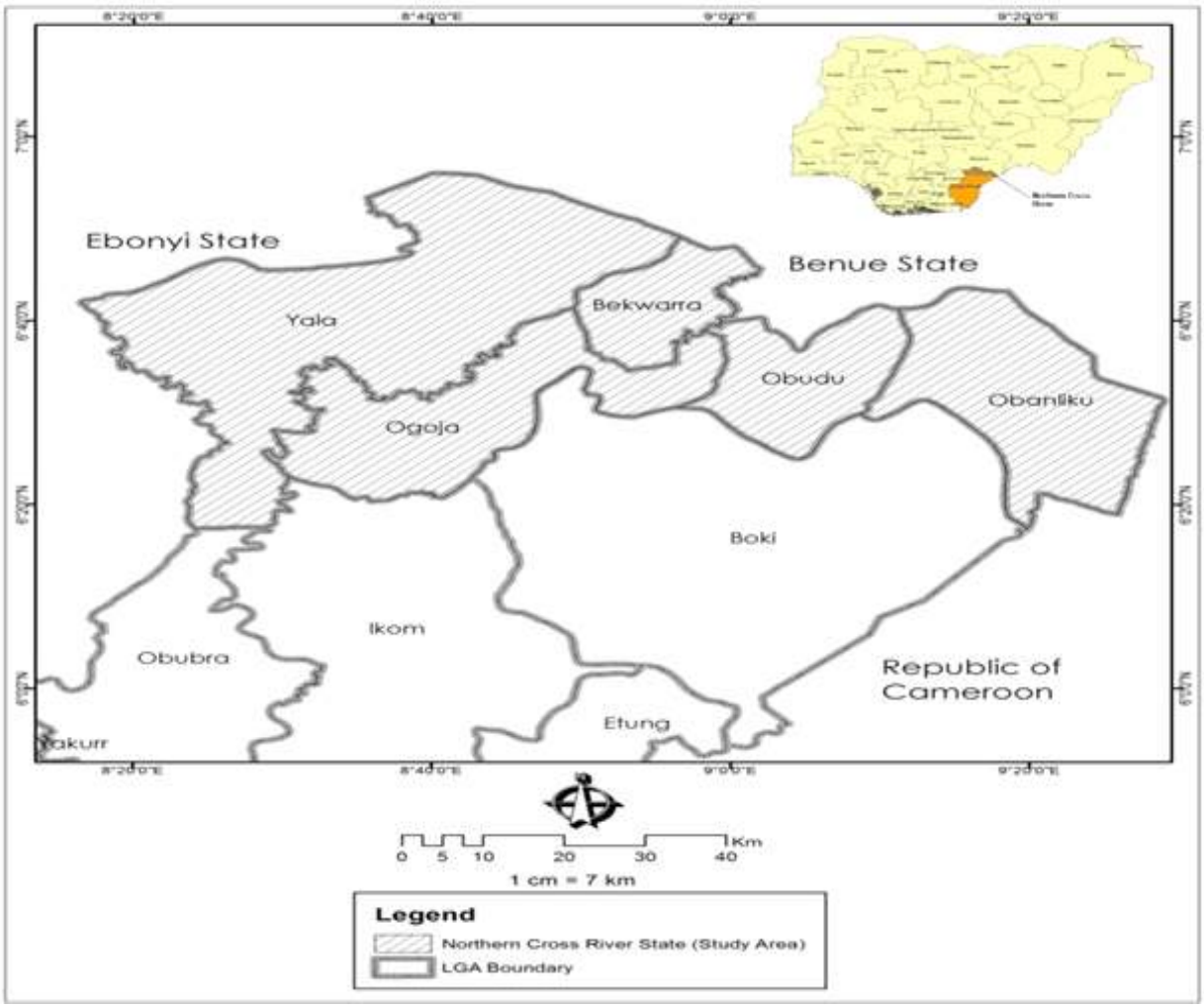


FIG. 1: Cross River North Senatorial District
Source: Department of Geography, University of Calabar.

Results

TABLE 1. Residents socio-economics problems in rural, suburban and urban communities in Cross River North Senatorial Destricts.

Community Problem	Community Type	Percentage prevalent of problem	Implication for census exercise
land dispute	Rural	175/250=70	Land dispute, cause by boundary issues, claim of land ownership and land grabbing often leads to communal crises that creates insecurity, displacement of population hence making census exercise cumbersome.
	suburban	40/250=16	
	Urban	35/250=14	
cultural diversity	Rural	36/250=14.4	Cultural diversity implies the presence of people of different culture and languages which must be understood and translated for easy census exercise.
	Suburban	71/250=28.4	
	Urban	143/250=57.2	
Housing	Rural	71/250=28.4	Housing problem implies that there may be homeless persons, inaccessible housing, slums, skyscrapers that can pose a challenge to census enumeration.
	Suburban	18/250=7.2	
	Urban	161/250=64.4	
Drug addiction	Rural	59/250=23.6	Drug addiction problem implies that there may be some socially misfit individuals such as lunatics, miscreants, rebels, terrorists and all types of criminals that can make census exercise difficult.
	Suburban	54/250=21.6	
	Urban	137/250=54.8	
Crime	Rural	71/250=28.4	Various types of criminalities such as arm robbery, terrorism, pickpocket, electronic gadgets snatching, rapping etc can be serious threats to census officials and the exercise itself.
	Suburban	125/250=50	
	Urban	54/250=21.6	
Poverty	Rural	172/250=68.8	Poverty implies that there may be persons that lack access to basic life support system such as food, clothing and shelter due to income inequality. This frustration usually leads to mistrust on the purpose of the census hence willingness to submit for enumeration.
	Suburban	53/250=21.2	
	Urban	25/250=10	
Education	Rural	120/250=48	The people levels of awareness and literacy influence their perception of the need for census enumeration and hence their willingness to submit themselves to be counted. People with low education found census exercise not necessary. A

			decision that affects accurate data at the end of census exercise.
	Suburban	90/250=36	
	Urban	40/250=16	
Migration	Rural	139/250=55.6	Movement of people from rural areas to urban centers often create zones of high and low population in urban and rural communities respectively including transient population. These have serious implications on census exercise.
	Suburban	70/250=28	
	Urban	41/250=16.4	
Joblessness	Rural	161/250=64.4	Joblessness creates poverty and insecurity and therefore mistrust and resistance to the census exercise in most backward communities. sometimes jobs involve changing locations thereby complicating the output of the census exercise.
	Suburban	52/250=20.8	
	Urban	37/250=14.8	
Transport problem	Rural	168/250=67.2	Movement of census officials from one rural community to the other is very difficult because of the terrain and poor road network.
	Suburban	70/250=28	
	Urban	12/250=4.8	
Location problem	Rural	185/250=74	Location problem implies that some communities may be located in remote and inaccessible locations with difficult terrain such as rugged hills and mountains, swamps and thick vegetations. This often pose serious challenges in accessing these locations for census enumeration.
	Suburban Urban	51/250=20.4 14/250=5.6	
Racism	Rural	37/250=14.8	Population in urban center is heterogeneous thereby making the census difficult because of the fear of dominance, ethnicity and superiority.
	Suburban	49/250=19.6	
	Urban	164/250=65.6	
Internet	Rural	154/250=61.6	It is very difficult to carryout census enumeration in rural area because there are poor internet services. Gadgets used by the enumerators always had internet network problem
	Suburban	69/250=27.6	
	Urban	27/250=10.8	
Medical	Rural	157/250=62.8	

	Suburban	58/250=23.2	Some rural areas have disease outbreak such as epidemics which makes it difficult for census officials to penetrate or access the area.
	Urban	35/250=14	
Market access	Rural	133/250=53.2	Market access problem implies that access to markets in some communities may be limited hence producing transient population that make census enumeration difficult for such population.
	Suburban	65/250=26	
	Urban	52/250=20.8	

SOURCE:authors' field result and research

Discussion of findings

This work has clearly revealed that there are variations in the extend and severity of socioeconomic problems among rural, urban and suburban communities in Cross River North Senatorial District. The rural communities are most affected by land disputes, poverty, educational, outmigration, joblessness, transportation, inaccessible locations, internet connectivity, health and market access problems. The urban communities on the other hand have racism, high population density, crime, drug addition, housing and cultural diversity as major socioeconomic challenges in the study area. The suburban experience transportation, land dispute/grabbing, community cohesion and inaccessible location as the most pressing problem. These problems have created a set of population described as hard-to-count population. These are people who are difficult to reach or access for counting. These may include homeless individuals, migrants, low-income people, non-English speakers, seasonal workers and older adults.

Conclusion

This research work has brought to limelight the likely impact of variation in intercommunity socio-economic problems on census enumeration exercises. The differences in residents socio-economic problems among rural, urban and suburban communities in Cross River North Senatorial District clearly reveals the challenges that may likely emerge when census exercises are to be conducted. These problems have the potentials of producing hard-to-count population during censuses if appropriate census strategies are not put in place.

Recommendation

Based on our findings, the following recommendations are made;

1. A comprehensive rural, suburban and urban development plan should be implemented so as to eradicate poverty, illiteracy, hopelessness and other forms of deprivations.

2. Training of census enumerators to understand the problems encountered by different communities so that they can develop effective strategies to reach out to those hard-to-count segment of the population.

3. Provision of internet facilities to cover remote locations like rural areas in order to facilitate the counting process.

4. Identifying and engaging various stakeholders involve in a comprehensive census exercise.

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POPULATION CENSUS ACCURACY (PCA) AND SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract
This paper explores the role of accurate population census data in achieving sustainable development in Nigeria. The study examines how the deployment of technology and the training and retraining of ad hoc staff with the conduct of census relates to sustainable development in the country. The research employs a documentary research method, gathering data from secondary sources such as textbooks, peer-reviewed journals, and national dailies. The collected data were analyzed using content analysis. Based on literature evidence, the study reveals a significant relationship between technology deployment, the training and retraining of ad hoc staff, and sustainable development in Nigeria. The findings conclude that an interplay exists between technology deployment during census, training, and sustainable development in Nigeria. This underscores the necessity for comprehensive strategies that leverage technology and invest in human capital during census-taking to drive positive and enduring changes for the country's development. The paper made several recommendations. First, for future censuses, it suggests adopting technological solutions such as digital infrastructure, automation, and efficient communication systems to enhance service delivery. Secondly, the research recommends providing training for ad hoc staff to effectively utilize technology, enabling them to adapt to changing demands and perform their roles more efficiently. This can result in improved productivity, reduced errors, and enhanced service delivery.

Keywords: Population census accuracy, population growth, sustainable development, soci-economic well-being, staff training and deployment of technology, Nigeria.

Introduction

The enumeration of individuals is not a recent occurrence; it has historical roots dating back to ancient times and serves as the most crucial provider of demographic information (Ebingha et al, 2019). Historical records indicate that the practice of conducting censuses began as early as 3,000 B.C. Even ancient civilizations, such as Egypt, Persia, Babylonia, Greece, Rome, Japan, and China, recognized the importance of carrying out population census (Bauml & Poston, 2018; Peter et al, 2020). These ancient civilisations conducted census for various purposes, including military conscription, tax collection, tribute collection, and communal labour organization. Population census serve as the primary source of fundamental data necessary for administrative planning and various aspects of economic and social research. Additionally, they play a vital role in standardizing other macroeconomic indicators for comparisons at regional and international levels (Brace, 2017). Census data serves various purposes such as aiding in educational, housing, agricultural, and

workforce planning, as well as contributing to healthcare planning. According to Osinaike, Aiyeola, and Alao (2006), census is a critical method for collecting statistical information about a population, widely recognized as essential for the progress of democracy and development.

In 1988, the Nigerian federal government established the National Population Commission, tasked solely with conducting a dependable nationwide population census (Anderson, 2019). This commission holds the legal authority to gather, analyze, and distribute demographic data within the country. Additionally, it is responsible for conducting demographic sample surveys, compiling and publishing migration and vital registration statistics, and overseeing the implementation of the nation's Population Policy (Jarmin, 2018; Jones et al, 2021).

Despite these intended functions, the process of conducting a census in Nigeria has consistently sparked political, social, ethnic, religious, and geopolitical controversies and disputes. These disputes have had detrimental effects on the nation's development and unity (Jensen & Hogan, 2017). The underlying cause of this issue is readily apparent, as there is a widely held public perception that inflating population figures serves as a political tool in Nigeria's diverse society. To clarify, higher population figures are believed to lead to increased government resources, demands for more parliamentary seats, and calls for the creation of additional local governments and states representing specific tribes or regions (Ajor et al, 2023). Consequently, the inherent socio-ethnic awareness and the struggle for political dominance among Nigeria's geopolitical regions have consistently undermined the primary purpose of conducting a national population census, which is to serve as a tool for strategic planning and sustainable development (Oyedele, 2013).

Lack of accurate census figures may have contributed to Nigeria's policy summersault and under development. It is unfortunate that in this 21st century Nigeria still does not have effective and reliable census data (Mathews, 2002; Odunfa, 2006; Attah et al, 2023). Thus, when a nation does not know the proportion and the total number of its citizens, its planning process is likely to be distorted (Odimegwu, 2013). Despite the fact that population data represents an important substance of any country as it relates to planning, most of the developing countries are faced with problems that have been affecting accurate population data (Gibson, 2021). Such include lack of technically qualified staff, lack of permanent organization charged with the collection of data, non-familiarity with socio-economic enquiries, poor transportation and communication facilities (Omang et al, 2022). While technology has the potential to improve the efficiency of population census processes, its implementation must be carefully considered to avoid deplorable consequences (Mimiko, 2006). The digital divide, data security concerns, incomplete coverage, software and hardware failures, and biases in algorithms are all critical issues that can compromise the accuracy of PCA. To ensure that technology contributes positively to census accuracy, it is crucial to address these challenges through comprehensive planning, robust security measures, and equitable access to digital resources. The paper examine the relationship between Population Census Accuracy (PCA) and Sustainable Development in Nigeria. The paper examines how the deployment of technology and the training and retraining of ad hoc staff with the conduct of census relates to sustainable development in the country.

Conceptualisation of terms

i. Population: In sociology, the term "population" is defined as a collection of individuals, groups, or communities that share common characteristics or attributes and are the subject of study or analysis. Sociologists are interested in understanding the social behaviors, structures, and dynamics of these populations within the context of a larger society (Mills & Rahal, 2021). They examine various aspects of populations such as their size, composition, distribution, and changes over time, and how these factors influence and are influenced by social, cultural, economic,

and political forces. The focus is on understanding human social interactions, relationships, and patterns within the population, as well as the impact of societal institutions and policies on the well-being and behavior of individuals and groups within that population.

ii. Population accuracy: Population accuracy is not a commonly used term in sociology or statistics. However, it might refer to the degree to which a study's findings accurately represent the characteristics or behaviors of the entire population being studied. In this context, accuracy is related to how well the sample used in the research reflects the true attributes of the population.

iii. Population census: A population census is a systematic enumeration of the entire population of a country, region, or specific area at a specific time. It is conducted to collect demographic, social, and economic information about the inhabitants, such as age, sex, marital status, education, employment, and housing conditions (Chan et al, 2021). The census provides a comprehensive snapshot of the population and its characteristics, which is crucial for government planning, policy-making, and resource allocation. It also helps in understanding population trends, distribution, and growth, and is used for various research and statistical purposes.

iv. Sustainable development: Sustainable development is a holistic approach to progress that seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs (Muttarak, 2021). It integrates economic, social, and environmental objectives to ensure a balanced and long-term approach to development. Sustainable development aims to promote economic growth and social equity while preserving the natural environment and the finite resources of the planet. It emphasizes the importance of responsible management of resources, equitable distribution of benefits, and the need for global cooperation and commitment to ensure a sustainable future for all.

Deployment of technology, Population Census Accuracy (PCA) and sustainable development

The deployment of technology can revolutionize the accuracy of population censuses by streamlining data collection, ensuring complete coverage, enhancing data quality, and engaging the public. Leveraging tools such as digital data collection, GIS, biometric identification, data analytics, and remote sensing, governments can generate more accurate and reliable demographic data (Ezeah, et al, 2013). This, in turn, empowers governments to make informed policy decisions, allocate resources effectively, and address the evolving needs of their populations with precision and foresight which will utimately result to sustainable development. The fusion of technology and census-taking is not merely a technological advancement but a pathway to achieving Population Census Accuracy that underpins sustainable development and governance in the modern era (Odewumi, 2000; Okoi et al, 2022). The deployment of technology can enhance the accuracy and efficiency of population censuses in the following ways:

i. Digital data collection:

One of the primary ways technology contributes to PCA is through digital data collection. Traditional methods of door-to-door surveys and manual data entry are prone to errors, inconsistencies, and time-consuming processes (O'Hare, 2019). With the advent of mobile devices, governments can equip enumerators with tablets or smartphones loaded with custom census applications. This enables real-time data collection, reducing the chances of double-counting or missing individuals. The collected data can be securely transmitted to centralized databases, eliminating data transcription errors.

ii. Geographic Information Systems (GIS):

Geographic Information Systems, or GIS, can significantly enhance the accuracy of population censuses. GIS technology allows for the precise mapping of enumeration areas,

ensuring complete coverage of a country (Walejko & Konicki, 2018). It helps identify remote and hard-to-reach areas, ensuring that every person is accounted for. Additionally, GIS can overlay demographic data with geographic features, aiding in the analysis of population distribution, migration patterns, and urban planning.

iii. Biometric identification:

Biometric technology, such as fingerprint and facial recognition, can be integrated into the census process to ensure the uniqueness and accuracy of individual records (Reamer, 2018). Biometric data can help prevent fraud, such as multiple registrations, and improve the identification of citizens, even in areas with low literacy rates. This technology enhances data quality and ensures that the census captures every eligible individual.

iv. Data analytics and machine learning:

Data analytics and machine learning algorithms can be employed to process and analyze the vast amount of data collected during a census. These technologies can identify inconsistencies, outliers, and patterns that might indicate errors or omissions. By automating data validation and quality checks, governments can improve the accuracy of census data and reduce the likelihood of errors going undetected.

v. Remote sensing and satelliteiImagery:

Remote sensing and satellite imagery can complement the census process by providing up-to-date information on changes in land use, infrastructure, and population density. This data can be integrated into the census analysis to validate and refine population estimates, especially in rapidly developing urban areas.

Training and retraining of ad hoc staff, Population Census Accuracy (PCA) and sustainable development

The relationship between training and retraining of ad hoc staff and Population Census Accuracy (PCA) is a critical aspect of ensuring the success and reliability of census data (MacDonald, 2019). Population Census Accuracy is a measure of how well a census accurately reflects the true population of a given area at a specific point in time (O'Hare & Jensen, 2014). It is a fundamental indicator of the quality and credibility of census results, with far-reaching implications for government planning, resource allocation, and policy formulation. Population census is a fundamental process for any government or organization to gather accurate and up-to-date demographic data, which is essential for policy-making, resource allocation, and socio-economic planning (O'Hare, 2017). The accuracy of this data is heavily dependent on the competence and preparedness of the individuals tasked with conducting the census, often comprising ad hoc staff. Training and retraining of ad hoc staff play a pivotal role in achieving a high level of PCA. Ad hoc staff, who are typically temporary workers or volunteers hired to assist in conducting the census, are the frontline personnel responsible for collecting and recording data from households and individuals. Their ability to perform these tasks accurately directly impacts the overall accuracy of the census (Miller, 2018).

Initial training of ad hoc staff is essential to ensure that they understand the census process, the questionnaire, and the importance of accuracy and confidentiality. They must learn how to approach households, ask questions, record responses, and address any issues or concerns that may arise during data collection (Leavitt, 2018). Proper training equips them with the necessary skills and knowledge to conduct their duties effectively. However, the relationship between training and PCA does not end with initial training (Gulamov, 2020). Retraining is equally vital, especially when dealing with a large-scale and complex operation like a population census. Over time, ad hoc staff may encounter various challenges, forget certain procedures, or face changing circumstances in the field. Retraining serves to refresh their knowledge, address any issues that have arisen, and introduce any necessary updates or modifications to the data collection process. Consistent and periodic retraining sessions help maintain the quality of data collection throughout the census period. They also provide an opportunity to reinforce the importance of accuracy and the ethical handling of sensitive information. Additionally, retraining can help ad hoc staff adapt to unexpected situations, such as a sudden increase in response rates or the need to

use new technology or tools (Amireev et al, 2021).

Ultimately, the relationship between training, retraining, and PCA is intertwined. Well-trained ad hoc staff who receive ongoing support and retraining are better equipped to collect accurate data. This, in turn, leads to a higher level of Population Census Accuracy. Equally, inadequate or inconsistent training can result in errors, omissions, or biases in the data, compromising the overall reliability of the census results and potentially leading to inaccurate policy decisions and resource allocation (Adamich, 2020). The training and retraining of ad hoc staff are essential components of ensuring the accuracy and credibility of a population census. The quality of the data collected depends on the competence and preparedness of those conducting the fieldwork. By investing in comprehensive training and continuous retraining, census authorities can enhance the accuracy of the census, providing governments and policymakers with reliable data for informed decision-making.

Population census challenges and sustainable development in Nigeria

In a diverse country like Nigeria, where the population size of each region plays a crucial role in determining their political and economic standing, the elite are often extremely enthusiastic about the significance of conducting accurate population censuses. They not only aim to count all their people but also resort to various illegal activities such as electoral violence, falsification, and manipulation of population data (Stallings, 2006; Udoh, 2020). Every population census conducted in Nigeria, both before and after gaining independence, has consistently resulted in national controversies, widespread accusations of population manipulation, and a lack of consensus among the general population regarding Nigeria's total population size (Eniayejuni & Agoyi, 2011). This situation vividly reflects the ethnic power struggle, particularly among the three dominant ethnic groups, in relation to census figures in Nigeria. The ethnic group with the highest recorded population figures leverages this data as a systematic institutional tool to assert dominance over other ethnic groups. Since population figures serve as the basis for distributing national resources and political representation, each ethnic group competes to inflate their census figures in an effort to maintain their dominance, reaping the socio-economic and political benefits (Eshiotse et al, 2023). The consequence of this rivalry is chronic oppression based on group identity, driven by both systemic institutional discrimination and individual bias. Consequently, census figures in Nigeria have transformed into a form of currency for the nation, consistently exploited as a means of exerting dominance rather than promoting equitable and sustainable development (Odimegwu, 2013).

In the words of Odimegwu (2013), demographic manipulation has profoundly negative effects on every aspect of a country's national life. A questionable population count inevitably weakens the overall socio-economic development of a nation. Odimegwu (2013) asserts that there is no doubt that inaccurate population figures have a significant impact on planning and, consequently, development. This issue lies at the core of the country's low human development index and its overall lagging in various aspects of national progress (Udoh, 2020). The persistent problem with unreliable censuses over the years revolves around two critical issues: ethnicity and religion. These two indicators have remained central due to the ongoing competition for dominance between the three major ethnic groups in the country. If Nigeria is to make progress in collecting accurate citizen data, it must address the struggle for supremacy among these three competitive ethnic groups, as highlighted by Odimegwu (2013). Unfortunately, the government has not recognized the importance of population census for effective planning and development. The Nigerian national population census has been marred by intense power struggles among the elite, accusations of regional bias and favoritism, widespread distrust, resistance, and widespread suspicion of the census results (Diamond, 1988; Anam et al, 2022).

The National Population Commission (NPC) has acknowledged its inability to provide precise population figures for Nigeria due to the ongoing controversies surrounding the estimates it has previously released (Oyedele, 2013).

According to Odimegwu (2013), there is a strong insistence that unless the challenges related to the census are comprehensively addressed and unresolved issues are clarified, Nigeria will remain trapped in a socioeconomic crisis resulting from inaccurate and unattainable projections (Eze, 2021). It is evident that the country is experiencing rapid population growth, which has significant consequences for the already strained social infrastructure (Odimegwu, 2013). In addition to these challenges, there is a pressing need to restructure the census process in Nigeria to support sustainable development. The perception of population counts as a battleground for interethnic competition for socioeconomic and political resources in Nigeria remains a persistent issue (Akinyetun, 2021). This perception has endured over time because deep-seated ethnic sentiments continue to hold sway in the country. This situation may persist for an extended period as younger generations have been influenced to prioritize ethnic affiliations and superiority (Odimegwu, 2013; Kabiru, 2022).

Future successful census exercises in Nigeria thus lie in value change, reorientation and strong institutional mechanisms to ensure credible census data for sustainable development in the country (Fagbadebo, 2019). Consequently, information about ethnic group, language, and religion which tend to influence tensions and inflation of census data in Nigeria must continue to be ignored in future census takings . Furthermore futures censuses in Nigeria cannot yield expect desirable and credible data without the adoption of improved ktechnology (Mohammed et al, 2019). This is an information and technological age and there is the need for transformation of census exercise to embrace new technologies to yield credible data for sustainable development in Nigeria

Conclusion

This paper underscores the paramount importance of technology deployment and the continuous training and retraining of ad hoc staff in achieving Population Census Accuracy and promoting sustainable development in Nigeria. The adoption of technology in census data collection and management can be a game-changer, that can enhance the accuracy, efficiency, and transparency of the process. Moreover, investing in the training and retraining of ad hoc staff ensures that they are well-equipped with the necessary skills and knowledge to effectively utilize these technological advancements. The implications of these findings extend far beyond the realm of population statistics. Accurate census data serves as the foundation for informed policymaking, resource allocation, and development planning. Nigeria, like many other nations, faces numerous socio-economic challenges that demand evidence-based solutions. Therefore, the investing in technology and human capital development, as revealed in this paper, represents a key pathway towards sustainable development. To harness the full potential of this relationship, it is imperative for policymakers, census authorities, and educational institutions to prioritize the development and implementation of technology-driven census methods and invest in the continuous training and retraining of personnel. By doing so, Nigeria can not only enhance the accuracy of its population data but also pave the way for more targeted and effective development initiatives that will ultimately improve the lives of its citizens and drive the nation towards a brighter and more prosperous future.

Recommendations

i. The governments and National Population Commission should invest in modernizing data collection methods through the use of digital tools, mobile applications, and geographic information systems. This will not only enhance data accuracy but also streamlines the entire census process, making it more efficient and cost-effective. Inaddition, government at all levels should establish robust data protection measures, including encryption and strict access controls, to safeguard sensitive census data.

ii. National Population Commision should prioritize investing in training and retraining programs for their temporary workforce. This should not be limited to just technical skills but also include soft skills and awareness about achieving the

goals of the training. Also, the commsion should encourage a culture of continuous learning among ad hoc staff. Provide opportunities for ongoing skill development and knowledge updates. This can be achieved through workshops, online courses, and mentorship programs.

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A REVIEW ON FAMILY SIZE DETERMINANTS AND SOCIO-ECONOMIC DETERMINANTS: IMPLICATION FOR NIGERIA

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Abstract
This study critically examines the intricate dynamics of family size determinants in the context of Nigeria, drawing insights from a comprehensive review of existing literature. The analyzed studies, spanning regions such as Delta State, Kogi State, and international settings like Pakistan and Bangladesh, collectively emphasize the multifaceted influence of socio-economic factors, education, cultural beliefs, and changing values on family size preferences. While these studies lay a crucial foundation, a notable research gap exists, calling for a nuanced nationwide investigation that accounts for the diverse socio-cultural and economic dynamics across different regions of Nigeria. This study underscores the urgency of addressing this research gap to inform evidence-based policymaking and to design effective and culturally sensitive population control measures tailored to the unique context of Nigeria.

Keywords: Family size, Nigeria, socio-economic factors, population control, evidence-based policymaking.

Introduction

The determination of family size is a multifaceted and dynamic process influenced by a complex interplay of socio-economic factors, cultural norms, educational attainment, and evolving values within a given society. It is a crucial aspect of demographic dynamics that not only impacts individual households but also holds significant implications for the overall well-being and development of a nation (Montgomery et al., 2013). Understanding the factors that shape family size preferences is particularly vital in the context of Nigeria, a country characterized by diverse cultural landscapes, economic variations, and regional disparities.

While various studies have contributed valuable insights into family size determinants, a noticeable research gap exists concerning a comprehensive nationwide investigation within the Nigerian context. Existing studies have often focused on specific regions or provided a national perspective, overlooking the inherent heterogeneity within the country. Nigeria's cultural richness, economic diversity, and distinct regional dynamics necessitate a more nuanced examination to capture the varying influences on family size preferences.

This study aims to bridge this research gap by undertaking a comprehensive exploration of family size dynamics in Nigeria. By delving into the socio-economic considerations, cultural norms, and educational dimensions that influence family size preferences, the research seeks to provide a holistic understanding of this intricate phenomenon. The findings aim not only to contribute to the academic discourse but also to inform evidence-based policymaking tailored to the diverse socio-cultural and economic dynamics present in different regions of Nigeria. Ultimately, a deeper understanding of family size determinants in Nigeria can pave the way for more effective population control measures, fostering sustainable development and informed decision-making at both the individual and

societal levels.

The implications of family size extend beyond mere numerical considerations, touching upon broader issues of resource allocation, social mobility, and community development. Understanding these implications is vital for policymakers, researchers, and community leaders seeking to implement effective strategies for sustainable development and improved well-being. Furthermore, the potential escalation of world population due to larger family sizes poses a significant threat to impoverished developing nations, exacerbating their conditions of extreme poverty and vulnerability. Conventional societal views on women's roles further complicate efforts toward population control, particularly in regions like Africa where many women, particularly those with limited education, perceive their primary purpose as prolific childbearing.

In contrast, developed economies experience increased family sizes and higher birth rates during economic growth, primarily attributable to advancements in public health (Coale & Hoover, 2015). As prosperity rises, both death and birth rates decline, resulting in a more controlled population growth. Presently, many developing countries exhibit elevated birth rates due to factors akin to those observed in industrialized nations (Hansen, 2018).

Despite observable declines in birth rates in certain developing regions, there remain persistent challenges in areas where high birth rates persist. Contributing factors include the reliance on agriculture among impoverished households, which creates incentives to invest in children for farm labor and support in domestic responsibilities. Additionally, the social security provided by large families through extended family networks encourages investment in children for care in old age. Limited awareness and understanding of family planning methods further contribute to sustained high birth rates (Simon, 2019).

Overview of Population Dynamics in Developing Nations:

High Birth Rates

The phenomenon of high birth rates is a prominent aspect of population dynamics in developing nations. Cultural influences play a pivotal role, especially in patriarchal societies, where the emphasis on having a large number of children persists as a symbol of prosperity and social status. This cultural norm contributes to the perpetuation of larger families, influencing individuals' perceptions and decisions regarding family size. Additionally, limited access to education and healthcare, particularly in rural areas, further exacerbates high birth rates by creating a barrier to awareness about and utilization of family planning methods (Reher, 2021). The intricate interplay of cultural, economic, and educational factors underscores the complexity of addressing and understanding the dynamics of high birth rates in developing countries.

Rapid Urbanization

A defining demographic trend in developing nations is rapid urbanization, marked by the migration of people from rural to urban areas in pursuit of enhanced economic opportunities. This significant shift in population distribution has far-reaching implications for various aspects of societal development. Urbanization necessitates comprehensive urban planning strategies to accommodate the influx of people, addressing challenges related to infrastructure development, housing, and the provision of basic services (Kundu & Pandey, 2020). The growth of urban populations often leads to the emergence of informal settlements, inadequate sanitation facilities, and increased pressure on public services. Managing these challenges requires strategic planning to ensure sustainable urban development in the face of escalating urbanization.

Youth Bulge

A notable demographic feature in many developing nations is the presence of a substantial youth population, often referred to as a "youth bulge." This demographic composition offers both opportunities and challenges for societal development. On the positive side, a youthful demographic can contribute to increased economic productivity and innovation. However, harnessing the demographic dividend requires strategic investments in education and creating meaningful employment opportunities for the youth (Ortiz & Cummins, 2012).

Addressing the challenges associated with a youth bulge involves ensuring that this demographic cohort receives quality education and has access to employment opportunities, preventing potential social unrest and maximizing the positive impact of a youthful population on overall development. The intricate balance between the opportunities and challenges presented by the youth bulge adds another layer of complexity to the evolving population dynamics in developing nations.

Impact of Family Size on Population Growth:
Family size has a direct influence on fertility rates, a critical factor in determining population growth (Gu et al., 2021). Cultural beliefs, religious practices, and access to family planning are among the factors influencing fertility rates. Interventions aimed at addressing these factors, such as education campaigns and increased accessibility to contraceptives, play a pivotal role in reducing fertility rates and contributing to more sustainable population growth.

The impact of family size on resource allocation within households is multifaceted and extends to various aspects of social, economic, and environmental dimensions. Larger families often encounter challenges in distributing limited resources among members, leading to potential disparities in education, healthcare, and nutrition (Penne & Goedme, 2021). This can contribute to a cycle of poverty, as individuals from resource-constrained households may face difficulties in breaking out of socio-economic disadvantages.

Economically, family size influences the size and dynamics of the labor force. While a larger population can contribute to increased economic productivity, the quality of the workforce, including education and skill levels, may be compromised in larger families due to resource constraints (Marios et al., 2019). Income disparities can also arise within larger families, as limited resources may be spread thinly among household members, perpetuating social and economic inequalities.

On the environmental front, larger families tend to consume more resources, contributing to environmental stress. This includes increased demand for food, water, energy, and other essential commodities. Sustainable population growth requires careful consideration of ecological carrying capacity and the overall environmental impact of resource consumption (Wang et al., 2021). The ecological footprint of larger families is generally higher, taking into account factors such as carbon emissions, waste production, and overall environmental impact.

The social infrastructure is also significantly affected by family size. Larger families may struggle to provide quality education for all children, impacting overall literacy and skill levels in the population. Access to healthcare services may be strained in larger families, affecting the overall health and well-being of the population.

Government policies play a crucial role in shaping demographic trends. Population policies, such as family planning initiatives and incentives for smaller families, can influence population growth (Kolk, 2021). Social welfare programs may need to adapt to the varying needs of different family sizes, with larger families potentially requiring more comprehensive support in areas such as housing, education, and healthcare.

Culturally, attitudes towards family size influence fertility rates. Addressing cultural factors requires a nuanced approach that respects diverse beliefs and practices . Cultural shifts can impact family planning choices and contribute to sustainable population growth (Royer et al., 2020). Additionally, the size of families can influence community dynamics, including social cohesion, support systems, and community resources.

In essence, the impact of family size on population growth is a complex and multifaceted issue. It necessitates comprehensive strategies addressing social, economic, environmental, and cultural dimensions. Balancing population growth with sustainable resource use and equitable distribution of opportunities is essential for the long-term well-being of societies (Gu et al., 2021; Penne & Goedme, 2021).

Relationship between Economic Improvement and Family Size

Demographic Transition Theory

The Demographic Transition Theory provides a framework for understanding the relationship between economic development and

demographic patterns in societies. This theory outlines a series of stages that countries go through as they progress economically, with distinct changes in birth and death rates, and subsequently, in population growth (Lesthaeghe, 2020).

In the initial stages of economic development, both birth and death rates are high, resulting in relatively slow population growth as the impacts of high birth rates are offset by high mortality rates (Coale & Hoover, 2015). Societies in this stage often have limited access to healthcare, basic sanitation, and face challenges in providing for a growing population. As a society undergoes economic improvement, there is a significant decline in death rates, primarily attributed to advancements in healthcare, improved living conditions, and disease prevention measures.

Despite the decline in death rates, birth rates often remain high during the initial stages of economic development. This leads to a phase where population growth accelerates due to a gap between high birth and declining death rates. This phenomenon is known as the demographic transition, and it is characterized by a rapid increase in population size. As economic development continues, there is a gradual decline in birth rates, driven by changes in societal attitudes, increased educational opportunities, and shifts in family dynamics. Families may start prioritizing quality of life, education, and career opportunities over having a larger number of children.

The final stage of the demographic transition is characterized by both low birth and death rates, resulting in stabilized and lower population growth. In this stage, the society has achieved a balance between birth and death rates, leading to a more sustainable population size. The population composition also shifts towards an older demographic structure (Lesthaeghe, 2020).

Economic Factors and Fertility Choices:

Economic improvement tends to influence fertility choices within families as societies progress. Changes in employment patterns, often linked to economic transitions such as industrialization and services, can impact family dynamics, leading to smaller family sizes (Mills & Blossfeld, 2013). Urbanization, a common consequence of economic development, encourages smaller families as the cost-of-living increases, and the focus on education and career prospects becomes more pronounced.

Improved economic conditions provide families with the means to invest more in the education and well-being of their children. As families prioritize quality over quantity, there is a tendency to have fewer children and allocate resources to ensure their overall development. The increased cost of living in urban areas, coupled with changing societal aspirations, contributes to a trend of smaller families as families choose to have fewer children to ensure a higher quality of life for each individual.

Access to Family Planning Services:

Economic development often coincides with improved access to family planning services, a critical aspect of demographic transition. As societies progress, there is an expansion of healthcare services, including reproductive health and family planning (Reher, 2021). This increased accessibility empowers individuals and couples to make informed decisions about family size. Contraceptive availability, facilitated by economic development, allows individuals to have greater control over their reproductive choices (Brunson, 2020).

With economic progress, there is a parallel increase in awareness and information dissemination. Healthcare campaigns, educational programs, and community outreach initiatives contribute to a more informed population, allowing individuals and couples to make choices aligned with their reproductive goals. Economic development empowers individuals to make informed decisions about family size as awareness grows and healthcare services become more widely available. This contributes to a decline in fertility rates and fosters a more sustainable and balanced population growth.

The Demographic Transition Theory highlights the intricate relationship between economic development and demographic changes. Economic factors influence fertility choices within families, and improved economic conditions contribute to smaller family sizes. Access to family planning services is a critical

component of this transition, empowering individuals to make informed decisions about family size and contributing to a more sustainable and balanced population growth.

Patterns Observed in Developed Economies and Lessons for Developing Nations:

Low Birth Rates in Developed Economies:

Developed economies stand out for their characteristic low birth rates, a consequence of sustained economic development, improved public health, and increased access to education. In these societies, smaller families are prevalent, reflecting a conscious choice among couples to invest more in the quality of life and education of their children. The correlation between economic prosperity and smaller family sizes underscores the impact of socio-economic factors on reproductive choices (Breschi et al., 2014). Families in developed economies often prioritize providing a higher standard of living, better educational opportunities, and enhanced healthcare for a smaller number of children, contributing to a demographic landscape characterized by reduced fertility rates.

Impact of Education on Fertility Choices:

Education emerges as a pivotal determinant in shaping fertility choices, particularly evident in developed economies (Doepke et al., 2023). These nations demonstrate a robust correlation between higher levels of education, especially for women, and smaller family sizes. Education serves as an empowering force, equipping individuals with the knowledge and awareness necessary for informed family planning decisions. In developed societies, where educational opportunities are widely accessible, individuals are more likely to prioritize personal and professional aspirations over larger family sizes. The transformative impact of education on fertility choices contributes significantly to the observed decline in birth rates in developed economies.

Balancing Economic Growth and Sustainability:

While economic development is associated with declining birth rates, there is a crucial need for developing nations to strike a delicate balance between economic growth and demographic sustainability. Rapid declines in fertility rates can lead to challenges associated with an aging population, including increased dependency ratios and potential strains on social welfare systems. Governments and policymakers in developing nations must carefully consider strategies that promote economic development while ensuring demographic stability. A harmonized approach involves addressing social and economic factors, investing in education and healthcare infrastructure, and implementing policies that support work-life balance. Achieving this delicate equilibrium is essential for sustainable development that meets the needs of the present without compromising the well-being of future generations.

The intricate relationship between economic development and family size involves dynamic interactions between economic factors, public health improvements, and societal choices. Developed economies serve as instructive models, showcasing the impact of sustained economic development on family planning decisions. Lessons for developing nations lie in adopting holistic approaches that encompass education, healthcare, and policy interventions. Education emerges as a potent tool for shaping fertility choices, enabling individuals to make informed decisions that align with personal aspirations. Striking a balance between economic growth and demographic stability is paramount, requiring thoughtful policies that address the unique socio-economic landscape of each nation. As developing nations chart their paths toward economic improvement, a comprehensive understanding of these factors can contribute to more informed family planning decisions and sustainable demographic transitions, fostering a harmonious coexistence of economic prosperity and population dynamics.

Empirical Review

Ugbomeh (2011) conducted an investigation into the intricate relationship between household size and socioeconomic variables, with a specific focus on Ika North-East Local Government Area of Delta State. Household size, as elucidated in the study, denotes the number of individuals residing together in a shared dwelling, engaged in common catering arrangements, and entwined in

social and economic relationships, operating under the guidance of a household head, who may be either male or female. The findings of Ugbomeh (2011) revealed a notably high positive correlation (r = 0.787) between household size and the various socioeconomic variables identified in the study. This correlation underscores the interdependence between the size of households and the socioeconomic characteristics examined. As a result, the hypothesis (Hi) positing that household size is a function of socioeconomic variables was affirmed.

The implications of these findings extend beyond the scope of Ika North-East Local Government Area, reaching into the broader context of Delta State and, by extension, Nigeria. Ugbomeh (2011) study underscores the significance of household size as a crucial factor influencing socioeconomic dynamics. Acknowledging and understanding these correlations hold considerable policy implications for the overall socioeconomic development of Delta State and, by extrapolation, Nigeria. The study provides valuable insights into the complex interplay between household size and socioeconomic variables, contributing to the existing body of knowledge in this critical field.

Batool et al. (2019) conducted a study aimed at exploring the socio-economic factors influencing family size in Pakistan, the sixth most populous country globally. The concept of family size, as defined in the study, relates to the culturally acceptable number of children in a given society, aligning with societal norms that may vary across different communities. Pakistan, grappling with the challenge of population growth, serves as a crucial backdrop for investigating the determinants of family size, particularly in the context of socio-economic factors. The study underscores a noteworthy observation that the preference for family size is intricately linked to the level of literacy within the population. As highlighted, literate individuals tend to opt for smaller family sizes compared to their illiterate counterparts, suggesting a correlation between education and family planning choices.

Employing a cross-sectional quantitative approach, the researchers utilized a multistage sampling technique to select a sample of 384 workers from a small industrial estate in Gujranwala. Data collection was executed through structured interviews, employing interview schedules. Statistical analysis of the gathered data was performed using SPSS. The study's primary objective was to examine the socio-economic factors influencing family size in the selected population. Notably, the research concluded that certain socio-economic variables exhibited significant associations with family size. Specifically, the age of the husband, the education level of the couple, and their monthly household income emerged as key determinants of family size. The results further elucidated that family size tended to be smaller among educated couples, particularly those engaged in business or government service. In contrast, larger family sizes were prevalent in illiterate, economically disadvantaged families.

Batool et al.'s (2019) study holds considerable policy implications for addressing the challenge of population growth in Pakistan. By identifying key socio-economic factors associated with family size, the findings contribute valuable insights for policymakers, allowing for the formulation of targeted interventions and strategies. Recognizing the influence of education, income, and other variables on family planning choices is essential for designing effective initiatives aimed at promoting smaller family sizes, thereby contributing to the broader goal of population control and sustainable development in Pakistan.

Family size preferences serve as a "silent norm" that subtly shapes the decisions of married couples regarding the number of children they are expected to bear. This unspoken trend significantly influences couples, sometimes leading them to have more children than they can adequately provide for. The consequences of this phenomenon are wide-ranging, impacting various aspects of societal well-being, including a decrease in the standard of living, childhood nutritional deficiencies, lack of education, an increase in crime rates, overcrowding, burglary, prostitution, and other associated challenges. The cumulative effect of these consequences contributes to excessive population growth within the community, bringing about negative outcomes. Against this backdrop, Alfred et al.

(2017) conducted a study to investigate the influence of socio-economic factors on family size preferences among married couples in the Kogi State University community, Anyigba, Kogi State, Nigeria. Employing a cross-sectional descriptive survey design, the study involved 240 married couples. The determination of the sample size was accomplished using Taro Yamane (1970) and the proportionality formulae. Data collection was facilitated through the use of a semi-structured questionnaire, and data analysis utilized tables, simple percentages, frequency counts, and the chi-square statistical test at a predetermined 0.05 level of significance, facilitated by the Statistical Package for Social Sciences (SPSS) version 17.

The study's findings revealed that various socio-economic factors, specifically religious orientations and beliefs, the current monthly income, and educational attainment of the respondents, significantly influenced family size preferences. These factors, acting either independently or in concert with other variables, played a crucial role in predisposing married couples to opt for a particular family size.

Islam (2020) contributes to the understanding of family size dynamics within a societal context, emphasizing the intricate interplay of socioeconomic and cultural factors. The study, conducted in the Khulna district of Bangladesh, seeks to unravel the determinants of family size, shedding light on the nuanced relationships between various variables.

The research was specifically carried out in Paikgacha villages under Paikgacha upazilla and Ward no. 31 of Khulna city within the Khulna district. Employing a survey research design, the unit of analysis focused on the heads of households within the study area. Islam (2020) adopted a systematic approach, selecting 296 respondents through simple random sampling and conducting interviews utilizing a semi-structured interview schedule.

The study utilized bivariate studies, employing chi-square analysis to explore potential associations between family size and certain covariates. This analytical approach allowed for the examination of relationships between family size and key variables, providing insights into the complex web of determinants shaping family size preferences. In addition, Islam (2020) employed the Ordinary Least Square (OLS) model. This statistical method enabled a more nuanced understanding of the impact of variables such as age, family income, educational status, number of surviving children, number of desired children, sex preferences, contraceptive use, family planning, and residence on family size.

Results from the study revealed that a significant portion of households (54.1%) fell into the category of small size, defined as having four or fewer members. The study identified several factors intricately linked with family size, including age, family income, educational status, number of surviving children, number of desired children, sex preferences, contraceptive use, family planning, and residence. The statistically significant associations underscore the role of these socioeconomic and cultural factors in shaping family size dynamics in the Khulna district of Bangladesh.

Research Gap

The research gap in the existing literature on family size and socio-economic determinants in Nigeria becomes apparent when considering the limited scope and geographical specificity of previous studies. While studies by Ugbomeh (2011), Batool et al. (2019), Alfred et al. (2017), and Islam (2020) have offered valuable insights into family size dynamics, they either focus on specific regions within Nigeria or provide a national overview. This limited geographical coverage overlooks the diverse socio-cultural and economic landscapes that characterize different regions within the country.

A more nuanced investigation is required to address the heterogeneity within Nigeria, acknowledging the significant cultural, economic, and geographical variations that influence family size preferences. Each region in Nigeria exhibits distinct cultural practices, economic structures, and community dynamics that shape the perceptions and decisions regarding family size. A comprehensive nationwide study would bridge this research gap by capturing the rich tapestry of influences on family size preferences across diverse regions.

Moreover, the existing studies often lack granularity in examining the specific contextual factors that contribute to variations in family size

preferences. A more in-depth exploration of cultural norms, economic disparities, and local practices within each region is essential to provide a comprehensive understanding of the determinants of family size in Nigeria. This nuanced approach would not only contribute significantly to the existing body of knowledge but also offer policymakers tailored insights for the development and implementation of effective population control measures that are sensitive to regional nuances.

The research gap identified underscores the need for a more detailed and context-specific investigation that goes beyond the regional and national perspectives provided by previous studies. A comprehensive nationwide study, considering the diversity of cultural, economic, and geographical factors, would significantly enhance our understanding of the intricate relationship between family size and socio-economic determinants in Nigeria.

Conclusion

In conclusion, the collective findings from the reviewed studies underscore the imperative for a more nuanced and comprehensive comprehension of family size determinants within the Nigerian context. While the existing literature forms a crucial foundation by elucidating the impact of socio-economic factors, education, cultural beliefs, and changing values on family size preferences, a significant research gap persists. The absence of a nationwide study that intricately captures the diverse socio-cultural and economic dynamics across different regions of Nigeria limits the depth of our understanding.

The reviewed studies collectively emphasize the need for a more granular exploration that goes beyond generalized national perspectives. A comprehensive nationwide study would enable researchers to delve into the heterogeneity of factors influencing family size decisions, considering the unique regional and cultural nuances that characterize Nigeria. Such an investigation would not only offer a more accurate representation of the intricate dynamics but would also furnish policymakers with tailored insights.

Addressing this research gap is of paramount importance as it would equip policymakers with the necessary knowledge to design targeted and context-specific population control measures. The socio-cultural and economic diversity across regions in Nigeria necessitates a differentiated approach to family planning interventions. A more extensive and region-specific study would unveil the specific determinants shaping family size preferences in different parts of the country, allowing for the formulation of policies that are both effective and culturally sensitive.

In essence, the call for a more comprehensive understanding of family size determinants in Nigeria echoes the importance of evidence-based policymaking. Bridging the existing research gap would not only enhance our knowledge but also pave the way for more effective and culturally responsive interventions, fostering sustainable population control strategies and contributing to the broader developmental goals of the nation.

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POPULATION CENSUS: AN INSTRUMENT OF CRIME PREVENTION AND CONTROL

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Abstract
The social space is dotted with all manner of crimes, from felonies to minor infractions, and many reasons have been advanced as to why crimes occur. Among the myriads of reasons given to explain why people commit crimes is the issue of population and its correlation with crime. Counting people present within a given geographical area, via population census, may well present a grand picture of how government and its security architecture can prevent and control crime within its territorial boundaries. The sociological problematic of crime against the security and smooth socio-economic and -political flow of activities need not be overemphasised. Crime presence and concentration among certain populations show that proper census may well present informed knowledge on how a country's security architecture should combat crime. Therefore, using the desktop research method, the paper looked at population census and the demographic variables of the population as important factors to be considered towards crime prevention and control in the country. It recommended that the National Population Commission (NPC), with proper government financing, should take accurate stock of the population distribution in the country in order that both government and private security agencies may provide adequate personnel as well as facilities to combat crime, while ensuring that overpopulation, improper town planning, unemployment, and so on, should be tackled as a means of controlling crime. The paper concluded that proper census machinery should be put on ground by NPC for accurate update of the population figures for adequate national planning for a secure sociological space for sustainable development. (Word count: 255)

Keywords: population, census, crime, prevention, control

1.0 Background to the study

The question, of why crimes occur more in certain geographical locations than others, has bogged the minds of criminologists since the beginning and growth of urban centres. The industrial revolution of the 18th century readily presents itself as an example of the beginning and growth of urban centres in Great Britain, and the spread of this phenomenon to other parts of the world. Great strides in scientific discoveries and

technological advancement, innovation in architectural designs of urban areas and the quest for a massive population to man the machines and do other available jobs gave fillip to the expansion of the gross national product in Great Britain (Wilde, 2020.) Rural-urban migration became a fashionable trend, which drew men and women seeking job opportunities, higher wages, better housing and better feeding to the city centres; so that these city centres became increasingly populated, exerting pressure on housing and other social amenities, and posing security challenges to the otherwise limited security personnel. Bitesize (2023) noted that increasing population, economic and social changes, such as more warehouses and factories, the opening of more banks and expansion of the middle classes promoted stealing. It also noted that overcrowding in alleyways and streets also encouraged stealing and other crimes.

It is pertinent to note here that during the Industrial Revolution, Great Britain could not tell how many its citizens, by a population census, were (Khan, 2008.) In fact, from 1750 to the close of the 18th century was a period in which Great Britain never did a headcount of its citizen. It was at the turn of the 19th century, precisely in 1801, that Great Britain had its first census (Bodleian Libraries, 2022.) Therefore, the absence of a population census in the last half of the 18th century in Great Britain could have contributed to the rise of crime during this period, as security officials were in the dark as to how many were the citizens in order to ask how many police personnel were required to combat the crimes of the period. Generally, in Great Britain, crime skyrocketed between 1750 and 1850 (Bitesize, 2023.) Undeniably, the absence of a population census, the new forms of crime that accompanied the industrial revolution and the dearth of security personnel would explain the rise in crime during this century.

In the 20th century, following the experiences of the Industrial Revolution and crime, sociological studies on crime and deviance have linked the growth of urban centres with crime and deviance. In intimate, traditional communities (Gemeinschaft), the issue of increasing population, concentration, congestion and impersonal forms of socialisation are hardly available, so that crime prevention and control are well contained within the social macrocosm. However, in complex societies (Gesellschaft), with a mix of increasing population, congestion and impersonal relationships, the issue of crime prevention and control then constitutes a social problem worthy of investigation. Similarly, Willem Bonger noted that altruism, characteristic of homogeneous societies, fades away as egoism, characteristic of heterogeneous societies, takes over and manifests itself in criminality. That is, as a society becomes more complex, egoism, promoted by capitalism, spurs criminal behaviours in their perpetrators (Wikipedia, 2023.) The Concentric Zone Theory of Robert Park and Ernest Burgess in 1925, brought to limelight the relative nature of population concentration on certain geographical areas of the cities, which they call concentric zones, such as the Central Business District (CBD), Zone of Transition, Low Income Housing Zone, High-Income Residences Zone and the Commuter Zone (Jamal, 2017.) Zones with high concentration of people, the CBD, the Zone of Transition and the Low Income Housing Zone would naturally be prone to crime and deviance because of their high population and concentration on the available geographical space. The state's security network should concentrate its efforts of crime prevention and control on these highly populated zones.

2.0 Objectives/limitations of the study

The main objective of this study is to ascertain how the population census serves as an instrument for crime prevention and control. However, the specific objectives are to determine how the sub-variables of population census such as overpopulation, unemployment, gender distribution, age distribution and educational distribution can affect crime and can serve as an instrument of crime prevention and control. Data was drawn from other studies in order to establish a correlation between population census and crime prevention and control.

Granted that there are many demographic variables of the population census, this study limited itself to five demographic variables that are likely to correlate with crime prevention and control, such as overpopulation, unemployment, gender distribution, age distribution and

educational distribution. The study was also limited by time and money required to carry out a field research, in order to generate some empirical data for testing and results, that is why it relied on research results from other studies.

3.0 Theoretical appraisal

This study anchors its theoretical beliefs on three theories that explain the nexus between some demographic variables and crime. These are the Social Disorganisation Theory, the Structural Strain Theory and the Sex Role Theory.

When Robert Park and Ernest Burgess propounded their Concentric Zone Theory, crime was not the focal point of their research activity, until Shaw and McKay appeared on the sociological scene. Under Park and Burgess' direct supervision, the University of Chicago established an ecological perspective on community processes, which was directly expanded upon by the approach of Shaw and McKay. They used Park and Burgess' zone theory to investigate crime. Their main goal was to find out how much of the different social and economic aspects of Chicago's different neighbourhoods contributed to crime (Wikipedia, 2018.) Based on the level of social disarray prevalent in certain neighbourhoods, they found that some Chicago neighbourhoods had greater crime rates than others. They discovered that Chicago's central business district and the immediate neighbourhood around it saw the highest levels of crime. The farther they looked away from the city centre, the less the incidence of crime became (Coleman, nd.). The social disorganisation theory owes much of its growth to the collective discoveries of the Chicago school, which influenced this school of thinking for many years to come. For a while, the theory's popularity amongst criminology scholars had declined, but more lately, as fresh academics have been studying the writings of early Social Disorganisation theorists of crime, the idea has gained traction.

The relevance of this theory to this research revolves around the fact that overpopulated areas are pressured by numerous people chasing fewer socio-economic resources, thereby displaying a social disorganisation that is crime-permissible.

Another theory that underpins this research is the Structural Strain Theory of Robert K. Merton. If there are institutionalised means of arriving at culturally defined ends, argues Merton, then we live in a society that sets equal goals for all without providing equal means for the attainment of those goals. The American dream of bagging a good university degree, getting a good job, riding a good car, living in a posh house and marrying a good wife or husband are excellent goals, but not all are privileged, for example, to acquire a good university degree, because society is so imbalanced that not all have the equal means of acquiring a good education, so that other goals follow. This, therefore, exerts pressure on people variously located on the social strata and forces some of them towards crime and non-conformity.

Hence, Merton (1938, p. 672) writes, "Our primary aim lies in discovering how some social structures *exert a definite pressure* upon certain persons in the society to engage in nonconformist rather than conformist conduct." Although a few in society who are called conformists have the means to attain the success goals, many others are strained by lack of resources and do commit crimes or deviate. These are the innovators, ritualists, retreatists and rebels.

The relevance of this theory rests on the fact that if education is a success goal, then the government must ensure in its policies and programmes to make it available to all so that, having it, her citizens will grow to become conformists rather than deviants or criminals. Again, it is relevant in that, if a good job means employment as a success goal, then unemployment is a menace that the government needs to grapple with, so that it will not rear its ugly head in forcing social subjects so unemployed into crime and deviance. Finally, it is relevant in also explaining the strains that force young people and adults, who suffer lack, into crime and deviance. Many criminologists agree that the age crime curve shows the highest level of offending amongst teenagers. Firstly, most teenagers are children and wards of adult parents who are already disadvantageously placed in the social strata – some are poorly educated, some have no jobs, and some have jobs that are not sustainable; so that these children become a

burden to their parents who care less about their needs, thereby forcing them onto the fringe of deviance and crime. Lastly, although some young people may be advantageously placed in the social strata, they are dragged by yet another strain: the interaction with a horde of many neighbours, relatives, friends, colleagues and acquaintances that are already disadvantageously placed in the social strata, so that, borrowing from Sutherland, the differential association has the potential to make deviants and criminals through this association.

The weakness of this theory is found in our everyday societal experiences. The real criminals of our time are the educated elite. Their criminality far outweighs that of the not-so educated. For example, a Nigerian sales clerk, Philomena Chieshe, told auditors that a snake swallowed 36 million naira (BBC, 2018.) The EFCC had nabbed Femi Fani-Kayode over allegations of forgery and manipulation of documents (Omolaoye & Agboluaje, 2021.) Since 2018, the Federal Bureau of Investigation (FBI) has been searching for Osondu Victor Igwilo, a suspect. The EFCC detained him and three other people in Lagos on suspicion of committing a N41.6 billion fraud (Lawal, 2022.) The Director of Finance and Accounts of the Nigerian Civil Aviation Authority (NCAA), Bilkisu Adamu Sani, was detained by the EFCC along with three other senior NCAA officials on suspicion of a N2 billion scam (Fakoyejo, 2023.) And the list goes on and on.

According to the Sex Role Theory, boys are more likely than girls to become criminals because they receive distinct socialisation. Sociologists Sutherland and Cressey (1960) note that girls are socialised in a way that is significantly more controlling and supervisory, which reduces the opportunity for deviance. On the other hand, boys are socialised to be more aggressive, rougher, and harsher, which increases the likelihood of deviation. And criminal behaviour is likely to follow if deviation is allowed to develop. According to sociologists Bales and Parsons (1956), girls internalise values like empathy and caring for others, and these traits lower the likelihood of them committing crime, because they indicate a less likely tendency to harm others. This is because women fulfil the "expressive role" in the family, which entails taking care of their husbands' emotional needs and raising their children.

The relevance of this theory to the present work is that, since the population consists of males and female, awareness of this theory of the population mix will guide law-enforcement agents on the group to focus on in their crime prevention and control.

However, the weakness of this theory lies in its very presumption that socialisation based on bio-cultural norms predisposes men to crime and women to conformity. The theory fails to explain why some other women commit crimes, in spite of the "expressive roles" they played and the empathy and care they learnt previously. It also failed to envisage that sex roles have changed over the years, due to changing economic conditions, and due to transgender surgery to trans-feminine and trans-masculine respectively.

4.0 Methodology

This is a desktop research venture, which used the eclectic method to gather data from different researches in order to ascertain whether there is a correlation between population census and crime prevention and control, by using empirical research findings of other researchers to ascertain whether overpopulation, unemployment, gender distribution, age distribution and educational distribution, which are elements of population census, affect significantly the incidence of crime prevention and control.

5.0 Demographic indices and crime prevention and control

Overpopulation, unemployment, gender distribution, age distribution and educational distribution, which are variables considered in a census, have been treated at one point or the other by demographers and criminologists as having a link with crime. Various theoretical literatures have been written to establish the link between them. This section, therefore, takes a panoramic view on literatures written on the subject matter.

Almost everywhere, cities are ranked and contrasted using their per capita crime rates. Nevertheless, the use of them is predicated on the robust linear assumption that crime rises in proportion to a region's population (Oliveira, 2021.) Various theories of crime have linked an

increase in crime in certain geographical regions to the linear growth of the population. From a structural standpoint, more people mean more opportunities for social engagements, which mean more criminal activities. Such an increase can be explained by two different theories. For instance, according to Mayhew and Levinger (1976), increased human interaction increases the likelihood that someone will be taken advantage of, offended, or hurt. They contend that as the population grows, there are more chances for interaction, which would cause the population to rise in terms of crime super-linearly. This is known as the Urban Scaling Theory, which states that there may be a super-linear link between the number of crimes and a city's population size. Contrastingly, Blau (1977) observed that, while population aggregation reduces spatial distance amongst individuals, thereby promoting different social associations like victimisation, he suggests a linear relationship between population and crime, arguing that as conflictive associations increase, other integrative associations also increase, leading to a linear growth of crime. According to the social control approach, population growth has a qualitative effect on social interactions, which erodes the informal social control systems that deter crime (Groff, 2015). According to this viewpoint, the size and stability of a population have an impact on crime. Population density and heterogeneity increase with population growth; people are frequently surrounded by strangers in addition to having more possibilities for social interactions (Wirth, 1938). This condition hinders a community's capacity to socially restrain misbehaviour and makes social integration challenging. Sampson (1986) noted that this social situation also fosters a high degree of anonymity, which feeds criminal tendencies. Crime rates may rise as a result of overpopulation. People become more aggressive and show less regard for one another as they compete with one another for resources including food, shelter, air, and space (Clark, 1999.) Densely inhabited places tend to have higher rates of violence and other criminal activities. Resources will become much scarcer and the competition for them will grow, which will raise crime rates because of drug cartels and people stealing to make ends meet. Population growth causes resource scarcity, which in turn causes unequal resource distribution, intolerance amongs the underprivileged classes, and ultimately a rise in crime. Aside from resulting in crime, King and Elliott (1997) have noted that an overpopulated society risks becoming demographically entrapped, which occurs as a result of an unfavourable combination of the three variables of one, a limited ecosystem that is overflowing its bearing capacity, two, insufficient possibilities for leaving the ecosystem through migration, and three, the economy's incapacity to generate the required exports and, consequently, secure the required imports, particularly food.

If a proper census accounts for the actual number of persons present within a definite geographical space, noting overpopulated grey areas, it can assist the government and its security network to deploy more security men to those grey areas, use community watches to assist the police, decongesting the overpopulated areas through proper town planning, migration incentives, and so on.

Unemployment has been pinpointed by several researchers as a cause of crime. A population census must take into cognisance the number of the unemployed, so that the government may expedite action in creating jobs to engage the unemployed population. Eke and Osaghae (2021) argue that the unemployment of young people who are churned out of our Nigerian university without jobs eventually turn to crime as the only way out. They present statistics to show the number of crimes committed, based on the unemployment level in Edo State as follows:

Crime rate as a result of unemployment in Edo State, Nigeri

2002	April– June	794 number of cri
2003	March– April	291 ”
2004	July	980 ”
2005	Feb	165 ”
“	Feb– March	248 ”
2006	Feb– March	264 ”
2007	June– July	1081 ”
2008	March– April	543 ”
“	August	1132 ”
“	July– August	1016 ”
“	October– August	1407 ”
“	December– August	1730 ”
“	November	1641 ”
2009	September–October	1580 ”
“	November–December	1889 ”
2010	January– December	128 ”
“	July– September	872 ”
“	May– September	380 ”
“	December–January	1231 ”
2011	December	1231 ”
2012	February– March	171 ”
2013	August– September	832 ”
2014	June– August	598 ”
“	November–December	960 ”
“	January– March	163 ”
2015	April– May	600 ”
2016	September–October	826 ”
2017	June– July	741 ”

Source: Nigerian Police Head Quarters, Benin City (2017)

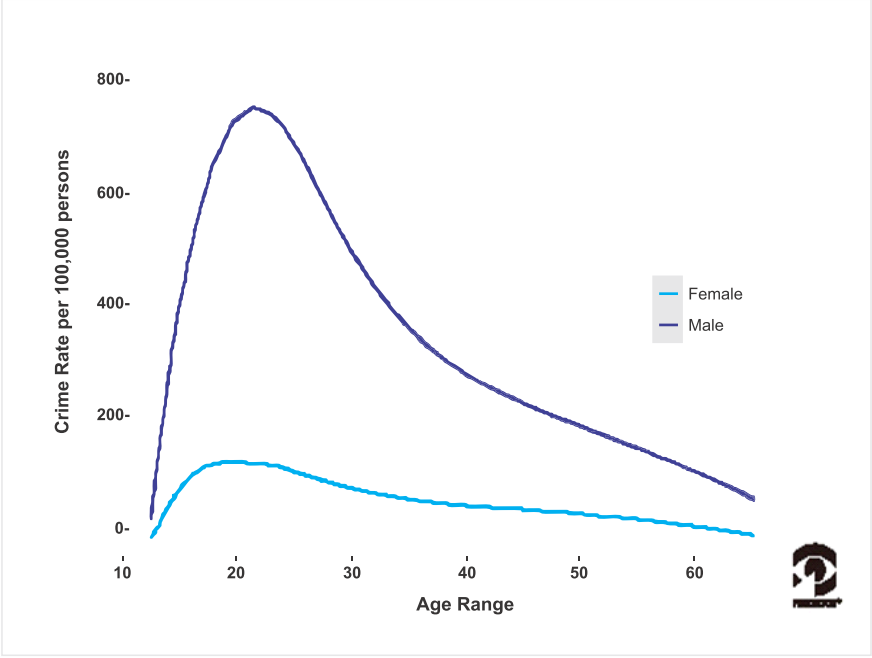
Although informative as this may look, it is doubtful that all the crimes should be tied to unemployment alone. Ojo, Omojuwa and Oludare (2021:45), stated that, “Nigeria's high crime rate has ultimately been caused by the country's high unemployment rate.” They also went ahead state their test result by saying that, “The outcome results reveals that in Nigeria, a high percentage of unemployment induced a high rate of crime, with a 1% rise in unemployment resulting in a 0.0830 increase in crime rate in Nigeria.” Ngele, Okom, Igwe-Okomiso and Iteh (2023:88) also support unemployment-crime causation when they noted that “Youth unemployment is a major problem giving rise to other criminal tendencies in the youths and threatening the socio-economic peace and stability of our nation.” Adejumola and Tayo-Olajubulu (2009) made a compelling case that societal vices like armed robbery, prostitution, destitution, political thuggery, kidnapping, and many others are mostly brought on by unemployment. And the reality that crime is frequently a way of survival is true for Nigeria and the majority of other countries worldwide.

Unemployment is a disease that affects all age brackets of the working population. If the government knows exactly how many people are unemployed, it can help reduce the crime threat and security challenges that this poses, through

the creation of jobs, proper technical and apprenticeship education, to help broaden the chances of work.

The norms and values associated with traditional masculinity are more likely to lead to crime, whereas the norms and values associated with traditional femininity are not. Sex Role Theory explains gendered differences in offending in terms of the differences in gender socialisation, gender roles, and gendered identities (Thompson, 2021.) A good population census should be able to tell how many men and women are there in a population, so that such information will tell security agents whether there are more men than women in the population or vice versa. This would enable them to anticipate the committal of certain crimes and work towards their prevention and control. It is traditionally believed that men are more likely to commit crime than women; are more likely to commit violent crime than women, and are more likely to become habitual offenders (recidivists) than women (The Conversation, 2021.) There is a connection between gender and crime, since criminal behaviour and experiences with the criminal justice system differ and are comparable for men and women. The fact that women commit fewer crimes than men does not vary across nations or throughout time, despite differences in its type and intensity. Men perpetrate the vast majority of criminal cases, and when women do conduct crimes, they typically include minor offences that do not constitute a threat to society (Abdul-Rasheed,Yinusa, Abduulateef, Ganiyu and Abdulbaqi, 2016.) The curves below in Figure 1 pictorially demonstrate the near-axiomatic fact that men do commit more crimes than women.

The age crime curve of criminal offenders in England and Wales in 1842–1844, broken down for male and female offenders, is presented in Figure 1 by Hirschi and Gott (1983).

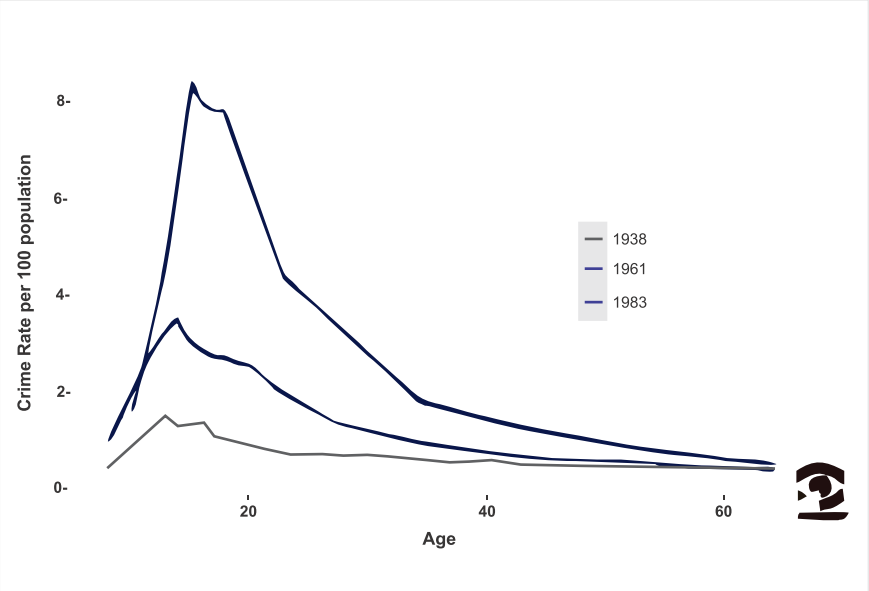


Source: Pinkerton (2023)

Therefore, if the government security apparatus should consider the population divide between men and women, it can use its numbers in crime speculation for prevention and control.

The distribution of a population based on age, if properly taken by a population census, is capable of indicating the composition of the population in terms of how many persons are present in a particular age bracket, which age bracket has the highest percentage of persons and what the government can do to help the teen population, believed to be most prone to crime than members of other age brackets. The age crime curve, believed by criminologists, always rises sharply in the early teens, peaking in the late teens and dropping off at the early 20s (Pinkerton, 2023.) Figure 1 below presents Farrington's statistical graph, showing three non-consecutive years when crime occurred the highest amongst teenagers and declined thereafter.

Figure 1: Farrington's (1986) age crime curve of British males from three separate years, using data from the U.K. Home Office.



Source: Pinkerton (2023)

The knowledge of the age distribution, adequately provided by demographers, gives the government and its security agencies insight on policies and programmes that should be put in place to primarily quell youth offending and crimes committed by other age brackets, through crime prevention and control.

The level of education is likely to affect crime committal. Level of education, in that no one can be said not to be educated. Sociologists make it quite clear that education occurs at the informal or family level, and formal or school level, so that it would be quite incorrect to refer to anyone who has never seen the four walls of school as uneducated. Such a person has some level of education required, at least to know the norms and values of the society in which they live and try to conform. Therefore, the level of education may presumably be said to be directly proportional to the level or amount of crimes committed; that is, the more educated, the more educated less likely to commit crime, and vice versa. Education no doubt broadens our socialisation horizon and compels us consciously or unconsciously to conform.

One of the biggest causes of crime is a lack of education or insufficient education. A low level of education is linked to several detrimental consequences, such as unemployment, poverty, and ill health. Compared to people with higher levels of education, those with little or without formal education are more likely to be involved in criminal activities. Crime can result from a lack of knowledge for several reasons. People without formal education are more likely to be unemployed, which makes them more inclined to turn to crime as a means of subsistence. Furthermore, desperation and hopelessness brought on by a lack of knowledge can encourage criminal action. Again, those with less education are more likely to come into contact with criminal forces like gangs and may consequently be more likely to commit crimes. Finally, lack of adequate knowledge may affect proper socialisation and throw the victims on the floorboards of ignorance and animosity, regarding the observances of norms, values, rules and laws, thereby making them deviate. Laura (2021) observed that people with higher educational attainment have lower crime rates than ones with lower educational attainment. Lack of a college degree makes it far harder for someone to advance in life, has a worse health history, and is less likely to be employed. The negative relationship between education and criminality may stem from unobserved individual traits. Amongst the many variables that lead to crime include poverty, drug and alcohol misuse, parental neglect, and alcohol abuse.

Jeremy Bentham's utilitarianism, which he defines as “the greatest good for the greatest number” (Business Ethics, 2018) makes government responsible for providing the many goods and services that would accord citizens the pleasure they crave, thereby avoiding the pain and suffering they detest. Education is one of those goods or pleasures that the government is supposed to make available to “the greatest number”. Since there is a negative correlation between education and crime, its provision

would take a heavy burden of crime control off the necks of security men and law-enforcement agents, so that they would have time to focus more on prevention.

6.0 Discussion

The Population census as an instrument of crime prevention and control is a timely topic which raises demographic questions covering crime, and, indeed, rising crime and its prevention and control. Crimes such as bribery and corruption, embezzlement, armed robbery, car snatching, kidnapping, assassination, pipeline vandalisation, oil bunkering, impersonation, and so on, bedevil a society that should demographically be captured by adequate census statistics that should serve as a veritable tool for the government and its security architecture in formulating its crime prevention and control policies and programmes. Why, no government or security outfit can tackle these crimes without these demographic facts. And why should the demographer sit at the fence and look, without raising the alarm for collective action? Why should they fold their arms and watch society perish in ignorance? Yet, why should any reasonable demographer capsize the boat that is society, when they know that they are in that boat? It would be rash, indeed, not to do something, even if it is to raise the alarm alone. Raising the alarm is better than solving the problem, because, if a problem is not known, how can it be solved? Why, too, should the criminologist sit and mop at these crimes as if they mean nothing? Of course, the criminologist can barely tackle the menace of crime without the demographer; they must know the characteristics of the population before they set forth to action. Both the demographer and the criminologist must have the financial mobilisation to do what they ought to do. This is where responsible governance comes in. An irresponsible government such as any typical African country has ever had is to look at the demographer and the criminologist, yawn sleepily and say, "If you book warmers and mad theorists have finished bothering yourselves, go to sleep! We are used to these problems!" But this is how our governments think and behave. They join other nations and sing the international anthem of the Sustainable Development Goals but lack the political will to mobilise quality men and resources towards the achievement of the seventeen goals, which, if and when achieved, would end poverty, protect the planet and improve the lives and prospects of everyone everywhere (United Nations, 2023.)

But everybody is government and no-government at the same time. Perhaps, this national ambiguity and contradiction is what we must tackle as a nation. If change begins with me as a government, then I should be able to channel resources put in my charge towards what those resources are meant to solve or alleviate for the collective. And, perhaps, bit by bit, our country will gradually become a better place to live. Otherwise, if I am no-government and continue to embezzle public funds, then the issue of exploitation and rise in crime will linger, as those marginalised will find a way to survive, no matter how crooked and ghoulish.

7.0 Recommendations

Overpopulation, unemployment, gender distribution, age distribution and educational distribution

The following recommendations are made to improve our census statistics and our security architecture towards crime prevention and control.

1. Population census should be held at regular but definite intervals, so that reliable numbers and statistics concerning the national population would help in crime prevention and control, and national planning.

2. The National Population Commission (NPC) should develop a system of statistical projections, with the help of computer software that reflect demographic truths about our national population, within those interludes when actual census is not done.

3. Annual budgetary allocations by governments, as a matter of priority, should be made to help the NPC develop a culture of providing accurate demographic figures for the nation, and to help security agents to get the required manpower and training, so as to work effectively.

4. The government should encourage migration from big cities that are usually overpopulated to villages and suburbs by citing industries there and getting the private sector to do so, even through legislation. This would reduce the incidence of crimes associated with overpopulation.

5. Congested cities across Nigeria should be re-planned by town planners and built to discourage hideouts for criminals. This should be the responsibility of the various governments involved.

6. The government should be responsible enough to create jobs and put in place a minimum wage that would not strain workers towards crime and deviance.

7. The educational system should be overhauled to remove criminal and deviant practices like "magic centres", "cooperation fees", exam malpractices, dashing of generous marks to pupils and students for money, etc. Surely, pupils and students who are products of this corrupt system can be nothing more than criminals and deviants, because they have been trained in a school system that has institutionalised crime and deviance and made it a norm. The evil of it is that they are the very ones who come into government and public offices tomorrow. What would we expect from them, but the perpetration of crime and deviance?

   The overhaul of the educational system should begin with government schools, then the government can have the moral justification to chastise private schools. It must be understood that the way the Ministry of Education approves schools is enough to bring in a horde of businessmen who have opened schools to maximise profit, rather than pursue the standard which will help us all tomorrow. Most schools approved are on sentimental bases. Therefore, schools which should not have ordinarily been approved, for lack of resources, will sprout up like mushrooms, creating corrupt breeding grounds for the raising of criminal and deviant children.

8.0 Conclusion

As a final word, proper census machinery should be put in place by NPC for accurate update of the population figures for adequate national planning for a secure sociological space for sustainable development. However, crime prevention and control, it must be noted, is not only tied to demographic rectitude; it involves multiple considerations to prevent and fight crime. For example, a school system that downright teaches its children the culture of crime and deviance has nothing to do with demography or the population census. Again, negative peer influence on juveniles and adults has no business with the population census. Again, embezzlement, money laundering and other such crimes have no business with the population census. Also, the smoking and womanising father who does his acts as his children watch on has no business with the population census. While we admit that proper census statistics can help prevent and fight crime micro-sociologically, let us look at the grand picture, the macro-sociological perspective, so that we can achieve a successful fight of crime prevention and control, using a holistic approach.

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IMPACT OF INFANT MORTALITY ON DEMOGRAPHIC DIVIDEND IN CROSS RIVER STATE: IMPLICATIONS FOR POPULATION DYNAMICS AND SOCIO-ECONOMIC DEVELOPMENT

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Abstract:
Objectives: This study explores the relationship between infant mortality and the potential demographic dividend in Cross River State. It aims to analyze the impact of high infant mortality rates on population dynamics and socio-economic development.
Design: Using a comprehensive research approach, this study combines demographic data, healthcare infrastructure assessment, and socio-economic indicators. It employs quantitative analysis of demographic trends over the years and the exploration of the socio-economic consequences of infant mortality in the state.
Results: A direct correlation emerges between elevated infant mortality rates and the state's population dynamics. An examination of the age structure indicates a continual high dependency ratio due to infant mortality, impeding the transition to a more productive population pyramid required for demographic dividends. This imbalance curtails potential productivity, innovation, and economic growth. Furthermore, the economic burden of high infant mortality showed significant impact on healthcare expenditure, diverting resources from critical developmental initiatives. Projections reveal the possibility of achieving a demographic dividend by reducing infant mortality rates to meet benchmarks. This highlights the advantages of prioritizing healthcare interventions aimed at lowering infant mortality.
Conclusion: This study establishes a significant link between infant mortality and the potential demographic dividend in Cross River State. The findings emphasize the necessity of focused endeavors to alleviate infant mortality, enabling the realization of sustained socio-economic benefits through favorable population dynamics.

Recommendations: To leverage the demographic dividend and drive sustainable socio-economic development, policymakers should conduct widespread health education campaigns emphasizing proper maternal and child healthcare practices. Additionally, advocating for policy changes and increased funding at state and national levels to support maternal and child healthcare programs is crucial.

Keywords: Infant mortality, demographic dividend, population dynamics, socio-economic development

Introduction

Infant mortality (IM), the tragic or rather heart-breaking loss of young lives in the early stages of existence, is a deeply concerning issue that has far-reaching implications for societies worldwide. When children die at a before reaching their first birthday, families, communities, and the nation as a whole bear the burden of grief and loss. Infant mortality, defined as the death of children under the age of one, is a critical health indicator that reflects the overall well-being of a society. IM has been one of the

greatest challenges confronting the government of today in sub-Saharan Africa and Nigeria particularly. Infant mortality rate (IMR) is a key indicator of the overall health of a society and is essential for social and economic development (CDC, 2022). In the National Demographic Health Survey (NDHS), IMR of each year was calculated as the number of infant deaths among the total number of alive-born children in the year (NDHS, 2013). In the past two decades, many countries have achieved significant improvements in reducing IM. According to the UN 2018 mortality report, IMR declined by 51% between 2000 and 2017(CDC, 2022). Despite this progress, wide disparities exist between low-income and high-income countries—76 deaths per 1000 live births and 7 deaths per 1000 live births respectively (Shobiye, et al.,2022).

Nigeria reported 72 deaths per 1000 live births among infants in 2020 with disparities across its regions and geopolitical zones (UNGME, 2018). Nigeria has worse IMR compared with neighboring West African countries such as Benin, Cameroon, Togo and Ghana, with 57, 48, 44 and 33 deaths per 1000 live births, respectively (UNIGME, 2018). The rate makes Nigeria one of the countries with the highest IMR rate in Africa.

The emotional and psychological toll of infant mortality is immeasurable, and it perpetuates a cycle of suffering that can erode the fabric of society. Moreover, it places a tremendous strain on healthcare systems, as they must cope with the demands of addressing preventable child deaths, often diverting resources from other pressing healthcare needs. The problem of infant mortality has been a persistent challenge that has raised significant concerns about its potential impact on the demographic dividend across states in Nigeria, and, by extension, the broader sphere of population dynamics and socio-economic development.

High infant mortality rates are often indicative of underlying health, social, and economic disparities. This issue is of particular significance in the context of demographic dividend, a period of demographic transition characterized by a large working-age population relative to dependents, which holds the potential to boost economic growth. However, the presence of high infant mortality rates can significantly impede the realization of demographic dividend, as it reduces the pool of individuals who survive to join the workforce, potentially limiting the state's socio-economic development.

The issue of infant mortality is a critical determinant of a region's population health and well-being, it profoundly influences the population dynamics which in turn results in the socio-economic development status. In other words, changes in the age structure interact with labor-market, health, and education policies to contribute to economic growth (Rahman et al., 2022).

The demographic dividend, on the other hand, offers a unique window of opportunity for socioeconomic development. With a large working-age population, a society can experience heightened productivity, increased innovation, and greater economic growth potential. This, in turn, can contribute to poverty reduction, improved living standards, and an overall rise in the quality of life. However, to fully harness this demographic dividend, reducing infant mortality is paramount. The loss of a significant portion of the youth population to preventable deaths not only hinders economic growth but also diminishes the potential for human capital development, which is a critical driver of long-term prosperity.

In the context of Cross River State, Nigeria, this study delves into the multifaceted dimensions of infant mortality and its far-reaching implications. As an essential component of public health and social well-being, IM is indicative of a society over all wellbeing and welfare standard. Consequently, understanding the impact of IM on the demographic dividend, population dynamics, and socio-economic development in Cross River State is a crucial endevour that holds significance not only for the State but also for the broader context of Nigeria and other regions grappling with similar challenges. Demographic dividend which is gained as a result of change in the age structure of a region's population may not be achieved when the infant mortality rate is high. A decline in fertility and mortality rates give rise to a change in age structure. Given that there is no improvement in child survival rates, even with

high birth rate and high rate of infant mortality, therefore the State rarely enjoy an economic benefit known as demographic dividend.

Cross River State, with its unique demographic and socioeconomic characteristics, serves as a compelling case study for exploring these issues. The state's diverse population, with a mix of urban and rural areas, presents a varied landscape for understanding the determinants of infant mortality and its effects on the demographic dividend. Additionally, the state's recent efforts in healthcare and social development make it a prime candidate for in-depth analysis, as it provides an opportunity to assess the effectiveness of various policies and interventions aimed at addressing infant mortality.

The State will enjoys accelerated economic growth if there is decline in fertility and mortality rates. However, when there is low birth rates in conjunction with low death rates the State will also receive an economic dividend or benefit from the increase in productivity of working population that ensues (Bloom et al.,2017). Increase in infant mortality makes the number of young dependents grow smaller, relative to the working population. Achieving demographic dividends depends on whether the government implement the right policies in areas such as education, health, governance and the economy. Again, the number of demographic dividends a State receives depends on the level of productivity of young adults which in turn, depends on the level education, health development. Reducing infant mortality is not merely a statistic; it is a stark indicator of a community's access to healthcare, maternal and child nutrition, and the socio-economic disparities that exist within its boundaries (Morakinyo &Fagbamigbe, 2017). These variables act on economic development making demographic dividend difficult to achieve.

This study is undertaken with a sense of urgency and importance for several reasons. Firstly, infant mortality rates are a crucial reflection of the healthcare and social services infrastructure within Cross River State. These rates highlight disparities in access to healthcare, maternal care, nutrition, and other essential services. Secondly, the potential impact on demographic dividend is a matter of immense concern, as it has far-reaching implications for the state's ability to harness its youth population for economic growth and development. Lastly, understanding the interconnections between infant mortality, demographic dividend, and socio-economic development can inform targeted policies and interventions aimed at improving the overall well-being of the state's residents.

Statement of the problem

Infant mortality rates in Cross River State, Nigeria, present a significant challenge that extends far beyond the loss of young lives. This critical issue poses a significant problem with profound implications for demographic dividend, population dynamics, and socioeconomic development within the state. Cross River State continues to grapple with high infant mortality rates that far exceed national and global averages. The persistence of these elevated rates raises concerns about the state's capacity to safeguard the lives of its youngest population. High infant mortality rates disrupts the demographic dividend, a potential demographic advantage that occurs when the working-age population surpasses the dependent population. A significant loss of infants negatively affects the state's ability to harness this dividend, potentially stunting economic growth and development.

The disproportionately high infant mortality rates are contributing to skewed population dynamics within Cross River State. This dynamic includes altered birth rates, age structure, and dependency ratios, which can have far-reaching consequences for the State's social and economic fabric. The implications of high infant mortality rates extend to the broader socioeconomic development of Cross River State. Elevated infant mortality reflects underlying challenges, such as inadequate healthcare infrastructure, poverty, and disparities in access to healthcare, which hinder the State's progress in achieving key development indicators. Health system of the State need to be revamped for effective reduction of infant mortality. Infant mortality in Cross River State is not an isolated issue but rather intertwined with various social, economic, and healthcare challenges. These interconnections make it

imperative to explore the root causes and consequences comprehensively. Despite efforts to address infant mortality, there still exists gaps in the effectiveness of existing policies and interventions (Ayoade,2020). Identifying these gaps and proposing targeted solutions is crucial for mitigating the problem. This study aims to shed light on the intricate relationship between infant mortality and demographic dividend, population dynamics, and socioeconomic development in Cross River State.

Review literature

Infant Mortality Rates: Over the past five years, infant mortality rates remained steady in Nigeria, at 74 per 1000 live births. At this mortality level one Nigerian child of every 13 born dies before reaching age 1. Infant mortality rate has declined gradually over the past 25 years, down from 126 in 1990 (UNICEF, 2021). Nigeria also ranked highest globally in incidences of neonatal and child deaths. Other countries in close ranking with Nigeria are; Pakistan, the democratic Republic of Congo, Ethiopia, Bangladesh, China, Indonesia, Afghanistan, and the United Republic of Tanzania. Ranging from 2017, 2018 and 2019 Nigeria has been the highest contributor of infant mortality globally, for instance 5.2 million global deaths of children younger than 5 years old in 2019 (Ezeh et al., 2021).

Additionally, report shows that maternal and infant mortality rates in Nigeria have stagnated since 2015, approximately occurring every year. Nigeria took the second position as more women died within three years from pregnancy related deaths, other concerns are from the growing poverty rate and worsening humanitarian conditions (Ayoade, 2020). In another joint report, fewer than 152 million premature babies were born between 2010 and 2020 with an estimated 13.4 million babies born preterm in 2020 and nearly one million dying from preterm complications. Malnutrition was also identified as another underlying cause of infant mortality and morbidity (UNICEF, 2021). However, these overwhelming number of deaths are preventable or treatable illnesses if there is optimal healthcare, affordable and accessible available to the populace. In the past ten years there has been a decrease in infant mortality although the rate of decline is very slow and if it continues at this pace, achieving the sustainable development goal (SDG -3) of reducing child mortality to 25 deaths per 1000 lives by 2030 may not be achievable (WHO, 2020)

Lack of skilled birth attendants and other professional medical personnel are in short supply in Nigeria, while there are few well equipped health facilities available for use. Again, the cost of medical services is very expensive for especially mothers and infants. Many of the skilled medical practitioners are leaving Nigeria's broken health system for European North America Infant mortality currently stands at 69 per 1,000 live births with more than 64 per cent of the deaths caused by pneumonia malaria and diarrhoea.in fact report by the WHO showed that Nigeria accounts for the second-highest number of maternal and child deaths globally (Ehigiator, 2023). The report titled, 'Improving maternal and newborn health and survival and reducing stillbirth progress Report 2023' and released by the World Health Organization (WHO) on May 9, 2023, shows that Nigeria, Africa's most populous nation is only behind India in the latest ranking. The report noted that in 2022 788 women and children died 'per thousand' in India, and 540 women and children 'per thousand' died in Nigeria (Ehigiator, 2023).

Exploring the Nigeria Demographic and Health Survey, Ezeh et al., (2021) study on 'under five mortality and its associated factors in Northern Nigeria: evidence from 22,455 Singleton live births (2013-2018)' noted that geographical zone, poor household, paternal occupation, perceived children body size at birth and parents' educational status were factors highly associated with increase in infant mortality. Although, interventions are needed but must commence from children residing in low-socioeconomic households (Ezeh et al., 2021). A robust health system will minimize or end the problem of infant and maternal mortality in Nigeria. A system where women will have access to care at any given time. It is globally applicable that no woman should die while giving birth (Adebowale-Tambe, 2023; Abimbola et al., 2012). Report from Centre for Public Impact India noted that mortality rates have decreased to less than half of their 1990 levels in India through initiatives anchored on the reproductive and

Child Health programmes in 1997. Under five deaths dropped from 12.7 million per year in 1990 to 5.9million in 2015 (Kumar, 2020). Nigeria can borrow a leaf from such ingenuity. There should be new approaches and initiatives to reduce the rate of advancement of the woeful health indices.

The three tiers of government, especially the state and local government levels should establish training centers mostly for the traditional birth attendants. Given that most complications during delivery are not well managed by the TBAs who are mostly patronized by pregnant women (Arisukwu et al., 2021; Mannah, et al., 2014). Ekanem et al., (1994) noted that the first 28days is very critical for a new born, therefore, it is imperative that mothers are well sensitized on care for newborns during this delicate period. Free medical treatments for ailments such as malaria and diarrhea for infants and under five children will suffice.

Healthcare Infrastructure and Access:

Various scholars have contributed on the level of utilization of reproductive health services (particularly place of child birth) in the study population. Availability and utilization of healthcare infrastructure enhance the reduction of infant mortality and equally improve on the economic development. Despite the provision of free medical services to pregnant women and children under five years by Cross River State Government notwithstanding, childbirth practices in the rural settings of the state predominantly take place outside the formal health facilities. For instance, a whopping 85.7% of pregnant women delivered outside the formal health facilities, with only about 14.3% of deliveries occurring in formal health facilities. This is in clear contrast with results from the urban where 79.1% of births occurred in formal health facilities (Akpabio et al., 2014). Therefore, there is a great demand for stakeholders to work to discourage rural women from seeking care outside the formal health facilities.

Studies have shown that proximity and accessibility to TBAs' (traditional birth attendance) homes, personal relationships between the TBA and the pregnant woman or other relations, affordable charges, religious affiliations, cultural beliefs, fear of injections and tablets, availability of 'special herbs' perceived to be effective for pregnancy and child birth, amongst others have over time greatly influenced the preference of TBAs (Akpabio et al., 2014; Okafor et al., 2014; Adegoke & Jegede, 2016). According to NDHS infant mortality rate was 67 deaths per 1,000 live births and 40,000 women die from pregnancy related causes each year (NDHS, 2018). women at the rural communities utilize Traditional Birth Attendants (TBA), delivering at homes has been less expensive, easy to access, and proper care given. Complications arising from home deliveries, or with TBAs cannot be overemphasized, many of these deaths could be prevented if frontline health workers at the primary care level can use ultrasound services to detect complications early. More so, receiving quality ANC services from qualified health practitioners is very important for the health of mother and child. However, access to these health services is lacking in most of the rural communities due to shortage of skilled personnel, such that most pregnant women travel far to the urban centers for medical treatment (WHO, 2020)

Alongside inadequate financing, essential medicines supply gaps and a myriad of service delivery challenges, the inadequate number of skilled healthcare workers is a major challenge to providing quality healthcare services as well as for the attainment of the health-related sustainable development goals (SDGs). According to Nullis-Kapp (2005), the shortage in the health workforce, especially within low- and middle-income countries, and the increasing evidence that community health workers contribute to improving health outcomes is generating new interest for more community health worker initiatives. About 99% of maternal, newborn and child deaths occur within developing countries (WHO, 2014; Gilmore & McAuliffe 2013). Nigeria which is the most populous country within sub-Saharan Africa, similarly has poor maternal, newborn and child mortality indices (Kana et al.,2015). The country has a maternal mortality rate (MMR) of 576 deaths per 100,000 livebirths, Choudhry noted that about `75% of women die as a result of these complications either during the course of giving birth or the week proceeding delivery (Choudhry, 2012). Recent statistics shows that the lifetime risk of maternal death indicates that out of every

30 women in Nigeria, one will have a death related to pregnancy of childbearing (NDHS, 2013). Study has shown that there exists a link between socio-economic status of women and utilization of maternal health services.

Socioeconomic Determinants: Studies show that among the determinants of infant mortality is socioeconomic status of parents or mothers specifically (Ayoade,2020). Utilization of maternal health services is also linked to socioeconomic status of mothers. Low birth weight has been identified as the most common cause of infant mortality rating 25% (Elder et al., 2016). Infant mortality depends mainly on antenatal conditions, such as hypertension in pregnancy, preeclampsia and anemia, these conditions may result to preterm births, complications during delivery and equally affect the survival of the baby. The issue of child mortality does not involve the media due to the fact that it is occurring amongst the poorest, most vulnerable and voiceless communities (Fatunmole, 2019). According to Kumar (2022) under 5 mortalities in India is minimal for the wealthy quintile whereas the poorest quintile, under five mortality rate is thrice higher. The Ali et.al., (2021) documented that under-five mortality gap between rural and urban in India is due to rural-urban disparity in socioeconomic and demographic variables. Urban children have survival advantage over the rural children due to improved household wealth, maternal education, mass media exposure, transport connectivity and health infrastructure. the economic condition of the children's household is linked to better nutrition and access to healthcare facilities. In-fact wealth differential is the most contributing factor for rural-urban mortality gaps. In other words, mortality rate lowers with mothers from a rich economic background (Saikia et al., 2013). Labour Economics noted that household income matters for Infant mortality, especially at a very income level and even when controlling for rich set of covariates.

Demographic Dividend: This refers to the growth in an economy, that is the result of a change in the age structure of a country's population (Baerlocher et. al., 2019). The change in age structure is typically brought on by a decline in fertility and mortality rates. In developing countries, improvement in the child survival rate but the birth rate remain high may likely will not enjoy the benefits of economic development. Certain occurrences that facilitate economic growth of a country normally arise from the decline in fertility and mortality rates. A country that experiences low birth rates in conjunction with low death rate receives an economic dividend from the increase in productivity of the working population that ensues. As fewer birth are registered the younger generation (dependent) grows smaller relative to the working population, resulting to fewer mouth to feed but more people in the labour force (Bloom et al., 2017). The economy is eased up and investment in other areas will accelerate a country's economic development and future prosperity of her populace. According to Van and Saha (2018) a decline in fertility and mortality rates boosts working population productivity, which leads to a demographic dividend, however to receive a demographic dividend a country must go through a demographic transition where it switches from a largely rural agrarian economy with high fertility and mortality rates to an urban industrial society characterized by low fertility and mortality rates. Empirical evidence has shown that a decline in childhood mortality is often a prerequisite for fertility decline (Tabutin et al., 2004). While other studies emphasized causal links in the reverse

Population Dynamics: Explore studies that delve into the population dynamics of Cross River State. Look for research that discusses the impact of infant mortality on birth rates, population structure, and dependency ratios. According to Ottong, Ering and Akpan in a study revealed that despite the fact that Cross River State experienced a rapid growth between 1991 and 2006, there was relatively low skilled manpower to withstand the prevailing demographic features (Ottong et al., 2010). Data such as this is essential in helping government to make projections and invest more in education as one way of sustaining the economic growth. Proper tracking of the population situation is therefore vital for the socioeconomic development of the society.

Methodology

The paper aims to investigate the relationship between infant mortality rates, demographic trends, and their consequences on the socio-economic development of Cross River State, Nigeria. In pursuit of this objective, the comprehensive research approach employed herein is designed to comprehensively explore and analyze thematic content derived from secondary data sources on the dynamics of infant mortality and its implications on population trends and socio-economic development. The review employs the collection and analysis of numerical data. It includes the examination of statistical indicators related to infant mortality rates, population demographics, and socio-economic variables. Vital statistics and demographic data were also sourced from official government records, surveys, and databases to quantify the extent of infant mortality's influence on population dynamics and socio-economic development in Cross River State. The analysis approach employed for this study is primarily inductive. This approach allows themes and patterns to emerge directly from the data without imposing preconceived categories. It ensures that the analysis remains open to unexpected findings and the rich complexity of the research topic. However, it includes deductive elements where predefined categories or concepts from existing literature are considered.

Analysis of Demographic Trends

Infant Mortality Rates:

The analysis of infant mortality rates in Cross River State reveals a significant and concerning situation (Figure 1). According to data from (National Bureau of Statistics, 2012-2014), the infant mortality rate in the state stands at 77.78 per 1,000 live births, and also have an under-five mortality rate of 123.63, which is significantly higher than the national average. This figure underlines the urgent need for targeted interventions to address this critical issue.

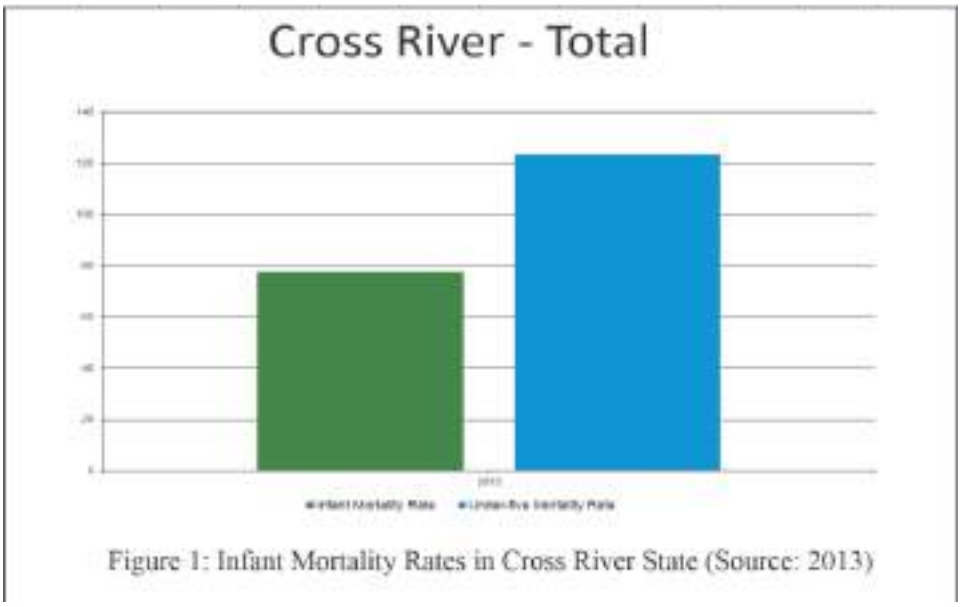


Figure 1: Infant Mortality Rates in Cross River State (Source: 2013)

High infant mortality rates are indicative of underlying health, social, and economic disparities within the state. These disparities include limited access to quality healthcare services, maternal care, nutrition, and sanitation, as well as broader socio-economic challenges (Patel, Prasad & Biradar, 2021). Thus, there is an urgency in addressing these disparities to improve the well-being of the state's youngest and most vulnerable population.

Population Dynamics:

An analysis of population dynamics in Cross River State reveals a complex picture (Figure 2). The state's population has been steadily increasing over the years, reaching 4221852 in 2019. However, the persistently high infant mortality rates are impacting the composition and growth of this population, as shown in Figure 2.

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LGA	Land Mass (Sq km)	Population				Densities			
		2006	2018	2025	2050	2006	2018	.2025	2050
Abi	335	144317	210607.5	262561.9	577064.3	430.797	628.6791	783.7669	1722.58
Akamkpa	4,943	419705	218470.4	272364.5	598608.6	30.28626	44.19794	55.10106	121.1023
Akpabuyo	816	272262	397322.7	495337.6	1088664	333,6544	486.9151	607.0313	4334.147
Bakassi	826	31641	46174.96	57565.79	126519.3	38.3063	55.9018.9	69.69224	153.1711
Bekwarra	304	105497	153955.9	191935.1	421839.1	347.0296	506.434	631.3654	4387.628
Biase	1,286	168113	245334	305855	672214.7	130.7255	190.7729	237.8343	522.7175
Boki	2,742	186611	272328.8	339509.2	746180.5	68.05653	99.31759	123.8181	272.13
Cal mimic	157	183681	268053	334178.5	734464.7	1169.943	1707.344	2128.525	4678.119
Cal south	270	191515	279485.4	348431.2	765789.6	709.3148	1035.131	4290.486	2836.258
Etung	903	80036	116799.7	145612.8	320031	88.63344	129.3463	461.2545	354.4086
Ikom	1,802	163691	238880.8	297809.8	654532.9	90.83851	432.5642	465.2663	363.2258
Obanliku	1,060	109633	159991.8	199459.9	438377.2	103.4274	150.9356	188.1697	413.5634
Obubra	1,086	172543	251798.8	313914.7	689928.4	158.8794	231.859	289.0559	635.2932
Obudu	520	161457	235620.6	293745.4	645600.1	310.4942	453.1165	564.8951	1241.539
Odukpani	1,424	192884	281483.3	350921.9	771263.8	135.4522	197.6708	246.4339	541.6178
Ogoja	1,156	171574	250384.7	312121.7	686053.8	148.4204	216.5958	270.0274	593.4721
Yakurr	670	196271	286426	357084	787806.9	292.9418	427.5016	532.9612	1171.354
Yala	2,041	211557	308733.5	384894.4	845929.3	103.6536	151.2658	188.5813	414.4681
Cross River	22,341	2892988	4221852	5263333	11567868	129.4923	188.9733	235.5908	517.7865

Figure 2: Population Dynamics in Cross River State
(Cross River State Bureau of Statistics, projected using 2006 as base)

The demographic transition in the state is characterized by a large number of dependents (young children and the elderly) relative to the working-age population, which can hinder the realization of the demographic dividend (Enang, Eni & Okpa, 2019). The population dynamics analysis emphasizes the importance of ensuring that a significant proportion of the population reaches working age. However, the presence of high infant mortality rates threatens this demographic transition, as it reduces the pool of individuals who survive to join the workforce. This situation can potentially limit the state's socio-economic development, as a robust demographic dividend relies on a healthy and productive workforce.

Dependency Ratio Analysis:

The analysis of the dependency ratio in Cross River State is of particular relevance due to the high infant mortality rates (Figure 3). According to the Cross River State Ministry of Health (2010), the dependency ratio is significantly affected by the presence of high infant mortality rates, leading to a greater number of dependents per 100 working-age individuals. The findings suggest that high infant mortality rates contribute to an increased dependency ratio, as a greater number of children do not survive to become part of the working-age population.

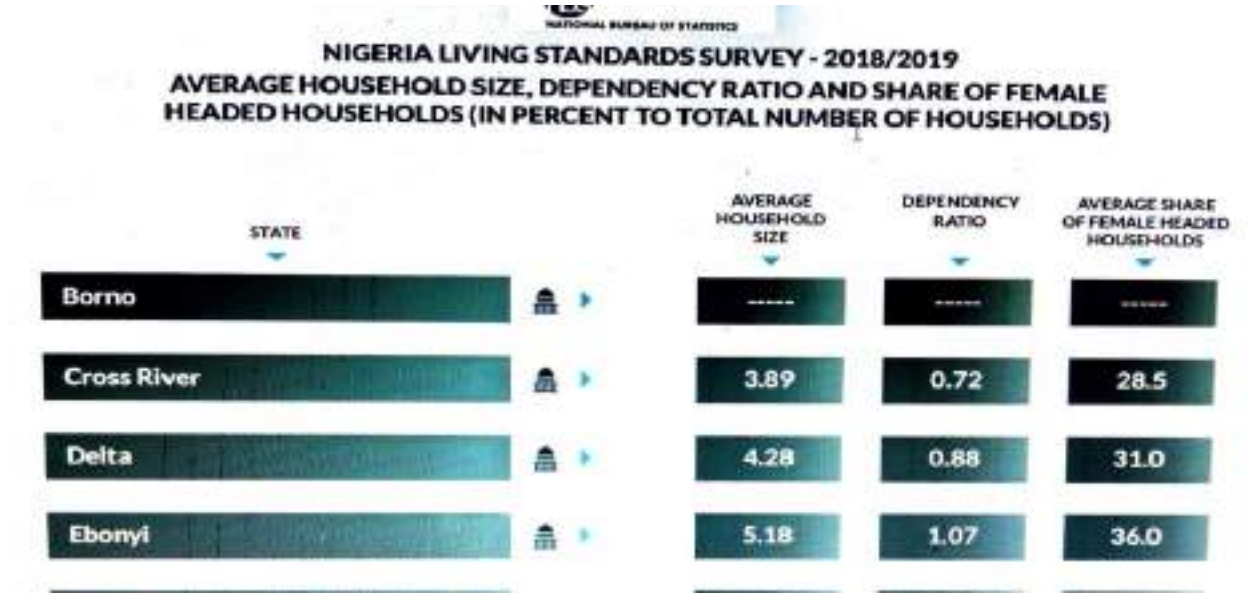


Figure 3: Dependency Ratio in Cross River State (National Bureau of Statistics, 2018/2019)

The implications of an elevated dependency ratio are multifaceted. It places a burden on the working-age population, who must support a larger number of dependents. This, in turn, can strain social and economic systems, affecting the quality of life and socio-economic development in the state (Ezeh, Ogbo, Odumegwu *et al.,* 2021). To harness the demographic dividend effectively, addressing high infant mortality rates is paramount to reduce the dependency ratio and unlock the state's potential for growth and development. Thus, the analysis of demographic trends in Cross River State highlights the pressing issue of high infant mortality rates and their consequences. These findings emphasize the need for targeted policies and interventions aimed at reducing infant mortality, improving healthcare and social services, and fostering a demographic transition that can drive sustainable socio-economic development in the state.

Socio-Economic Impact of Infant Mortality

High infant mortality rates in Cross River State have far-reaching socio-economic consequences, impacting various aspects of the state's well-being and development. The socioeconomic repercussions of infant mortality and their implications are discussed herein:

Economic Consequences: The persistently high infant mortality rates significantly affect the state's economy. Research shows that infant mortality results in a decreased labor force, reduced productivity, and a subsequent economic burden (Salami, Ebeh, Ali, & Yakubu, 2019). Families and communities must grapple with the emotional and financial costs associated with the loss of infants. Furthermore, the potential contributions of these individuals to the workforce are lost, hindering the state's economic growth. Addressing high infant mortality is not only a moral imperative but also an economic necessity to unlock the state's full potential for development.

Healthcare Expenditure: High infant mortality rates also impose a substantial financial burden on healthcare expenditure. The cost of providing medical care and support for newborns and infants is substantial, especially when there is a lack of adequate healthcare infrastructure. Moreover, the long-term healthcare needs for surviving children, born into environments with high infant mortality, can also place an ongoing burden on healthcare systems (Kiross, Chojenta, Barker et al., 2020). These financial implications underscore the urgency of investing in maternal and child healthcare to reduce infant mortality.

Resource Allocation: The consequences of high infant mortality extend beyond healthcare expenditure. Resources that could be allocated to

developmental initiatives are often redirected to address the immediate healthcare needs and social support required by families affected by infant mortality. This diverts funds and attention away from projects that could otherwise contribute to socio-economic development, such as education, infrastructure, and poverty reduction programs (Adeyinka, Muhajarine, Petrucka & Isaac, 2020; Dolan, Saunders & BinYishay, 2020).

The Potential for Demographic Dividend

Despite the challenges posed by high infant mortality rates, Cross River State still possesses the potential for demographic dividend, a period of opportunity for accelerated economic growth. The demographic transition in the state, characterized by a significant youth population, presents the possibility of enhanced productivity and innovation. To fully harness this demographic dividend, the reduction of infant mortality is pivotal. By ensuring that a substantial portion of the youth population reaches working age, Cross River State can unlock its potential for economic growth and development (Enang *et al.,* 2019). However, this realization hinges on addressing the underlying causes of high infant mortality, investing in healthcare, education, and social services, and implementing policies that promote the well-being of its young population (Patel et al.,2021). Thus, outlines of benchmarks, projections, potential healthcare interventions, and the socio-economic benefits of addressing infant mortality are put forward to harness the demographic dividend in the state.

Benchmarks and Projections:

Setting clear benchmarks for reducing infant mortality rates is essential. It's imperative that the state, in collaboration with relevant stakeholders, establishes specific targets for decreasing infant mortality. These benchmarks should be based on data-driven analyses and should align with global and national goals for child survival. Projections should also be made, outlining the potential demographic dividends that could be realized by achieving these benchmarks. These projections should take into account potential increases in the working-age population and their economic contributions.

Healthcare Interventions:

Reducing infant mortality rates requires a multi-faceted approach. A comprehensive strategy must include healthcare interventions that address both direct and underlying causes. These interventions may include:

- *Improved Maternal and Child Health Services:* Ensuring accessible and quality maternal and child health services, including prenatal care, skilled birth attendance, postnatal care, and immunization programs, is vital for reducing infant mortality.
- *Nutrition Programs:* Focusing on nutrition, particularly for pregnant and lactating mothers and infants, can significantly reduce the risk of infant mortality due to malnutrition-related complications.
- *Preventive Measures:* Implementing strategies to prevent common causes of infant mortality, such as low birth weight, preterm birth, and infections, is essential. This includes maternal education, infection control, and adequate sanitation.
- *Access to Clean Water and Sanitation:* Ensuring access to clean water and proper sanitation facilities can help reduce the risk of waterborne diseases and infections, which are significant contributors to infant mortality.
- *Health Education:* Promoting health education in communities can increase awareness and knowledge about infant care, hygiene, and prevention of diseases.

Socio-Economic Benefits:

Addressing high infant mortality rates in Cross River State has profound socio-economic benefits. These advantages include:

- *Enhanced Workforce:* As infant mortality rates decline, a larger proportion of the youth population survives to reach working age. This results in a more significant and productive workforce, which can contribute to economic growth and development.
- *Reduced Healthcare Expenditure:* Lower infant mortality rates reduce the financial burden on healthcare systems, freeing up

resources that can be redirected to other critical areas of healthcare, infrastructure, and education.

- *Poverty Reduction:* Reduced infant mortality contributes to poverty reduction by ensuring that families do not suffer the economic hardships associated with child loss and high medical expenses.
- *Improved Human Capital:* Lower infant mortality rates lead to increased human capital development as a healthier population is better positioned for education and skills acquisition. This, in turn, fuels innovation and productivity.
- *Community Well-Being:* Reducing infant mortality enhances the overall well-being of communities, as families and individuals experience less grief, emotional trauma, and financial stress. This contributes to social cohesion and community development.

Conclusion

The impact of infant mortality on demographic dividend, population dynamics, and socioeconomic development is both undeniable and significant the world over. High infant mortality rates not only represent a profound loss of young lives but also hinder the state's potential for sustainable growth and prosperity. Every child born is not only another mouth to feed but also another pair of hands to either weed the field or a mind to pioneer an industry. This review has illuminated the profound challenges posed by high infant mortality rates in Cross River State, Nigeria. It was discovered that Cross River State continues to experience disproportionately high infant mortality rates, reflecting underlying health, social, and economic disparities. More so, high infant mortality rates impact the demographic transition in the state, creating a large dependency ratio and hindering the realization of the demographic dividend. The economic consequences of high infant mortality are significant, with a decreased labor force and increased healthcare expenditure. Resource allocation is redirected from developmental initiatives to address the immediate needs of families affected by infant mortality. The potential for demographic dividend exists, provided that clear benchmarks are set for reducing infant mortality, and effective healthcare interventions are implemented. However, addressing high infant mortality rates can lead to a more robust workforce, reduced healthcare expenditure, poverty reduction, improved human capital development, and overall community well-being.

Implications for Policy and Practice

The implications of this review are far-reaching and offer practical guidance for policymakers and practitioners. Policymakers should prioritize and invest in maternal and child healthcare services, nutrition programs, and preventive measures to reduce infant mortality. Ensuring access to clean water and proper sanitation facilities should be a key policy objective to address the risk of waterborne diseases. Promoting health education in communities can significantly improve infant care, hygiene, and disease prevention. Establishing clear benchmarks for reducing infant mortality, in collaboration with stakeholders, is essential for realizing the potential for demographic dividend. Policymakers should consider reallocating resources from the immediate needs associated with infant mortality to other critical sectors, including infrastructure, education, and poverty reduction.

Limitations:

While this review provides valuable insights, it is essential to acknowledge that the availability and quality of data on infant mortality rates and other related variables varies, and reliance on official government records was a potential bias. Findings from this study are specific to Cross River State and are not directly transferable to other states in the country. The socio-economic context is dynamic, and the findings of this review may evolve over time.

Recommendations

The findings of this research underscore the critical need for targeted interventions to reduce infant mortality in Cross River State. To this end, the following recommendations are put forward:

(i) ***Investment in Healthcare Infrastructure:*** Cross River State should prioritize investments in healthcare

infrastructure, with a specific focus on improving maternal and child health services. This includes expanding access to prenatal care, enhancing neonatal care facilities, and ensuring the availability of skilled healthcare professionals.

(ii) ***Health Education and Awareness Programs:*** Implement comprehensive health education and awareness programs aimed at promoting maternal and child health practices. These programs should target both urban and rural communities and cover topics such as proper nutrition during pregnancy, family planning, and safe childbirth practices.

(iii) ***Poverty Alleviation and Social Safety Nets:*** Addressing the underlying socio-economic determinants of infant mortality is crucial. Implement poverty alleviation programs and social safety nets to provide financial support to vulnerable families, ensuring they can access healthcare services without financial constraints.

(iv) ***Education and Female Empowerment:*** Promote education, particularly for women and girls, as an effective means to reduce infant mortality. Educated women tend to make better healthcare decisions and have healthier pregnancies. Empowering women economically and socially can have a positive impact on maternal and child health.

(v) ***Community-Based Interventions:*** Develop community-based interventions that involve local leaders, traditional birth attendants, and community health workers. These individuals can play a pivotal role in educating communities about maternal and child health and facilitating access to healthcare services.

(vi) ***Use of Local Languages:*** Disseminate health education materials and messages in local languages to ensure that the information is accessible and easily understood by the target audience.

(vii) ***Mobile Health Units:*** Implement mobile health units that can deliver healthcare services and education directly to underserved communities, particularly in remote areas.

(viii) ***Monitoring and Evaluation:*** Establish a robust monitoring and evaluation system to track progress in reducing infant mortality rates and improving demographic dividends. Regular data collection and analysis will help policymakers make informed decisions and adjust strategies as needed.

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SELF-MEDICATION AND ITS IMPLICATIONS AMONG THE ELDERLY IN RURAL AREAS OF CROSS RIVER STATE, NIGERIA: PANACEA FOR DEMOGRAPHIC DIVIDEND AND SUSTAINABLE LIVELIHOOD

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ABSTRACT
This study was carried out to investigate the influence of self-medication and its implication on the health of the elderly in rural areas of Cross River State, Nigeria. The survey research design was adopted for this study, with population of the study comprising all the elderly male and female inhabitants of the study area. A sample of 350 respondents was selected for the study through census and purposive sampling techniques. A structured questionnaire was used to generate data for the study. Response to items on the questionnaire was patterned on a modified 4-point likert scale. Pearson's Product Moment Correlation and Chi-square methods were statistical techniques used to test the hypotheses. The three hypotheses were tested at 0.05 levels of significance. The results of findings revealed that, a significant relationship exist between the nature of self-medication, outcome of self-medication as well as reasons of self-medication among the elderly in rural area of Cross River State, Nigeria. The study recommended among others that healthcare services should be made accessible to all as a way of discouraging all manner of self-medication especially among the elderly that cannot afford the cost of treatment. They should equally be sensitized on the need to consult a doctor, thereby acquiring information related to drugs and their usage.

Keywords: Self-medication, Elderly, Implications, Rural areas, Cross River State, Nigeria

1.1 INTRODUCTION

Self-medication is an age long practice. Every day, people are advancing in the practice of self-medication especially in economically deprived communities. To the lay man, self-medication means the use of drugs to treat self-diagnosed disorders. Self-medication has been perceived differently by various studies, discipline and individual. Studies have shown that there is no universal definition of self-medication. Baracaldo-Santamaria, Trujillo-Moreno, Perez-Acosta, Feliciano-Alfonso, Calderon-Ospina, and Soler, (2022), sees self-medication as a global and growing phenomenon that represents

a public health problem due to antibiotics resistance, risk of dangerous side effects, interactions between drugs, and disease masking. Self-medication as defined by Zheng, Liu, Tang, Hu, & Ung, (2023), is the treatment of self-recognize disorders or symptoms by use of medicines without prior consultation by a qualified health professional or intermittent/continued use of medicines previously prescribed by a physician for chronic/recurring diseases. It is further described as the selection and use of herbal or chemical medicine by individuals to treat illnesses and possible symptoms. It is also seen as the use of drugs without the advice, recommendation, prescription, diagnosis and supervision of a physician for the treatment of disease or illness (Bakhtiar, Bastami, Sharafkhani & Almasian, 2017). To Rafati, Baniasadi, Dastyar, Zoghi, Ahmadidarrehsima, Salari and Rafati (2023), self-medication is referred to as the use of drugs to treat a disease or self-diagnosed symptoms without a doctor's prescription. self-medication is a widespread habit throughout the world and is considered an essential part of health policy in various countries, such as Saudi Arabi, Iran, Kuwait and Lebanon etc. (Zheng et al., 2023) since COVID-19 infection is high in these areas, self-medication had become highly popular due to risk of virus infection and overwhelming medical resources. As a result, pharmacists are well positioned to provide public health education and disease prevention (Zheng et al., 2023).

Furthermore, previous studies (Tajvar, Yaseri, Karami & Mohammadi, 2021; Roberts, Roberts, Burns, Goodlet, Chapman & Cyphers, 2020;), has shown that older people have a greater likelihood of resorting to self-medication because of the biochemical, physiological and pharmacokinetic changes of their body, which can cause adverse effect to their health. The elderly women are significantly more likely to self-medicate than the male counterpart; due to the fact that they usually seek medical services more frequently. The medicals see self-medication as a double-edged blade, one edge targets the pathogenic agents, while the other edge endangers human life. To individuals, emphasis is on safety, preventive, promotive and disease control (Almadi, Aladwani, Alqahtani, Bin Nouh & Alanazi, 2021). Mostly, people self-medicate only for the sickness to relapse after sometime. Studies (Morgan, Arimiyaw & Nachibi, 2023., Mbam, 2022) have shown that self-medication is influenced by several factors, including age, sex, education level, marital status, socioeconomic status, health insurance coverage, place of residence, and availability of medications for individuals.

Though self-medication has some advantages and disadvantages, it is on this note that the World Health Organization, WHO (2022), promotes the practice of self-medication without medical consultations for effective and quick relief of symptoms to reduce the burden of health-care services centers especially in rural communities, which are often understaffed and inaccessible thereby encouraging one to see a physician if symptoms persist. Although self-medication contributes to lessening of the economic burden on patients, healthcare systems, government agencies, and insurance companies, its penalties cannot be overlooked since inappropriate use of medications through self-medication may cause vital complications, such as: bacterial resistance, drug interactions, severe side effects, increased fatal disease and malignancy, drug dependence, intentional and unintentional poisoning, and even death, as well as wasting resources, delay in treatment, and undesirable health outcomes (Rafati et al., 2023). Studies by Almalki, Almuqati, Alwezainani, Makki, Alqasem, Alsharif, & Hassan-Hussein, (2022); Almadi, Aladwani, Alqahtani, 2021). As of 2020, Nigeria's population amounts to about 206 million people, 9.4 million people were aged 60 years and older. Between 2018 and 2020, Nigeria's elderly population experienced an increase of about 740 thousand people (Mbam, Halvorsen & Okoye, 2022; Statista, 2022).

Non-communicable diseases such as cancer, joint pain, heart conditions, hypertension, diabetes, neurosurgical conditions etc. requiring huge amount of money and extreme care for its management are common in old age. Sridhar, Shariff, Dallah, Anas, Ayman and Rao, (2018), affirmed the above statement in their report where they revealed that about 13 percent of the elderly in the U.S are hospitalized because of medication problems or medicine poisoning, which has resulted in 106,000 deaths and has imposed 58

billion dollars expense on the U.S healthcare system. Whereas, WHO (2022), in its report which is geared towards meeting the health needs of aging population has it that the prevalence of self-medication among the elderly in Nigeria have been reported to be about 85%. It is also pertinent to mention that self-medication may affect the utilization of medical facilities and lead to people missing out on provider-initiated services such as immunization, HIV testing and counselling and many others (Mbam et al., 2022).

The most common drugs taken via self-medication include painkillers, influenza and cold tablets, antibiotics, gastrointestinal tablets, analgesics, eye drops and vitamins, (Almadi et al., 2021). Frequent use of drugs that are not prescribed by doctors can damage body organs especially when the drugs are not properly administered or overdose is done; and this will be disastrous in the case of the elderly. Self-medication can be in the form of using formerly prescribed drugs, traditional and home remedies, and supplements. It further includes use of unprescribed medications, medication refills, changing the dosage of prescribed medications, prescribing a drug for friends and relatives, leftover medications from previous medications etc. (Rafati et al. 2023) According to WHO (2022), if patient information leaflet on medication pack is ignored and overlooked; it can cause harm which can damage one's health and even lead to death. Many factors encourage the elderly in rural communities to self-medicate, it includes: proximity to access health care, high cost of treatment, problems with insurance, unavailability of medications, disregarding the importance of the disease, access to previously prescribed medicines, lack of knowledge, cultural, social and economic factors (Das, Ahmed Jafry, Zulfiqar Hyder Naqvi & Kumar, 2020). Self-medication is advancing among rural dwellers than urban population. it is usually considered as first choice remedy for early disease symptoms and it's a part of patient's medical behaviour. In Nigeria, almost every pharmacy would sale a drug to customer without prescription. Patients who practice self-medication fail to understand that underlying pathology of disease may not be the same, which may lead to serious drug-related problems. This study therefore focuses on understanding of self-medication and its implication among the elderly in rural areas of Cross River State, Nigeria.

1.2 Statement of the problem

self-medication otherwise known as self-care is regarded as unnecessary and potentially unhealthy practices. Its intention to treat sickness (rather than to prevent disease) remains a familiar aspect of health care in many countries including Nigeria to this day. This is in the form of self-care to health; and the elderly are not left out. The problems associated with self-medication are enormous and the effects cannot be underestimated, this is because self-medication has created both social and economic problems to the elderly and the society at large.

Empirical studies (Almadi et al., 2021; Mbam et al., 2022), over the years carried out on self-medication states that it is a very common practice especially in economically deprived communities. The misuse of medicines is another reason for the development of drug resistance. The increasing self-medication practice requires more and better education of both the public, especially the elderly and even health professionals to avoid irrational use of drugs. According to Mogan et al., (2023), people self-medicate mostly for the sickness to relapse after sometime. Furthermore, frequent use of drugs not prescribed by doctors can damage body organs especially when the drugs are not properly administered or overdose is done. The effect will be adversely severe in the health of the elderly, whose immune system is relatively low to withstand the complications. It is also pertinent to mention that self-medication may affect the utilization of medical facilities and lead to people missing out on provider-initiated services such as immunization, HIV testing and counselling, covid-19 investigation and many others (Almalki et al., 2022).

It is common for individuals to feel unwell at one time or the other and the innate survival instinct in humans produces a tendency to treat themselves. Every day all over the world, people irrespective of how knowledgeable they maybe; act on their health without consulting qualified health personnel, they practice what is known as self-medication or self-care. It is a lifelong habit and culture, which is practiced largely and mostly all over the world, Nigeria

inclusive and Cross River State in particular. Medicines for self-medication are often called nonprescription or over the counter (OTC) products, mostly gotten from pharmacies, chemists or other outlets, while those that require a doctor's prescription are generally called prescription products (Rx products). (Roberts et al., 2020; Tiguman, Silva, & Galvao, 2020). Even though self-medication is perceived as a health-related hazard, people without health insurance may try to avoid paying for the general practitioner's services and other laboratory tests by going directly to a pharmacy. Self-medication can be attributed to socioeconomic factors such as: lifestyle, ready access to drugs, the increased potential to manage certain illness through self-care and greater availability of medicinal products, social demographic, epidemiological, accessibility and availability of health care and exposure to advertisements (WHO, 2022; De Paula, Gonzaga, Oliveira, Feibelmann & Markus, 2020).

This study answers the following questions:

1. How does the nature of self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?
2. To what extent do the outcome of self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?
3. How does the reason for self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?

2.1 Literature Review

The practice of self-medication is a global phenomenon, mostly practiced by rural dwellers and common among women and those who have low socioeconomic status (Ayanwale, Okafor & Odukoya, 2017; Awosusi & Konwea, 2015; Karimy, Razaee-Momtaz, Tavousi, Montazen & Araban, 2019). Further studies have posited a contrary opinion on this and revealed that self-medication is prevalent among males than females, while others found no strong association between gender (Awusasi & Konwea, 2015; Donmez, Gungor & Gov, 2018). Self-medication comprises the use of modern and traditional medication for self-treatment without consulting a physician for diagnosis, prescription and treatment (Esan, Fasoro, Odesanga, Esan, Ojo & Faeji, 2018). Self-medication if not controlled could lead to drug abuse or substance abuse and drug dependency, and drugs administered by self includes paracetamol, antibiotics, cough syrup, anti-malarial, analgesics, antipyretics etc.; which are sold in the market, shops, stalls, motor-parks, and unauthorized places without license (Anyanwale, et al; 2017). And persistent use of those drugs could lead to serious medical conditions such as: infertility, allergic, psychiatric conditions, increased morbidity and mortality and even death (Eshiet, Essien, Effiong & Ekwueme, 2015). The sale of over the counter (OTC) and prescribed drugs by petty traders and road side hawkers is very common in Nigeria.

Self-medication is more likely to occur among poorly informed people, who has limited access to health care and cannot afford the cost of treatment as a result of high illiteracy level and poverty (Anyanwale, et al., 2017). Donmez et al., (2018) did not support the above assertion but postulated that people self-medicate even in situations where there is availability of health facilities. People refrain going to the doctor with their medical problems because they assume to have sufficient information related to drugs and their usage. One reason for the overconsumption of drugs in the elderly is the higher risk of getting many diseases at older age. The elderly suffers from diseases such as diabetes, cardiovascular disease, and cancer (Donmez et al., 2018). Self-medication is not restricted to a region or race; both developing and developed countries are experiencing the menace of inappropriate self-medication. Also, the level and pattern of self-medication varies among these nations (i.e., developing and developed countries), and this may be due to disparities in the cultural, economic, health care system and policies in each nation (De Paula et al., 2020). Furthermore, self-medication is prevalent in Nigeria as a developing nation, where there is poor level of literacy, scarcity of health information and non-implementation of government policies on health issues.

The International Pharmaceutical Federation (FIP) and the World Self-Medication Industry (WSMI), defined self-medication as the use of non-prescription medicines by patient's own initiatives. They further perceive self-

medication as treatment of common health problems with medicines specially designed and labelled for use without medical supervision and approved as safe and effective for such use (FIP & WSMI, 1999). FIP and WSMI seek to ensure that pharmacists and manufacturers appropriately discharge their interacting responsibilities. The interest of the public will be served when pharmacists and nonprescription medicines industry work together to ensure that self-medication is responsible. It is only undertaken when it is appropriate to do so and advice is always given to seek a consultation with a physician when that is necessary. Although popular and successful, the theory of planned behaviour (TPB) is not without criticism. As major critique is on the theory's sufficiency- the proposition that attitudes, subjective norms, and perceptions of behavioural control are sufficient to predict intentions and behaviors. Secondly, the assumptions of the theory of reasoned action were challenged by investigators, where they argued that reasoned action may represent only one mode of operation, which is controlled or deliberate.

2.2 Theoretical framework

This paper adopts the theory of planned behaviour (TPB), proposed by Icek Ajzen (1985). The theory was developed from the theory of reasoned action, which was proposed by Martin Fishbein together with Icek Ajzen in 1980 to predict an individual's intention to engage in a behaviour at a specific time and place. The theory was intended to explain all behaviours over which people have the ability to exert self-control. The key component to this model is behavioural intentions, which are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome (Pineles & Parente, 2012). The TPB has been used successfully to predict and explain a wide range of health behaviour and intentions including smoking, drinking, breastfeeding and substance use among others.

The decision of whether to use medication without consulting a physician or not to use medication unless a physician prescribes is influenced by a person's beliefs about treatment and the expected outcome. The strength of a person's attitude is influenced by how much value is placed on the outcome of the behaviour. Therefore, a person who believes to use analgesics that is un-prescribed for treatment of disease or illness is safe and socially acceptable will more likely use these medicines. The theory of planned behavior focused on the effect of behavioural attitudes on the intention to self-medicate. Self-medication in Nigeria is socially acceptable and easy to access compared to passing through the rigorous process of consulting a physician for investigation, diagnosis and treatment.

3 Research methodology

The study adopted survey design where the probability techniques specifically simple random sampling and non-probability such as purposive sampling techniques were employed to select all elderly male and female inhabitants within the rural areas of Cross River State, Nigeria. Quantitative data collection approach was used. This was done to ensure that all the variables measure numerically and to provide statistical information on the factors responsible for self-medication among the elderly in rural areas of Cross River State. The quantitative approach also helped in gathering empirical data to give readers and policy makers an understanding of the implication of self-medication using quantifiable approach.

The research setting is rural areas of Cross River State, Nigeria. Population of this study consisted of all the elderly male and female in rural areas of Cross River State, who were involved in self-medication. Sample size for this study was three hundred and fifty (350) elderly (Male and Female), who were selected using purposive and simple random methods. Purposive sampling was employed to select the various towns where those vulnerable to self-medication resided. While simple random sampling was used in the selection of research subjects (elderly male and female) to guarantee equity in the number that was used in the sample. A total number of three hundred and fifty (350) questionnaires were administered after which three hundred (300) were retrieved. The instrument of data collection for this study was

questionnaire. It was divided into two main sections; Section 'A and B' containing the sub variables embedded in the objectives using the four-point Likert scale. Descriptive statistics was used in the analysis of data. The descriptive tools comprised of tables and percentages used in the analysis of demographic variables while, the Pearson Product Moment Correlations coefficient (r) and Chi-square were used in the test of hypotheses at 0.05 level of significance.

4.1 Data presentation and analysis

This section has to do with the demographic characteristics of respondents. The data collected from the questionnaire were presented and analyzed with the use of tables and percentages. Also, appropriate statistical interpretation based on the results was carried out. The statistical analysis of the data collected and the results were based on the hypotheses earlier formulated to guide the researcher on the study. In the tables, simple percentages were used for the demographic data and test of hypotheses. The questionnaire was designed in two sectional headings: Demographic data and substantive information on Self-medication among the elderly in rural areas of Cross River State, Nigeria. Out of the three hundred and fifty (350) administered questionnaire, three hundred (300) were properly filled and returned while fifty (50) of them were wrongly filled. The analysis in table 1 was on the demographic data of respondents. Item 1 was on the sex of respondents; it shows that out of the 300 respondents, 147(49 percent) were male while 153(51 respondents) respondents were female making a total of 100 percent. Item 2 showed the age of respondents, it revealed that out of the 300 respondents, 119 (39.67) percent) were between the ages of 20-35 years while 181 (60.33) respondents were between the ages of 36 and above years sample making it a total of 100 percent. Item 3 below was on marital status of respondents, it showed that out of the 300 respondents, 31(64.58 percent) were single, 295 (98.33percent) were married, making it a total of 100 percent.

Item 4 below was on occupation, it showed that out of the 300 respondents, 6(2 percent) respondents were self-employed, 17(5.67 percent) respondents were engaged in business and 277(92.33 percent) were civil servants making it a total of 100 percent. Item 5 was on religion of respondents. It showed that, 256(85.33 percent) were Christians 3(1 percent) respondent were traditional African religion believers and 41(13.67 percent) were Muslims sample making it a total of 100percent**.** Item 6 was on educational attainment of respondents. It showed that 12(4 percent) respondents had primary education, 175(58.33 percent) had secondary school education**,** 113 (37.67percent) respondents had tertiary education making a total of 100percent. Item 7 was on the nature of self-medication. It showed that 19(6.33 respondents) used traditional medication, 254(84.67percent) respondents patronize orthodox medicine and 27 (9 percent) respondents patronize both traditional and orthodox medicine making it a total of 100 percent.

Table 1 Presentation of demographic characteristics of respondents

Variable	Category	No. of respondents	Percentage (%)
1. Sex	Male	147	49
	Female	153	51
Total		**300**	**100**
2. Age	20-35	119	39.67
	36 and above	181	60.33
Total		**300**	**100**
3. Marital status	Single	5	1.67
	Married	295	98.33
Total		**300**	**100**
4. Occupation	Self employed	6	2
	Business	17	5.67
	Civil servant	277	92.33
5. Religion	Christianity	256	85.33
	African Traditional Religion (ATR)	3	1
	Islam	41	13.67
Total		**300**	**100**
6. Educational attainment	Primary	12	4
	Secondary school	175	58.33
	Tertiary	113	37.67
Total		**300**	**100**
7. Nature of self medication	Traditional	19	6.33
	Orthodox	254	84.67
	Both traditional and orthodox	27	9
		300	**100**

Source: Field work 2023

Research question 1: How does the nature of self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?

To analyze this question, items 8 to 10 on the questionnaire were used and responses presented in percentages as shown in table 2. From the table, out of the 300 administered questionnaire, majority of the respondents 229(76.33%) respondents which represented a greater proportion agreed that self-medication is a regular practice among the elderly in rural areas of Cross River State and 71(23.67%) respondents disagreed, 233(77.67%) respondents agreed that people react to self-medication while 67(22.33%) respondents disagreed and 240(80%) respondents agreed that self-medication is a cultural practice and 60(20.%) respondents disagreed making a total of 100 percent of the population sampled

Table 2: The nature of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria

Items	Strongly Agreed/Agreed		Strongly Disagreed/Disagreed		Total	
Nature of self- medication	Freq.	%	Freq.	%	Freq	%
Self-medication is a regular practice among the elderly	229	76.33	71	23.67	300	100
People react to self-medication	233	77.67	67	22.33	300	100
Self-medication is a cultural practice	240	80	60	20	300	100

Source: Field work 2023

Research question 2: To what extent do the outcome of self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?

To analyze this question, items 11 to 13 on the questionnaire were used and responses presented in percentages as shown in table 3. From the table, out of the 300 administered questionnaire, a huge number of the respondents 226(75.33%) respondents agreed that infectious diseases are mostly treated by self-medication and 74(24.67%) respondents disagreed; 228 (76%) respondents agreed that getting the actual dosage of drug when self-medicating is a challenge, 72 (24%) respondents disagreed; 199(66.33%)respondents agreed that Reactions to self-medication are mostly handled by orthodox health providers, and 101(33.67%) disagreed making it a total of 100 percent of the population sampled.

Table 3: The Outcome of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria

Items	Strongly Agreed/Agreed		Strongly Disagreed/Disagreed		Total	
Outcome of Self- Medication	Freq.	%	Freq.	%	Freq	%
Infectious diseases are mostly treated by self-medication	226	75.33	74	24.67	300	100%
Getting the actual dosage of drug when self-medicating is a challenge	228	76	72	24	300	100%
Reactions to self-medication are mostly handled by orthodox health providers	199	66.33	101	33.67	300	100%

Source: Field work 2023

Analysis of question 3: How does the reason for self-medication and its implications affect the elderly in rural areas of Cross River State, Nigeria?

To analyze this question, items 14 to 16 on the questionnaire were used and responses presented in percentages as shown in question 4. From the table, out of the 300 administered questionnaire a greater proportion 237(79%) of respondents agreed that financial status influences self-medication among the elderly and 63(21%) respondents disagreed; 206(68.67%) respondents agreed that people self-medicate because they anxiously want the pain to go, and 94(31.33%) respondents disagreed; 274(91.34%) respondents agreed that self-medication is as a result of peoples past experiences and 26(8.66%) respondents disagreed making it a total of 100 percent of the population sampled.

Table 4: Reason for self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria

Items	Strongly Agreed/Agreed		Strongly Disagreed/Disagreed		Total	
Reason for self- medication	Freq.	%	Freq.	%	Freq.	%
Financial status influences self-medication among the elderly	237	79%	63	21%	300	100%
People self-medicate because they anxiously want the pain to go	206	68.67%	94	31.33%	300	100%
Self-medication is as a result of peoples past experiences	274	91.34%	26	8.66%	300	100%

Source: Field work 2023

4.2 TEST OF HYPOTHESES

Hypothesis one: There is no significant relationship between the nature of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria.

To test hypothesis 1, Pearson Product Moment Correlation coefficient (r) was used at 0.05 levels of significance and accessible in Table 5. Result of analysis showed that calculated r-value 0.883** is greater than critical r-value 0.196 at 0.05 levels of significance with 298 degrees of freedom. This shows that a significant relationship exists between the nature of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria.

Table 5: Summary of Pearson's product moment correlation coefficient (r) computation of the relationship between nature of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria.

Variables	N	Mean	SD	r-value	Sig.
Nature of self-medication	300	1.8200	1.18276		
				.883**	05
Implications amongst the elderly in rural areas	300	1.9000	.93430		

Source: Field work 2023; Significant at *P< .05; Critical r-value = 0.196 d.f = 298

Hypothesis two: Outcome of self-medication and its implications does not have significant influence on the elderly in rural areas of Cross River State, Nigeria.

Simple percentage (%) and Chi-square (X^2) were employed to test the hypothesis at 0.05 levels of significance accessible in table 6. Result of the analysis showed that calculated r-value 77.067[a] is less than critical r-value 7.81 at 0.05 levels of significance with 3 degrees of freedom. This showed that outcome of self-medication and their implication does not have significant influence on the elderly in rural areas of Cross River State, Nigeria.

Table 6: Chi-square test statistics on outcome of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria

Variables	Observed N	Expected N	Residual	D.f	Cal. X^2	Sig.
SA	114	75.0	39.0	3	77.067*	.05
A	112	75.0	37.0			
SD	38	75.0	-37.0			
D	36	75.0	-39.0			
Total	300					

Source: Researcher's field work 2023

Hypothesis three: Reason for self-medication and its implications has no significant correlation with the elderly in rural areas Cross River State, Nigeria.

Pearson's Product Moment Correlation Coefficient (r) was adopted for analysis. To test hypothesis 3; Pearson Product Moment Correlation coefficient (r) was used at 0.05 levels of significance and accessible in Table 7. Result of analysis in Tables 6 showed that calculated r-value. 0.767^{**} is greater than critical r-value 0.196 at 0.05 levels of significance with 298 degrees of freedom. This showed that a significant relationship exists between the reasons for self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria.

Table 7: Summary of Pearson's product moment correlation coefficient (r) computation of the correlation between reasons of self-medication and its implications among the elderly in rural areas of Cross River State, Nigeria.

Variables	N	Mean	SD	r-value	Sig.
Reasons of Self Medication	300	1.7800	1.25039		
				.767**	05
People of Cross River State	300	2.0000	1.00833		

Source: Field work 2023; Significant at *P< .05; Critical r-value = 0.196 d.f= 298

4.3 Discussion of findings

The use of medicine without medical supervision and approval as safe and effective for such use is very common in the society in recent times. Evidence showed that a person's attitude is influenced by how much value is placed on the outcome of self-medication. It was observed that one, who believes that use of analgesics that are prescribed for treatment of disease or illness are safe and socially acceptable will more likely use these medicines. The findings in table two (2) showed that a huge number 229 (76.33percent) of the elderly in rural areas of Cross River State sees self-medication as a regular practice in the study area. The nature of self-medication and its implications depends largely on the status of elderly involve in self-medication. This finding agrees with Anyanwale et al., (2017) which stated that self-medication is more likely to occur among the poorly informed people who have limited access to health care and cannot afford the cost of treatment as a result of high illiteracy level and poverty. It also revealed that the elderly in rural areas of Cross River State react to self-medication even as it is a cultural practice. It was also gathered that self-medication is not free from

negative health repercussions.

The study also revealed that outcome of self-medication and its implications significantly influences the elderly in rural areas of Cross River State, Nigeria. From the investigation as shown in table three (3) a large proportion 226(75.33percent) of the respondents stated that infectious diseases are mostly treated by self-medication, and people find it difficult to consult medical experts because self-medicating also yield result. This also tallies with the finding of Donmez et al., (2018), which revealed that people refrain from going to the doctor with their medical problems because they assume to have information related to drugs and their usage.

It was also gathered that a significant relationship exists between reasons for self-medication and its implications among the elderly in rural areas of Cross River State. From the finding as shown in table four (4) a greater proportion 237(79percent) of respondents revealed that financial status influences self-medication, the need to ward off the pain quickly and due to peoples past experiences. It was as well revealed that the knowledge of drugs used in previous treatment significantly influences self-medication and the stress involved in seeking healthcare in health facilities among the people of the study area. This is in line with data gotten via the interview session which one of the informants stated thus:

> I chose to self-medicate because I know the treatment of the common sickness that I suffer from; which is malaria and typhoid. I also know the drugs for both orthodox and traditional treatment. I do this, in order to avoid the rigorous process of consulting a physician who will first do investigation, diagnosis before treatment.

This confirms that all the indicators; nature of self-medication, outcome of self-medication and reason for self-medication has strong influence on self-medication and its implications among the elderly in Cross River State, Nigeria. The elderly self-medicate with all amount of confidence without considering the negative repercussions hence the need for education and policy implementation to curb the menace.

5.1 CONCLUSION AND RECOMMENDATIONS

Considering research results, conclusion was drawn that; Nature of self-medication, outcome of self-medication and reasons for self-medication and its implications are very key determinants of self-medication among the elderly in rural areas of Cross River State, Nigeria. The quest for fast pain relief, past experiences and financial status are indisputable reasons why the elderly self-medicate in rural areas of Cross River State, Nigeria, making it crucial for education and policy implementation to curb the menace among the elderly in the rural societies.

Based on the findings, the following recommendations were made:

1. Healthcare services should be made accessible to all as a way of discouraging all manner of self-medication especially among the elderly that cannot afford the cost of treatment.

2. There is need to sensitized the elderly and the general public on the need to consult a doctor, thereby acquiring information related to drugs and their usage. this will go a long way of making the elderly to know that the outcome of self-medication is always disastrous to health.

3. They should be exposed to the fact that drugs used in previous treatment should not be consumed in subsequent health conditions in a bid to avoid the rigorous process of consulting a physician who will first investigate, diagnose before treatment.

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DEMOGRAPHIC AND SOCIOECONOMIC DETERMINANTS OF UNDER-FIVE MORBIDITY AND MORTALITY IN GOMBE STATE

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Abstract
This study examined the demographic and socioeconomic determinant of under-five morbidity and mortality in Gombe State. Child mortality is the probability that a child born in a specific year or period would die before reaching the age of five. Goal 3 of SDG centred on ensuring healthy lives and promoting well-being for children as well as ending preventable deaths of newborns and under-five children by 2030. The objectives of the study are to: identify the major prevalent under-five diseases in Gombe State; to examine the influence of child's demographic characteristics on under-five diseases, as well as to examine the influence of child's mother demographic and socioeconomic determinants on under-five mortality. The study utilized both quantitative and qualitative data to obtained information from the pool of respondents. Quantitative data such as medical records of under-five children and their mothers were generated while qualitative data was obtained using Focus Group Discussion (FGD) and In-depth interview. A cross sectional Hospital Medical Records of under-five children from 2007- 2016 was was utilized. The data was analyzed using descriptive statistics such as tables and charts. Logistics regression was used for inferential statistics. The result showed that malaria fever accounted for 50% of under-five morbidity and mortality in Gombe State. Also, age of the child and mother's age significantly influenced under-five mortality in Gombe State. The result indicates that children that their mothers are younger are more likely to experience under -five mortality compares to more advance mothers. Likewise, educational qualification of mother was found to be significantly associated with under-five mortality. More efforts should be put in place by government at all levels and NGOs on how to curtail malaria fever. These efforts may include the provision of treated mosquito net, effective sensitization of mothers on proper usage of treated mosquito net, provision of dedicated malaria treatment facilities/units, and provision of affordable/subsidized malaria treatment. Also, efforts should be put in place to promote girl-child education.

INTRODUCTION

Child mortality is one of the major indicator of both Sustainable Development Goal (SDG) and Millennium Development Goal (MDG). Under-five mortality is the probability that a child born in a specific year or period would die before reaching the age of five (Preston & Haines, 2014). Goal 3 of SDG centred on ensuring healthy lives and promoting well-being for children as well as ending preventable deaths of newborns and under-five children by 2030. The targets are to: reduce newborn mortality to at least as low as 12 per 1,000 live births in every country; and to reduce under-five mortality to at least as low as 25 per 1,000 live births in every country. (United Nations (UN) (2015).

The 2019 globally estimate show that 5.2 million children under the age of 5 years died mostly from preventable and treatable diseases such as measles, diarrhoea, tetanus, malnutrition. Out of this, children aged 1 to 11 months accounted for 1.5 million of these deaths while children aged 1 to 4 years accounted for 1.3 million deaths. Newborns (under 28 days) accounted for the remaining 2.4 million deaths (World Health Organization (WHO, 2020).

Under-five mortalities are global observable fact and two regions, Southern Asia and Sub-Saharan Africa accounted for 39% and 38% of this mortality respectively. Worldwide, the estimate shows that five countries account for half of all under-five deaths. These countries are India (24%), Pakistan (10%), Nigeria (9%), the Democratic Republic of the Congo (4%), and Ethiopia (3%) (United Nation (UN) Reports, 2017).

\ The United Nations Children's Fund (UNICEF, 2021) reported a substantially declined in the under-five mortality rate from 93 death per 1,000 live births in 1990 to 37 deaths per 1,000 live births in 2020. However, despite this considerable progress, improving child survival remains a matter of concern, especially in developing countries. In 2020, roughly 13,800 under-five deaths occurred every day and the causes of these deaths are mostly preventable and avoidable if adequate measures such as proper sanitation, immunization are put in place (UNICEF, 2021) . In 2019, 122 countries have met the SDG target for under-five mortality and a further 20 countries are expected to meet the target by 2030 if current trends continue in which Nigeria is included. However, accelerated progress will be needed in 53 countries, which may not achieve the target by 2030 on current trends. Thirty of these countries will need to double their current rate if they must meet the SDG and 23 will need to triple their current rate so as to meet the SDG. Meeting the SDG target would reduce the number of under-five deaths by 11 million between 2019 and 2030. Efforts are still needed in Sub-Saharan Africa and South East Asia to prevent 80 percent of under-five deaths.(WHO, 2020)

In Canada, under-five mortality fell gradually from 20.9 deaths per 1,000 live births in 1971 to 4.98 deaths per 1,000 live births in 2020. In India, the records revealed that the under-five mortality rate in 2022 was 27.70 deaths per 1000 live births, a 3.74% decline from 2021 which stood at 28.77 deaths per 1000 live births. In Bangladesh, under-five mortality in 2022 was 22.61 deaths per 1000 live births. The under-five mortality rate in South Africa fell gradually from 143.83 deaths per 1,000 live births in 1971 to 32.63 deaths per 1,000 live births in 2020. However, in Kenya, 2022 reports shows that under-five mortality was 31.77 deaths per 1000 live births (WHO, 2020).

In Nigeria, progress has been made on the reduction of under-five mortality. For instance, in 2016, the under-five mortality rate was 104.3 deaths per 1,000 live births. However, in 2020, the under-five mortality rate was 95.12 deaths per 1,000 live births. Every day, Nigeria loses about 2,300 under-five children, making the country one of the largest contributors to under-five mortality in the world (UNICEF, 2017). The degree and causes of under-five mortality vary among the 36 states and the Federal Capital Territory (FCT). The study conducted by Alaba, Olubusoye & Korter (2014) revealed that the hot spots for under-five mortality are Kano, Katsina, Jigawa and Bauchi States while Imo, Enugu, Anambra, Abia, Delta, Edo, Ekiti, Osun, and Rivers States were found to have the lowest prevalence of under-five mortality.

The deaths associated with public health issues have resulted in a plethora of studies carried out by scholars in medical and paramedical fields to understand the epidemiology of these diseases. However, a look at the existing studies shows that a good number of the studies rely on hospital-based data without utilizing other tools of data collections. For instance, Eke *et al* (2001), Eke & Opara (2013) in their studies on the causes of mortality among children under the age of five in Port-+Harcourt utilized hospital records of the University of Port-Harcourt Teaching Hospital. Other sources such as questionnaire administration and Focus Group Discussions (FGD) were not utilized. Likewise, Kandala., Stallard., Stranges, & Cappuccio (2008) in their study on childhood diseases in Nigeria relied on data obtained from the 2003 Demographic and Health Survey neglecting other sources of information that can add to the understanding of the prevalence of under-five mortality. Also, Fagbamigbe (2021) in modelling the spatial distribution and the factors associated with under-five mortality in Nigeria utilized NDHS, 2018 data without considering other instruments for data collections.

Studies show that children from poor households are much more vulnerable to several preventable diseases compared to children born to rich families. Likewise, studies revealed that age, sex, parents occupation, education have

significant influence on under-five mortality (Mundi *et al* 2019; Imo, Isiugo-Abanihe & Chikezie, 2017; Oleribe, Kumar, Awosika-Olumo, *et al*., 2017). This implied that the findings of these previous studies conducted in other places may not be particularly applicable in the context of Gombe State. Therefore, there still need to identify the major prevalent under-five diseases in Gombe State; to examine the influence of child's demographic characteristics on under-five diseases, as well as to examine the influence of child's mother demographic and socioeconomic determinants on under-five mortality.

STUDY AREA

Gombe State also known as (the Jewel in the Savanna) is located in the Sudan savanna region of the country at the North-East of river Benue and East of Yankari Game Reserve bordering Adamawa, Bauchi, Borno, and Yobe states covering a total area of 20,256.5sq/km. The approximate altitude of Gombe ranges from 400-500m above mean sea level. Topography is mainly mountainous, undulating, and hilly to the Southeast and opens plains in the central Northeast, west, and northwest (Abbas, 2012).

Map of Gombe State showing all the Local Government Areas were presented in Figure2

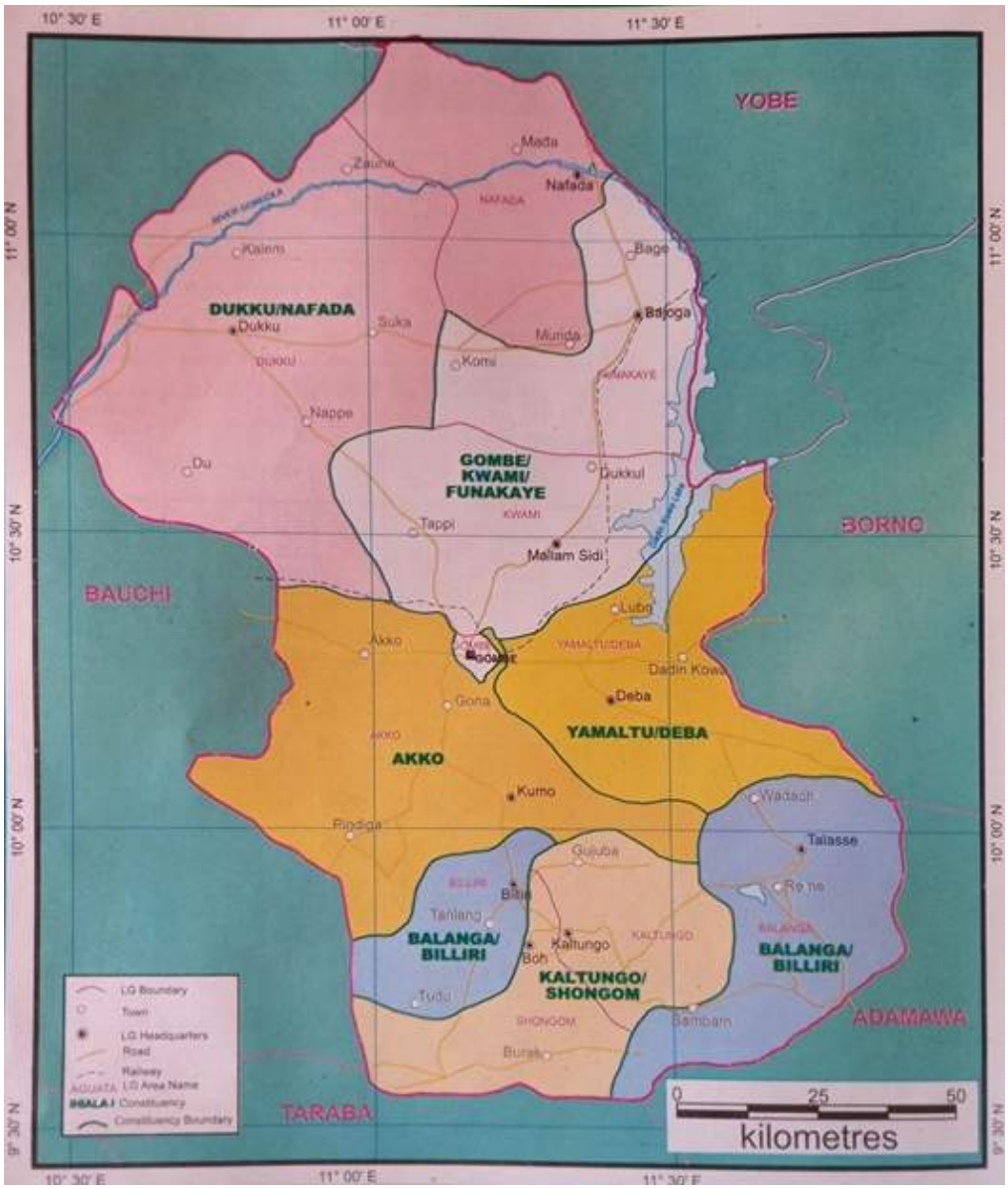


Figure2. **Location of Gombe State Showing all the Local Government Areas**
Source: Google Earth, 2017

OPERATIONAL FRAMEWORK

The operational framework (Figure.1) was used to show how the conceptual framework was applied to the selected variables. In this study, demographic and socioeconomic factors are the background factors such as age, sex, marital status, religion, educational attainment, occupation, income and place of residence are examined in relation to treatment outcome (well or dead)

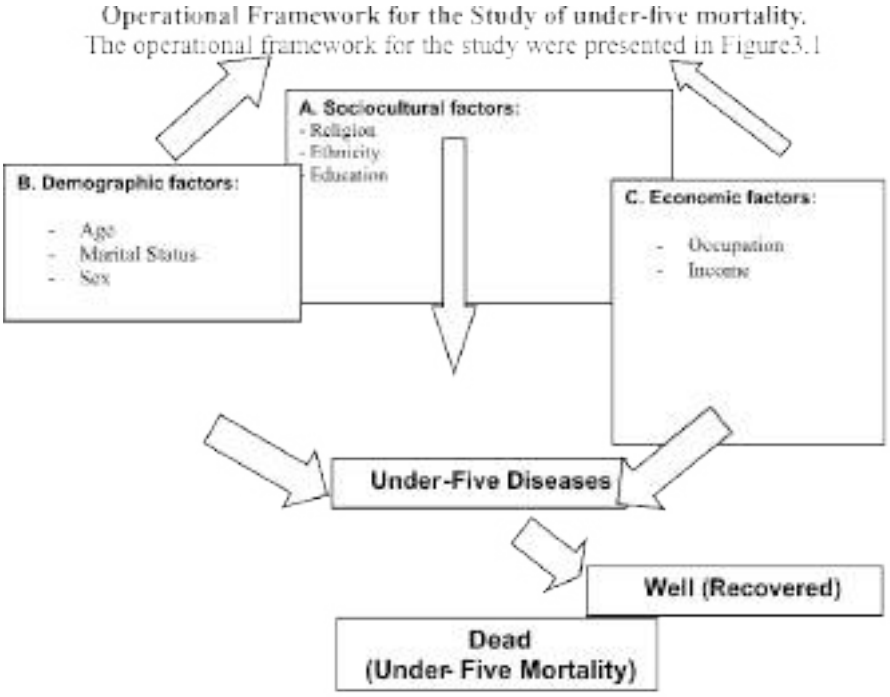


Figure1: A Framework Illustrating the Determinants of Child mortality
Source: Adapted and Modified from Mosley and Chen

METHODOLOGY

Research Design

The study utilized both quantitative and qualitative data. Quantitative data such as medical records of under-five children and their mothers were extracted from medical records while qualitative data was obtained using Focus Group Discussion (FGD) and In-depth interview. The target population were child or children under the age of five and their mothers. Others, include community or opinion leaders and health personnel in Gombe State. A two-stage sampling procedure was used for the study. The first stage involves the systematic selection of two Local Government Areas based on urban and rural characteristics (Gombe LGA, Yamaltu/Deba LGA). The second stages involves the selection of 25 localities from each LGAs with the aid of locality Enumeration Areas list prepared from the 2006 Population Census.

Total population of women aged 15-49 years from the selected LGAs was 6,151 and the sample size was determined using Taro Yamane's formula.

The formula is stated below:

$$n = \frac{N}{1 + N(e)^2}$$

Where

n is the sample size

N is the finite (known) size of the population

E is the square of the maximum allowance for sampling error or the level of significance is 5%.

Therefore, n can be determined thus,

$$n = \frac{6151}{1 + 6151(0.05)^2}$$

$$n = \frac{6151}{1 + 6151(0.0025)}$$

$$n = \frac{6151}{1537755}$$

$$n = 400$$

A total number of 400 mothers was extracted from cross sectional Hospital Medical Records from 2007- 2016. The data was analyzed using descriptive statistics such as tables and charts. Logistics regression was used for inferential statistics.

RESULTS AND DISCUSSION

DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS OF THE RESPONDENTS IN THE STUDY AREA.

Data on the age and marital status of the respondents or caregivers were collected, analyzed, and presented in Table1

Table1. Age and Marital Status Characteristics of the Respondents

Variables						
Age	Rural	%	Urban	%	Total	%
15-19	6	30	14	70	20	5.3
20-24	50	31	40	69	58	42.5
25-29	25	36.8	44	64.2	68	18.0
30-34	15	33.3	30	66.6	45	12.0
35--39	16	23.1	20	77.0	26	7.0
40 and above	18	31.1	112	69.0	162	15.3
Marital Status						
Married	101	45.9	119	54.1	220	58.0
Divorced	29	29.3	70	70.7	99	26.1
Others	12	20	48	80	60	15.8

Source: Extracted from Medical Record, Gombe State(2007-2016)

1.1 Age of Child's Mother. This shows that, the majority (42.5%) of the respondents were in the age group 20-24 years in the rural areas of Gombe State while the age group 15-19 years had the least respondents with 5.3%. In the urban areas, the result shows that, the majority (69%) were in age group 40 years and above while the least were in the age group 15-19 years. This finding collaborated with Buwembo (2010) which reveals that, under-five mortality was higher among teenage mothers compared to mothers who were well mature before having their first birth. This was because, well-mature mothers would have adequate knowledge about child care either formally or informally.

1.2. Marital Status of Child's Mother. This indicate that, 58.0% of the respondents were married, 26.1% were divorced and 16.8% belong to other categories. This implied that majority of the respondents were married.

SOCIOCULTURAL CHARACTERISTICS OF THE RESPONDENTS

Data on the sociocultural characteristics of respondents such as religion, ethnicity, and education was gathered, analyzed, and summarized in Table2

Table2. Distribution of Respondents by Their Sociocultural Chara

Variables						
Religion	Rural	%	Urban	%	Total	%
Christianit	45	44	58	56	103	27.2
Islam	100	38	160	62	260	68.6
Traditional	2	29	5	71	7	1.8
Others	3	33	6	67	9	2.4
Ethnicity						
Fulfulde	59	37	100	63	159	41.9
Hausa	50	35	93	65	143	37.6
Tangale	9	31	20	69	29	7.6
Others	10	21	38	79	64	16.9
Education						
Tertiary	11	17	53	63	64	16.9
Secondary	50	32	105	68	155	40.9
Primary	20	29	48	71	68	17.9
Arabic	1	25	3	75	4	1.3
No Formal education	30	34	57	66	87	23.0

Source: Extracted from MCH Record, Gombe State(2017)

2.1. Religion of Child's Mother. This revealed that the respondents (68.6%) that practice Islam were the majority, while the traditional religion worshipers were the least with 1.8%. This implied that most of the respondents in the study area were Muslim. Other religion groups co-exist with the Muslim in all the settlements.

2.2. Ethnicity of Child's Mother. This shows that 41.7% of the respondents were Fulfulde and they are the majority. However, 37.7% of the respondents were Hausa while Tangale with 7.7% were the least respondents. This implied that Fulfulde and Hausa are the most widely spoken languages in the study area.

2.3. Education of Child's Mother. This shows that, respondents with secondary education constituted the highest with 40.9% while those with Arabic education were the least, constituting 1.1% of the respondents. This implied that most of the respondents are knowledgeable to understand the implication of child mortality. . Likewise, parents with basic education are well equipped to understand their children's system better than uneducated parents. In one of the FGD sessions, it was reported by the participants that;

> *Mothers educational attainment is important because educated mothers are more knowledgeable about their children well-being and can take good care of their children compare to mothers without formal education; This is my own experience' I am educated to secondary level, so, I can handle my children illness better than those of my friends that do not have formal education.*

In one of the IDI, a participant said,

> *Mothers that have basic education take care of their child when sick than those without education. Some of the uneducated one in most cases find it difficult to administer drugs to their children as at when due.*

ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

Table 3. Distribution of Respondents by their Occupation and Incom
Characteristics

Variables						
Occupation	Rural	%	Urban	%	Total	%
Farming	9	47	10	53	19	5.0
Civil service	12	20	50	80	62	19.4
Housewife	101	51	97	49	198	52.0
Trading/business	13	25	39	82	52	14.0
Others	15	31	33	69	48	12.6
Average Monthly Income						
<₦1000	46	46	53	54	99	26.1
1000-10,000	34	19	143	81	176	46.4
₦10, 001-50, 000	18	25	54	75	72	19.0
>₦50, 000	4	13	28	87	32	8.4

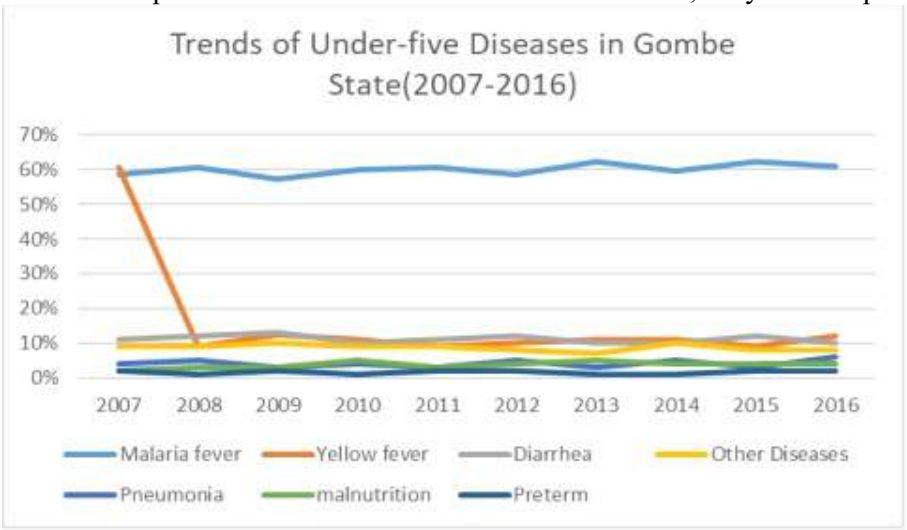
Source: Extracted from Medical Record, Gombe State (2007-2016)

3.1. Occupation of Child's Mother. This shows that, 52.0% of the respondents were housewives and those were civil servants constituted 19.4%. Trading/business and those in other occupations constituted 14.0% and 12.6% respectively, while civil servants accounted for 5.0%. This implied that mother's working status has influence on child healthcare. That is, if the mother is working, there is a higher chance of her child surviving from illness because she has resources to seek health care services. On the other hand, if the mother is not working, she has limited resources to seek health care as necessary.

3.2. Income of Child's Mother. This shows respondent's average monthly income and the result reveals that, 46.4% earned within the range of 1000-10,000, while 26.1% of the respondents earned within the income of <₦1000. However, 8.4% of the respondents had an income range > ₦50, 000. The result implied that the majority of the respondents may not be financially empowered to support their families with healthcare expenses especially when the father of the child is not around.

PREVALENT UNDER-FIVE DISEASES IN GOMBE STATE

Data on the prevalent under-five diseases were collected, analyzed and presented in Figure3.



Sources: Medical Records , Gombe State (2007-2016)

Figure3 shows the trends of under-five diseases (2007-2016) in Gombe State. The findings revealed that, malaria fever was the most prevalent diseases over the years. Malaria fever accounted for over 50% of under-five diseases within the study period. This was followed by yellow fever in most of the years in the study area. Meanwhile, the least under-five diseases in the study area are neonatal sepsis and preterm complications respectively. This finding is in agreement with WHO (2016) reports that, there were 214 million new cases of malaria worldwide in 2015 with an estimated 438 000 malaria deaths. The reports revealed that Nigeria and the Democratic Republic of Congo, both in the African region, accounted for about 40% of the total estimated malaria deaths worldwide. Southeast Asia and the Eastern Mediterranean regions account for the few remaining cases in that order. This finding was in agreement with the key informants reports in Gombe LGA, .

One of the participant said. The major child diseases I have seen here are malaria fever, diarrhea, vomiting, Also, a participant in Yamaltu/Deba said, malaria remained the common diseases but we have had yellow fever, diarrhoea, tetanus, and malnutrition as well. We are finding it difficult to differentiate between yellow fever and diphtheria. So, anyhow we want to classified it, we should note that yellow fever and diphtheria are also prevalent here

Also, in one of the IDI conducted in the hospital, a Nurse said,

malaria fever accounted for most of children morbidity and mortality in this hospital. I have found out from my years of service that most of the women will never report cases of malaria and other diseases for immediate medical solutions. Instead, they will stay and drink all manner of concoctions and tried other local solutions before reporting to hospital. In most cases, the child will eventually died.

One of the IDI participant said, yellow fever was another major causes of child morbidity and mortality here but, recently, all the symptoms of yellow fever satisfied the symptoms of Diphtheria. So, cases of diphtheria is rampant and deadly here as well. Poverty and I don't care attitude of most parents are the major brains behind late seeking for medical attentions here.

Influence of Child's Demographic Characteristics on Under-Five Diseases

Data on child age and malaria fever were collected, analyzed and present in Figure4

Figure4. Under-five Child Age and Outcome of Malaria Fever Treatment
Source: Medical Record, Gombe State (2007-2016)



Figure 5 shows that, out of 139 cases of diarrhea reported among children < 1 month, 7.5% of deaths were recorded while 95% were treated and got well. Likewise, out of 289 reported cases of diarrhea among children aged 1-12 months, 1.7% of deaths were recorded while 98.3% were treated and got well from the illness. Similarly, out of 387 cases of diarrhea reported by children aged 1-5 years, 3% of deaths were recorded while 97% of the children were treated and got well respectively. This finding is in agreement with TAyuk Bertrand Tambe*et al* (2013) studies in Tiko city in Cameroonhe which revealed that the prevalence of diarrhea was 23.8% among children under 24 months.

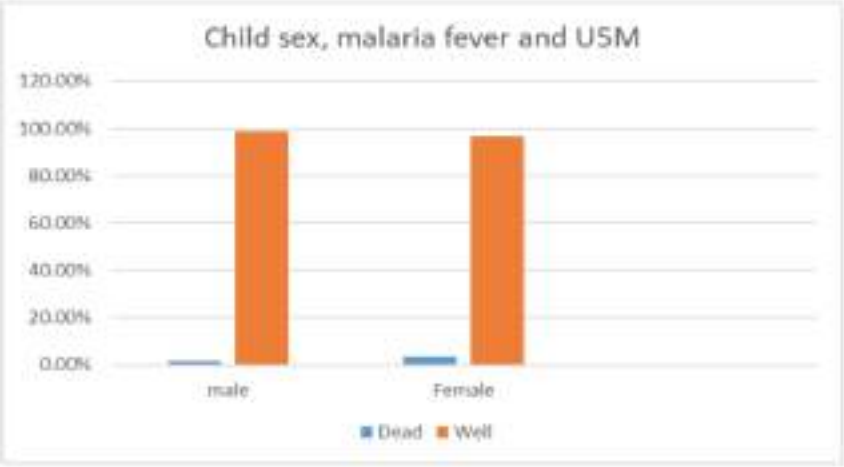


Table6 shows that, out of the 4,281 cases of malaria fever recorded in the study area, 2,099 were males under-five children while 2182 cases were from females under-five children. However, 0.5% casualties occurred among male under-five children while 99.5% of the male children under-five years were treated and got well. Similarly, 2% of deaths were recorded among female under-five children while 98% of female children were treated and got well from the illness.

Figure7. Under-five Child Sex Composition and Outcome of Diarrhea Tre
Source: Medical Record, Gombe State (2007)

Table4 shows mother's age and under-five diseases in both the urban and rural areas in Gombe State. The highest incidence of preterm complications was reported by mother aged 20-24 years in the urban areas of the state while the highest (30.2%) reported cases of preterm complications in the rural areas of the state was reported to mothers aged 15-19 years. The least (1.9%) incidences of preterm complications were attributed to the mothers of age 25-29 years in the urban areas of the State while the least cases of preterm complications were recorded by mothers aged 25-29 years. The implication is that experience mothers can handle their children's ailments compares to those one with little or no experience. The experienced mothers are more likely to handle an illness better than the inexperienced mothers. This finding is in tandem with Mundi *et. al.* (2019) that revealed that children born to younger mothers with age <24 years are at higher risks of childhood diseases and mortality because they may lack necessary experience to handle complications and other childhood morbidity

Furthermore, data on malaria fever reveals that, the highest (14%) incidences were reported by mothers between the age 25-29 years in the urban area of Gombe State while the most (30.7%) recorded cases of malaria fever in the state was attributed to mothers aged 15-19 years in the rural areas in the State. However, the least (0.4%) cases of malaria fever were reported by child's mothers aged 35 years and above in the urban area of the state while the least (0.7%) recorded cases of malaria fever was attributed to mothers aged 35 years and above in the rural area of the state.

Also, data on yellow fever show that, the highest (16.1%) incidence was recorded by a child's mother between 25-29 years in the urban areas of Gombe State while the highest (26.7%) cases of yellow fever were reported by child's mothers of age 20-24years and 25-29 years in the rural area of the state. However, the least (0.9%) cases of yellow fever were reported by child's mothers of age 35 years and above in the urban areas while in the rural area, the least incidence of yellow fever was attributed to child's mothers 35 years and above.

Data on Pneumonia shows that the highest (25%) incidence occurred with the child's mothers of age 20-24 years in the urban areas while in the rural area, the highest (17.4%) cases of pneumonia were attributed to child's mothers aged 15-19 years. Likewise, the least occurrence of pneumonia was reported by child's mothers aged 25-29 years in the urban areas while a 3.5% incidence of pneumonia was recorded by child's mothers of age 30-34 years in the rural areas of the state.

Furthermore, data on diarrhea revealed that, the highest (13.3%) cases were recorded by child's mothers aged 20-24 years in the urban areas of the state while in the rural areas of the state, the highest (37.4%) incidence of diarrhea was attributed to child's mothers aged 15-19years. The least (0.9%), (1.8%) cases of diarrhea in the urban and rural areas in the study area were attributed to the child's mothers aged 35-39 years and 35-39 years.

Also, data on neonatal sepsis reveals that, the highest (22.2%) cases were attributed to the child's mother's age 25-29 years in the urban areas of the state while the highest (50%) cases of neonatal were reported by the child's mother's age 25-29 years in the rural areas of the state.

Also, data on malnutrition show that, the highest (18.7%) cases were recorded by child's mothers aged 15-19 years in the urban areas of the state while in the rural area of the state, the highest (24.6%) incidence occurred among children's mother's age 20-24 years. The lowest (6.7%) cases of malnutrition were attributed to the child's mother's age 34 years and above in the urban areas of the state, and in the rural areas, the lowest (4.1%) was recorded by the child's mother's age 34years and above.

Finally, the highest (16.3%), and (34.8%) cases of other under-five diseases not mentioned were attributed to the child's mothers in the urban and rural areas of the state. The least (4.9%), and (3.5%) cases of other under-five diseases in the urban and rural areas of the state were reported by child's mothers aged 15-19 years, 30-34years and 30-34years respectively.

Child Family Type and Under-five Morbidity

Table5. Distribution of Under-five Diseases and Child's Family Type.

Diseases	Urban						Rural						Total
	Mono	%	Poly	%	Single	%	Mono	%	Poly	%	Single	%	
Preterm	15	14.1	40	37.7	4	4	1.2	11.3	30	28.3	51	4.7	106
Malaria fever	223	5.2	2000	46.7	50	1.1	400	9.3	1469	34.3	57	1.3	4281
Yellow Fever	48	6.4	282	37.7	11	1.5	100	13.4	300	401	8	1.1	749
Pneumonia	1	0.3	87	30.2	-	-	-	-	200	69.4	-	-	288
Diarrhea	86	10.6	126	15.5	1	0.1	101	12.4	501	61.5	-	-	815
Neo-Natal Sepsis	-		7	38.9	-	-	-	-	11	61.1	-	-	18
Malnutrition	4	1.5	100	37.3	4	1.5	100	3.7	138	51.5	12	4.5	268
Others	35	5.7	166	27.2	12	1.9	66	10.8	300	49.2	28	4.6	609

Source: Extracted from Medical Record, Gombe State (2007-2016)

Table 5: shows the child's mother family types and the reported cases of preterm complications in the state. The results reveal that, the highest cases of preterm complications were reported by the child's mothers from the polygamous family in both urban (37.7%), and rural (28.3%) areas of the state. In contrast, the least reported cases of preterm complications were attributed to child mothers who were single mothers in both urban (4%), and rural (4.7%) areas in the study area. This finding is in agreement with Ekholuenetale, Wegbom., Tudeme, & Onikan (2020) study in sub-Saharan African countries which concluded that households with a large number of children (3–5 and ≥ 6) had a higher risk of infant mortality, compared with those with 1–2 children. The study also shows that the risk of infant mortality was higher in households in sub-Sahara African of polygamy compared with monogamous families.

Furthermore, data on malaria fever shows that, the highest cases were associated with polygamous families in both urban (46.7%), and rural (34.3%) areas of the state. The least incidence of malaria fever was recorded by the child's mothers that were single in both urban (1.1%), and rural (1.3%) areas of the state.

Also, data on yellow fever in both urban and rural areas of the state reveals that, the highest cases were traceable to child's mothers from polygamous homes in urban (37.7%) and rural (40.1%) areas while the least, cases were recorded by child's mothers from single families in urban (1.5%) and rural (1.1%) areas.

Also, result on pneumonia show that, the highest incidence was recorded by the child's mothers from polygamous families in both urban (30.2%) and rural (69.4%) areas of the state.

Furthermore, data on diarrhea reveals that most cases were traceable to child's mothers from polygamous families in both urban (15.5%), and rural l(61.5%) areas of the state while the least was attributed to child's mothers from polygamous and monogamous families in both urban (0.1%), and rural (12.4%) areas of the state respectively.

Furthermore, data on neonatal sepsis reveals that, the highest of cases were reported by the child's mothers from polygamous families in both urban (38.9%) and rural (61.1%) areas of the state.

Also, data on malnutrition reveals that, the highest incidences were attributed to child's mothers from polygamous homes in both urban (37.3%) and rural (51.5%) areas of the state.

Finally, data on other diseases not identified reveals that the highest incidence was traceable to child's mothers from polygamous families in both urban (27.2%) and rural (49.2%) areas of the state while the least reported cases were recorded by child's mothers from single homes in the urban (1.9%) and rural (4.6%) area of the state.

Table6. Mothers Age and Under-five Mortality

	S.E.	P-value	Odd Ratio	95% CI.for EXP(B)	
				Lower	Upper
15-19years	RC				
20-24years	1.036	.000	.520	3.076	19.965
25-29 years	.793	.000	.184	2.010	11.971
30-34years	.803	.005	.409	1.951	45.383
35-39year	.867	.167	.316	.607	18.124
40-44years	.763	.063	.365	2.099	41.774
45-49years	1.016	.184	.857	.527	28.241

The tables containing logistic regression analysis in determining the demographic determinant associated with under-five mortality in the study area. The odd ratio of each variable determined at 95% confidence interval (CI) and P-value of < 0.05 was used to determine the significant level of the variable.The model summary in the table showed that the explained variance (Nagelkerke) is 72%, indicating that the data fitted the model. The age of the respondents was significantly related to under-five morbidity/mortality in the study area. The result indicates that children that their mothers are within the aged 15-19, 20-24, 25-29 years are more likely to experience under five under-five morbidity/mortality. In support of the finding, Hobcraft, McDonald and Rustein (1985), it states that mortality was clearly higher among children of teenage mothers. As supported by Manda (1999), that the risk of infant mortality to be considerably higher for relatively young and relatively old mothers. It was reported that young women in their teenage years have higher risks of complications during delivery because they are not fully developed and have little experience.

The educational qualification of mother was found to be significantly associated with under-five mortality at P- value < 0.05. Mothers with no formal education (Odd Ratio 0.467 95% CI and P-value .002) were 46% likely to experience under-five mortality. The result is in tandem with Houweling & Kunst, (2010) which revealed that educated women have fewer and more healthy children than the less educated.

Table7. **Mother's Education and Under -five Mortality**

Table6:2. Mo ther's Education and Under -five Mortality

	S.E.	P-value	Odd Ratio	95%C.I.for EXP(B)	
				Lower	Upper
Arabic	RC				
No formal	1.243	.002	.467	.478	62.507
Primary	1.180	.029	.324	.032	3.268
Secondary	1.166	.051	.443	.045	4.352
Tertiary	1.205	.022	.063	.006	.667

Table8. Mother Average Monthly Income and Under -five Mortality

	S.E.	P-value	Odd Rat io	95%C.I.for EXP(B)	
				Lower	Upper
<N1,000	RC				
>N50,000	0.180	0.062	0.100	0.000	0.231.
N1,001 - 10,000	0.269	0.008	0.724	0.533	1.532
N10,001 - 50,000	0.321	0.003	0.261	0.206	0.723

The result shows that children that their mothers have low income N1,001 – N10,000, <50,000 are at risk of experiencing dying before reaching the age of five compares with mothers with higher income. This finding is in agreement with Adepoju, Akanni and Falusi, (2012); Policy project/Nigeria, (2002) UNICEF, (2010) which affirmed that poverty makes children from less privilege households vulnerable to inadequate water, poor sanitation, air pollution and undernourishment.

CONCLUSION

The findings shows that under-five morbidity/mortality in Gombe State remains very high despite efforts and interventions such as immunization and other poverty alleviation programme. The result showed that malaria fever accounted for 50% of under-five morbidity and mortality in Gombe State. Also, age of the child and mother's age significantly influenced under-five mortality in Gombe State. The result indicates that children that their mothers are younger are more likely to experience under -five mortality compares to more advance mothers. Likewise, educational qualification of mother was found to be significantly associated with under-five mortality at P- value < 0.05. Mother with no formal education were more exposed to under-five morbidity and mortality compares to those with higher education.

POLICY RECOMMENDATIONS

1. More efforts should be put in place by government at all levels and NGOs on how to curtail malaria fever. These efforts may include the provision of treated mosquito net, effective sensitization of mothers on proper usage of treated mosquito net, provision of dedicated malaria treatment facilities/units, and provision of affordable/subsidized malaria treatment. These efforts will reduce the prevalence of malaria fever among under-five children.
2. Efforts should be put in place to improve income level of women of childbearing age especially housewives. This, to a larger extent will increase the purchasing power (income) of women and in taking decisions that affect the health of their children.
3. Efforts should be put in place to promote girl-child education. This will expose them to better opportunities to earn a living and meet their children health needs.

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THE CHALLENGES OF BRIDGING GAP OF DEMOGRAPHIC DIVIDEND IN A THIRD WORLD SOCIETY: EVIDENCE FROM AKWA IBOM STATE, NIGERIA

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Abstract
A large market for goods and labour services which is a function of expanded youthful population is a mirage in parts of Akwa Ibom State. Evidently, the rates of unemployment and poverty are high and accompanied by increasing spate of insecurity. This study investigated this scenario with a focus to identify the challenges of harnessing the potentials of the young and educated population in the state to help accelerate economic activities and enhance the socio-economic conditions of the people. The study adopted the mixed research method with data collected using questionnaire and desk review. It found enormous potentials in the area and population that have remained un tapped and harnessed due to political reasons, corruption, favouritism, spatial differences, lack of data and poor policy of government on employment, poverty, resources exploitation, among others. Hence, recommended that in order to bridge the gap of demographic dividend in the state youth empowerment, gender equality and enabling environment that supports youth productivity should be given adequate attention by the government.

Introduction

The apparent heightened poverty, escalated unemployment, poor standard of living, weak health institutions and epileptic services, and many more characteristic of many states in Nigeria including Akwa Ibom State despite the blessings of huge and inexhaustible oil resource and several other non-oil resources is a paradox. Approximately a decade since the winding up of the millennium development goals (MDGs) and nine years into the full scale implementation of the sustainable development goals (SDGs), critical social and economic indicators have underscored the status of Akwa Ibom State as one that still lag behind in terms of the global philosophy of achieving the demographic dividend. Conceptually, demographic dividend refers to the growth in a country's economy resulting from a change in the age structure of its population. It is according to AU (2006) the accelerated economic growth that results from a decline in a country's mortality and fertility and the subsequent change in a population's age structure.

Apart from being conceptualized as the economic benefit that can take place when a country undergoes rapid declines in mortality and fertility, thus, producing smaller, healthier families and a youth cohort that can be educated and empowered to enter the labour market,

Elhadary, Abdelatti and Nour (2018) have described it as the window of opportunity presented whenever the working-age population group is exceeding the dependent groups (which include children and old people), with both fertility and mortality falling. Yet, Gribble and Bremner (2012) have christened it as the accelerated economic growth that may result from a decline in a country's mortality and fertility and the subsequent change in the age structure of the population. It is the product of decline in fertility, improved health, education and gender equity, and increase in investment (Gribble and Bremner, 2012); sustained family planning, accelerated economic activities, youth employment and poverty reduction.

The achievement of demographic dividend in is a function of several preconditions. These include greater investment in education and health, enabling policy environment and broader social, economic and cultural context as well as increase in labour participation by women and youth (Marone, 2016). Other are a large and growing population, lower fertility and mortality, a large working population, adequately educated population, lowered unemployment, low poverty, opportunity for savings and re-investment, a robust health institution, youth training and empowerment and good governance (Beery, 2014). As posited by Gajjar (2017), Klasen and Lawson (2007), Bloom, Canning and Sevilla (2003), a large and growing population to economies of countries particularly those that are developing or still growing are beneficial both as the source of labour and market for the economy. This is because an increase in the working age group that accompany an increase in the overall population creates a window of opportunity, which if properly harnessed, can translate into higher growth and yield a demographic dividend (Drummond, Thakoor and Yu, 2014).

Statistics have shown that Nigeria is a highly populated country that leads others in Africa and sixth in global population ranking based on her current estimate of 225 million people. The chronicle of population situation in Nigeria reveals that population growth has always been an increasing phenomenon in all states and regions (Ben and Okon, 2020). Historically, the country has never experienced a decrease in her population no matter the percentage change in the rate of growth or the percentage change in mortality rate and out migration which of course have never surpassed the opposite (Ben, 2023). Past survey has revealed that Nigeria's population that was 17 million in 1921 rose to 21 million in 1931, 31 million in 1953, and 55 million in 1963 while in 1991, it became 88.5 million (Udo, 2000). Later in 1995, the country's population increased to 103 million and 120 million in 1999 while the 2006 national census reported a figure of 140 million. The NDHS (2013) report indicate overall national growth rate of 3.2 percent: approximately, a lower total fertility rate of 4.7 in the South East, South-South (4.3) and South West (4.6), and a higher rate in the North West (6.7) and North East (6.3). Essential features of this population include a growth rate of 2.61 percent, infant and child mortality rates of 61 and 27 per 1000 live births respectively, maternal mortality rate of 917 per 100,000 live births, total fertility rate of 3.7, life expectancy rate of 54.07, a dependency ratio of 87 and a high rate of natural increase.

Like Nigeria, Akwa Ibom State has a young, rapidly growing and expanding population that is growing at the rate of 3.4 percent (MOED, 2018). The dynamics of the state population include an estimate of 7,365,177; fertility rate of 0.97; total fertility of 3.9; infant mortality rate of 17.4, under-five mortality rate of 24.9; maternal mortality rate of 289.5 and a life expectancy at birth of 49. Also, teenage pregnancy is estimated at 16.2%; contraceptive use varies between modern method (10 %) and traditional method (9%); a population density of 804; and rural-urban migration ratio 8:2. Yet, the state is trapped by high rates of unemployment and under employment, poverty, corruption, nepotism, youth restiveness, poor funded and weak health institutions, inadequate and poorly maintained public infrastructures. This scenario has called for serious concern about the persistency of these social issues in the state and as well invoked the desire to conduct this study.

The Study Objectives

This study was basically aimed at identifying the challenges of bridging gap of demographic dividend in Akwa Ibom State, Nigeria. As a pathway to achieving the aim of this study, the following specific objectives were

envisaged:

i) To identify the factors that influence the distribution of opportunities for the youths in the study area

ii) Find out the factors that hinder the achievement of demographic dividend in the study area

Literature and Gap in Knowledge

There is much in academic literature on the issue of demographic dividend. Asafu-Adjaye and Brown (2021), Elhadary, Abdelatti and Nour (2018), ILO (2017), Ahmed, Cruz, Go and Maliszewska (2016), Mason, Lee and Jiang (2016), Marone (2016), Gribble and Bremner (2012), Ross (2004), Bloom, Canning and Sevilla (2003) and several others have undertaking critical evaluation of the issue in different contexts. As indicated by African Union (AU, 2006), demographic dividend is ultimately beneficial to a country but that depends on the capacity and proportion of working-age population pushed by a declining fertility, and strong investments in health, empowerment, education and employment through public action and private sector involvement. Many scholars such as Bloom et al (2003) have argued that the possibility of demographic dividend follows a demographic transition that ultimately occurs when labor supply increases as people in the relatively expanding 15-64 age group are more likely to be working than people in other relatively shrinking age groups. The same applies when there is increase in the number of women in the workforce which Bloom et al (2003) maintained that the engagement of more women will lead to smaller family sizes and reduce the level of consumption.

Studies have enumerated the factors that cause and can slow down the achievement dividend in countries. The factors vary from low fertility and mortality, a large and growing population, lower fertility and mortality, a large working population, adequately educated population, lowered unemployment, low poverty, opportunity for savings and re-investment, a robust health institution, youth training and empowerment and good governance (MOED, 2018; Gajjar, 2017; Marone, 2016). To Bongaarts and Sinding (2011) fertility declines are heavily influenced by ages at marriage and the practice of contraception during childbearing years. Thus, expanding secondary schooling, employment opportunities, and universal access to reproductive health care, as well as large-scale maternal and child health and nutrition programs, are essential to accelerating fertility transitions to low levels.

For many years, literature has been huge and remained consistent about the continuous high rate of unemployment in the third world or developing countries. Examples of such include Temitope (2023), Lawretta (2021), Anyanwu and Duru (2020), Ojo, Abayomi and Odozi (2014), among others. In Nigeria, studies have revealed that the rates of unemployment and poverty are high and accompanied by increasing spate of insecurity, political tension, corruption, favouritism, age barriers and spatial differences among many other factors (Ojo, Abayomi and Odozi, 2014). Also, the rate of unemployment and poverty have found triggered by increased wave of armed robbery, prostitution, drug trafficking kidnapping, terror threats, abductions and sometimes suicide (Lawretta, 2021). Lawretta (2021) and Anyanwu and Duru (2020) whose study centered on youth unemployment have described it as the most critical problems of development confronting the continent of Africa and Nigeria. The rate of unemployment in a country has a number of consequences that directly and indirectly impact negatively on the attainment of demographic dividend. A similar argument held by ILO (2017) and AFDB (2016) is that high rate of unemployment leads to increase in youth migration, terrorism, cultism, kidnapping, prostitution, and cyber fraud, among others. These are characteristics of the study area and hindrance to the achievement of demographic dividend.

Poverty has been identified in many studies both as an important characteristic of Nigeria's population and a key factor in the achievement of demographic dividend in any society if reduced and kept sustainably at a very low rate. Poverty reduction ideally implies more than ordinary raising income levels of the poor but also creating conditions that enhance healthy and creative lives with sufficient food, shelter, clothing, without compromising human freedom, dignity, self-esteem, and fair treatment by the

government and community. As indicated in the NBS (2019) reports, 63 percent of persons living within Nigeria (133 million people) are multi-dimensionally poor. Poverty associates with unemployment and unemployment is worse in Nigeria where estimated 18.8% youths are jobless (Premium Times, 2019). Furthermore, according to Christensen (2023) the global poverty rate is estimated at 8.5 percent compared to Nigeria with at least 50 percent while in Akwa Ibom State, poverty rate is approximately 71 percent (Okojie, 2023). On the other hand, Akwa Ibom State has over the years experienced a rapidly growing and expanding population, indeterminate pressure on the education and healthcare institutions, a low standard of living for most families particularly in the suburbs and rural areas, and a lingering sanitation problem that creates habitat for pathogenic bacteria responsible for many diseases and sicknesses. These characteristics are inimical to the achievement of demographic in any society because of the implications on the health of the population which is the source of labour or manpower.

According to UNFPA (2016) demographic dividend is the economic growth potential that can result from shifts in a population age structure, mainly, when the share of the working age population (15-64) is larger than the non-working age share of population, that is, 14 and younger; 65 and older. The largest single challenge to Africa enjoying a demographic dividend, however, is likely to come from climate change (Bloom, Kuhn and Prettner, 2016). Some other scholars who collaborated the argument are Marchiori, Maystadt and Schumacher (2012) and Collier, Conway and Venables (2008). Another critical factor in the achievement of demographic dividend which act a barrier in Nigeria and Tanzania is failed policy on family planning. Chen, Menezes, Rusatira, Cardona et al. (2023) who investigated the demographic dividend-favorable policy environment in two pre-dividend African nations of Nigeria and Tanzania found persistent gaps in policies targeting family planning. Apart from policies, education has been found to constitute a serious impact on the achievement of demographic dividend. A study based on education and South Africa's waning demographic dividend by Oosthuizen (2024) found education as a critical factor in the process of harnessing the demographic dividend, and also a key focus of public policy in the country that helps girls and women take care of themselves; limit fertility through elongated years of schooling. Also, relying the argument of Mejia-Guevara (2015) and quoted in his study, Oosthuizen (2024) maintains that educational attainment shapes income, work and economic conditions as well as determines the likelihood of being employed, the job position and income associated.

Literature on the subject of this (bridging gap of demographic dividend) is copious and endless. However, in addition to scanty reference on Akwa Ibom State, such other impediments to harnessing available potentials (e.g political reason or factor, corruption, favoritism, age barriers to employment, spatial differences, lack of reliable data on unemployed proportion of the population and poor economic policy) to help the bridging gap of demographic dividend have not examined in the existing literature. Noting the rising spate of unemployment particularly among the youths and poverty which consequently give rise to security challenges such as kidnapping, armed robbery, communal conflicts, youth cultism and rural-urban migration, our study focused the latter variables.

Theoretical Discussion

This study adopted the economic theory – the balanced growth theory to establish the empirical foundation needed to guide the study. We decline adopting the theory of demographic transition mostly applied by scholars in their studies since development in the study area does not progress based on stages defined by the theory. Equally, no existing data can reliably justify the standard of important variables – healthcare services, fertility and mortality levels, level of technological development, and growth pattern of the population among others, compared to experiences in the reference societies of the advanced and industrialized nations as indicated by the theory. However, the origin of the doctrine (theory) of balanced growth is traced Rosenstein-Rodan in 1943. In this theory, the central idea or emphasis is on the multiplier process that takes place if all parts of the society (rural and urban) are developed together. That is, the theory proposes a comprehensive approach to the

development where all parts of the society are brought into the scheme. This may not necessarily be at the same time. Implied in this theory is the fact that a balanced growth can be both the cause and product of the demographic dividend in a society. As a cause, it emphasizes on the attainment of a large and growing population, low fertility and mortality rates, a large working population, adequately educated and skilled population, low unemployment, low poverty, opportunity for savings and re-investment, a robust health institution, youth training and empowerment and good governance which are all prerequisites for a demographic dividend. The doctrine or theory assumes that achieving this fit in every part of the society and not only in one or selected parts accelerates the course of demographic dividend for the whole society not part(s) of it. On the other hand, in terms of product, a successful transition to a condition of or achievement of demographic dividend ensures even growth and development because the right population and potentials have holistically been harnessed and adequately exploited.

The Study Area

The study area is Akwa Ibom State. Akwa Ibom is a state located in the coastal rain forest belt of Nigeria that is politically demarcated and named the South-South geopolitical zone. It lies between latitudes 4°32′N and 5°33′N, and longitudes 7°25′E and 8°25′E. The state is bordered on the east by Cross River State, on the west by Rivers State and Abia State, and on the south by the Atlantic Ocean and the southernmost tip of Cross River State. It was carved out of the former Cross River State and declared a state on September 23, 1987, by Ibrahim Babangida but currently the highest oil and gas-producing state in the country. It situates on a land area of 7,081 square kilometres. Like other states in Nigeria, Akwa Ibom State has three senatorial districts - Uyo or Akwa Ibom North-east Senatorial District, Ikot Ekpene or Akwa Ibom North-west Senatorial District and Eket or Akwa Ibom South Senatorial District; ten Federal Constituencies and 31 Local Government Areas. The state is dominated by Ibibio ethnic but eight different dialects are spoken in parts of the state.

Akwa Ibom State has an estimated 7,365,177 population that is characteristically young and depending population. The population comprises children age 0-14 years (37.34 %), working age 15-64 years (59.41 %) and the elderly persons 65+ years (3.25 %). The youth constitutes about 37% of the total population of the state and 80% of the 1,773,449 men and women that make up the working age population. This age structure is known to exert varied dimension of pressure on the health, education and economic sectors as well as complicates the problems of inadequate infrastructure and decay of existing ones, unemployment and underemployment, poverty, youth restiveness, women and child rights violation, pollution, improper wastes disposal already being battle by the government. As it is currently, the health facility-population ratio in the state is 1:11,992. In terms of education and literacy, there are only 7 Universities, 45 Polytechnics, 3 Colleges of Education, 243 Secondary Schools, 2487 Primary Schools, 18 Technical/Vocational Schools and 904 Adult/Non-Formal Centers which are crossly inadequate given the population size of the state.

The state is endowed with large deposit of oil and mineral resources - crude oil, silica sand, gravel, limestone, clay, sodium caustic soda chloride, coal/lignite and silver nitrate. Also, it has on records industries such as Peacock Paint Limited, Champion Breweries, Exxon Mobil/NNPC Joint Ventures, Seven Energy, Ibom Power Plant, Coconut Plantation/ Refinery, Syringe Manufacturing Industry, Electric Meter Manufacturing Plant, AKEES Pencil/Toothpick Company and Akwa Prime Hatchery. The list of industries that are ailing include Quality Ceramics, Nigeria News Print Manufacturing Company, Akwa Palm Industry, Seastate Seafood, Plasto crown, Asbestonit Limited, Qua Steel Ltd, Aluminium Smelter Company of Nigeria and Autopack Nigeria Limited. Apart from those industries that are functional which of course, employ only an insignificant proportion of the state population, the civil service employs 16,183 persons, comprising 7927 zmales and 8256 female.

Method and Data

The mixed-method of research design was adopted in this study. Both primary and secondary data were collected – primary data elicited with questionnaire from 384 respondents, selected

randomly using the stratified and accidental procedures. This sample size was determined using the Cochrane formula that is given as n = z^2p.q/e; with z (95%), p (50%) and e (5%). The respondents mainly persons aged 18-65 years were selected (equally) in six local government areas of Ini, Obot Akara, Eastern Obolo, Ibeno, Ibiono Ibom and Udung Uko. Similarly, secondary data were extracted from literature and desk review of relevant documents selected ministries and departments in the state. These data are shown in tables, charts and graphs as well as discussed descriptively while the primary data that are based on the identified variables assumed to pose challenges to bridging gap of demographic dividend in the state measured using multiple regression analysis.

Model Determination

In order to determine the effect changes in the dependent variable y as a result of changes in the independent variables x, the variables were fitted in the model shown thus;

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7$$

where, y represents the dependent variable, bridging of demographic dividend (the challenges) and x, the independent variables characterized by political reasons, corruption, favouritism, age barrier, spatial differences, lack of data and poor policy.

Table 1: Background Characteristics of the Respondents

Variable	Description	No. of Respondents	%
Age	**18-27**	**24**	**6.3**
	28-37	**169**	**44.0**
	38-47	**127**	**33.1**
	48-57	**45**	**11.7**
	< 65	**19**	**4.9**
Sex	Male	218	56.8
	Female	166	43.2
Level of Education	Primary	Nil	0.0
	Secondary	73	19.2
	Higher	211	55.5
	University	96	25.3
Employment Status	Unemployed	191	49.7
	Self Employed	83	21.6
	Paid Employment Private	43	11.3
	Paid Employment Public Service	67	17.4
	Total	384	100

Data in table 1 give information on some characteristics of the study population. The data grouped in 10 years age cohort, show that 19 (4.9%) of the 384 total samples were 65 years or less but not younger than 58 years whereas 24 (6.3%) were between 18 and 27 years. A larger number, 169 (44.0%) of the respondents reported their ages in the interval of 28-37 years, another 127 (33.1%) respondents said they were 38- 47 years old while the remaining 45 (11.7%) respondents, indicated that their ages fell in the cohort of 48-57 years.

As indicated in the table, the respondents comprised male, 218 (56.8%) and female, 166 (43.2%). Literacy level in the area is relatively low as 96 (25.3%) of the 380 respondents that gave information on their level of education, have undergone a University education compared to the 284 (74.7%) others who have either finished secondary school, 73 (19.2%) or a higher school, 211 (55.5%). Based on data elicited from the respondents, majority of those who have attended a higher school, graduated with diploma certificates. The table shows that 191 (49.7%) respondents were unemployed while 83 (21.6%) others were self-employed. As low as 43 (11.3%) respondents were employed in private enterprises and only 67 (17.4%) others in public service. Although the status or rank of respondents in the public employment were not disclosed, the

respondents in self-employment were majorly in menial economic activities such as petty trading, mason, and casual labour.

Table 2 Regression Coefficients of the Interaction of y and x Varia

Model	Variables	B	B	Sig
	(Constant)	.288		.00
	Pol Reason	.158	.157	.00
		.333		.00
	Corruption	.129	.129	.01
		.272		.00
	Pol Reason	-.103	-.102	.32
	Corruption	.295	.297	.00
		.340		.00
	Favouritism	.096	.099	.05
		.246		.00
	Pol Reason	-.167	-.166	.12
	Corruption	.231	.233	.03
	Favouritism	.157	.152	.07
		.430		.00
	Age Barrier	-.001	-.027	.59
		.161		.09
	Pol Reason	-.158	-.158	.15
	Corruption	.226	.227	.038
	Favouritism	.154	.150	.08
	Age Barrier	.002	.050	.32
		.315		.00
	Spatial Dif.	.153	.157	.00
		.157		.10
	Pol Reason	-.212	-.211	.06
	Corruption	.158	.159	.16
	Favouritism	.091	.088	.33
	Age Barrier	.002	.042	.40
	Spatial Dif.	.206	.201	.03
		.322		.00
	Lack of Data	.161	.160	.00
		.119		.20
	Pol Reason	-.173	-.172	.12
	Corruption	.076	.077	.50
	Favouritism	.052	.050	.57
	Age Barrier	.002	.047	.33
	Spatial Dif.	.203	.199	.03
	Lack of Data	.174	.178	.00
		.333		.00
	Poor Policy	.186	.169	.00

The interaction between the dependent variable y and x variables (independents) are shown in table 2. Evidently, the analysis shows a significant and direct effect of x variables (political reason, corruption, favouritism, spatial differences, lack of data, poor policy) with the exception of age barrier on the y variable (achievement of demographic dividend). The assumed hypothesis is that political reason, corruption, favouritism, spatial differences, lack of data, poor policy relate positively with y. that is, they limit or slow down the process of achievement of demographic dividend at univariate level while only age barrier has both an insignificant and indirect effect on y variable. For the significant results, the equation for x_1 can be expressed as R^2=.025, F(1,382)=9.69, p=.002; for x_2, the equation is R^2=.017, p=.011; x3 (R^2=.010, p=.053); x4, (R^2=.001, p=.591); x5 (R^2=.025, p=.002); x6 (R^2=.026, p=.002); and x7 (R^2=.029, p=.001). The results imply that the more or increase in these variables, the more unlikely the achievement of demographic dividend in the study area

At bivariate level, the result of the analysis indicate that political reason has insignificant effect on the y variable: the equation is stated as (R^2=.045, F(2,381)=9.07, p=.322), while corruption shows a significant effect (R^2=.053, F(3,380)=7.12, p=.004) when combined with political reason. The multivariate analyses show varyingly that when political reason, corruption and favouritism were combined to measure their effect on the y, corruption became significant at p=.034 leaving political reason and favouritism insignificant at p= .129 and .078, respectively. In the case of a combined effect of political reason, corruption, favouritism and age barrier; corruption indicated a direct and significant effect on the y variable (R^2=.056, F(4,379)=5.42, p=.038) compared to political reason, favouritism and age barrier in which the test result showed insignificant effect on y (see, R^2=.056, F(4,379)=5.59, p=.151; p=.083; p=.321).

Similarly, in the combination of political reason, corruption, favouritism and age barrier; spatial differences in the distance that the respondents live posed a direct and significant effect on y (R^2=.067, F(5,378)=5.59, p=.034**)** whereas political reason, corruption, favouritism and age barrier related insignificantly with y. When combining political reason, corruption, favouritism, age barrier, spatial differences and lack of reliable data together to measure the effect on y, the result indicated that spatial differences and lack of reliable data proved a direct and significant effect on y (see, R^2=.091, F(6,377)=6.31, p=.034; 0.002), the other x variables were insignificantly related with y. The study also measured the combined effect of all the seven independent variables (political reason, corruption, favouritism, age barrier, spatial differences, lack of data and poor policy) on y. Unlike in other cases, political reason, lack of data and poor policy constituted direct and significant effect on while corruption, favouritism, age barrier and spatial differences show insignificant effect. The equation of the significant outcome is shown as (R^2=.102, F(7,376)=6.07, p=.019; 0.001; .002).

Table 1: Land area and population density of Akwa Ibom State in 2018 and 2024

LGA	2018 PP	2024 PP	AA (km^2)	2018 PD	2024 PD
Abak	207,719	253,863	252	824	1007
Eastern Obolo	89,574	109,472	117	766	936
Eket	258,185	315,540	176	1,467	1793
Esit Eket	94,634	115,657	296	320	391
Essien Udim	288,657	352,781	160	1,804	2205
Etim Ekpo	158,210	193,355	182	869	1062
Etinan	252,312	308,362	164	1,538	1880
Ibeno	111,784	136,617	248	451	551
Ibesikpo Asutan	204,819	250,318	192	1,067	1304
Ibiono Ibom	281,708	344,289	333	846	1034
Ika	108,695	132,842	114	953	1165
Ikono	196,672	240,362	390	504	616
Ikot Abasi	198,069	242,069	335	591	723
Ikot Ekpene	211,213	258,133	128	1,650	2017
Ini	147,996	180,873	320	462	565
Itu	190,971	233,395	273	700	855
Mbo	152,610	186,512	335	456	557
Mkpat Enin	264,812	323,689	332	798	976
Nsit Atai	109,626	133,979	135	812	992
Nsit Ibom	161,455	197,322	109	1,481	1810
Nsit Ubium	189,816	231,984	243	781	955
Obot Akara	219,993	268,863	227	969	1184
Okobo	153,476	187,570	360	426	521
Onna	184,006	224,883	174	1,058	1292
Oron	130,259	159,196	41	3,177	3883
Oruk Anam	256,666	313,683	512	501	613
Udung Uko	79,253	96,858	64	1,238	1513
Ukanafun	187,412	229,045	254	738	902
Uruan	175,009	213,886	422	415	507
Urue Offiong/Oruko	105,660	129,132	205	515	630
Uyo	456,996	558,516	156	2,929	3580
Total	**5,828,267**		**7,249**	**804**	

LGA=Local Government Area; PP=Projected Population; AA=Approximate Area (km^2)

Table 1 shows data on the projected size of Akwa Ibom State population in 2018 and 2024 as well as those of the 31 Local Governments Areas in the state. The table also shows the land mass of the state, the portion covered by each Local Governments Area, and the ratio of people to physical space in each Local Governments Area. The table indicates that there are in estimate 180,873 people that occupy a land area of 320 km^2 in Ini Local Governments Area compared to the 147,996 who lived there in 2018. Udung Uko Local Governments Area with an estimate of 79,253 in 2018 and 96,858 in 2024, experienced change in the population density from 1236 to 1513 whereas the land mass of 64 remained unchanged. Another Local Governments Area (Eastern Obolo) which came second to the last in the 2006 result has a projected figure of 89,574 in 2018 and 109472 in 2024. It density changed from 766 in 2018 to 936 in 2024. Obot Akara which had 219,973 population estimate and 969 population density in 2018 witnessed an increase in the

population to 268,863 and a density of 1184 while the land area remained unchanged at 229. A similar change has been observed in the case of Ibeno where the population of 111,784 in 2018 increased to 136,617 in 2024, and correspondingly, the population density also increased from 451 in 2018 to 551 in 2024. Equally indicated in the table are data related to the Ibiono Ibom Local Governments Area where the population estimate (281,708) and density (846) in 2018 almost double to 344,289 population and 1304 density in 2024. These data elucidate on the land and population resources: two of the preconditions to achieving demographic dividend in the study area. This view has been held by Beery (2014) who argues that growing economies need growing populations for purposes of increasing the supply of both workers and consumers, and a large and growing population is a prerequisite for the achievement demographic dividend in societies (Beery, 2014). Below is a graphical presentation of the data.

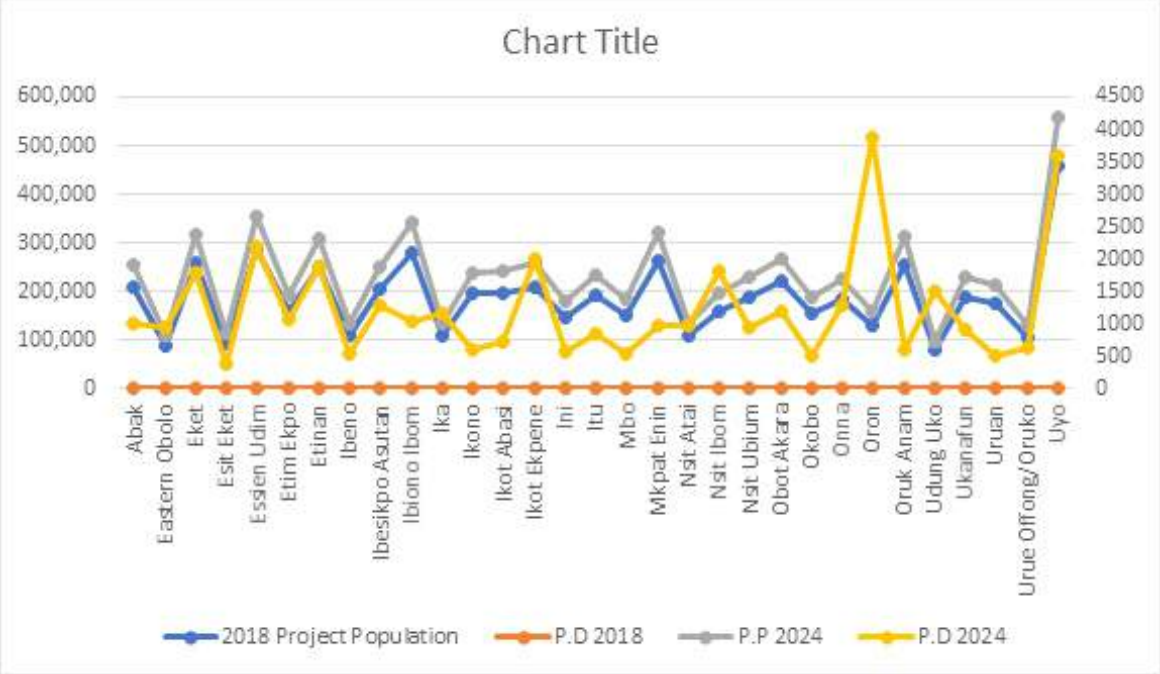


Table 2: Age structure of Akwa Ibom State population based on the 2006 census

Age Group	Pop. (both Sexes	%	Male Pop.	%	Female Pop.	%
0-4	477993	12.2	245695	6.30	232298	5.95
5-9	508827	13	266620	6.83	242207	6.21
10-14	470100	12	247996	6.36	222104	5.69
15-19	458814	11.8	235415	6.03	223399	5.73
20-24	388866	10	190602	4.88	198264	5.08
25-29	336925	8.6	152778	3.92	184147	4.72
30-34	260231	6.7	117722	3.02	142509	3.65
35-39	223213	5.7	102100	2.62	121113	3.10
40-44	197821	5.1	101142	2.59	96679	2.48
45-49	158234	4.1	84252	2.16	73982	1.90
50-54	137025	3.5	75681	1.94	61344	1.57

55-59	71134	1.8	40006	1.03	31128	0.80
60-64	85892	2.2	48734	1.25	37158	0.95
65-69	41917	1.1	22640	0.58	19277	0.49
70-74	37857	1	23157	0.59	14700	0.38
75-79	16501	0.4	9897	0.25	6604	0.17
80-84	15512	0.4	9093	0.23	6419	0.16
85+	15189	0.4	9672	0.25	5517	0.14
Total	**3902051**	**100**	**1983202**	**50.82**	**1918849**	**49.18**

In Table 2, the population of the state is presented by age group and sex. The data show that population is dominated by persons in the age cohort of 15-64 years. This group represents 59.5% of the total population. As indicated in the table, persons in the age cohort of 0-14 years constitute 37.2% of the total population while those in the age cohort of 65 years and above constitute 3.3% of the total population. In terms of sex, there is a slight variation between the population of males (50.82%) and that of the female (49.18%) in the population. Children who fall in the age group of 0-5 represent the highest single age cohort in the population with 13% of the total population. This population distribution has enough potentials that can be beneficial to the state if adequately harnessed.

Table 3 Rural-urban composition of Akwa Ibom State population

Population	Rural area	Urban area	**Total Population**
2006 Census	3,121,641	780,410	**3,902,051**
2011 Projected	3,689,654	922,413	**4,612,067**
2012 Projected	3,815,1	953,775	**4,768,877**
2013 Projected	3,944,816	986,204	**4,931,020**
2014 Projected	4,078,940	1,019,735	**5,098,675**
2015 Projected	4,217,623	1,054,406	**5,272,029**
2016 Projected	4,361,022	1,090,255	**5,451,277**
2017 Projected	4,509,297	1,127,324	**5,636,621**
2018 Projected	4,662,614	1,165,653	**5,828,267**
2019 Projected	1205292	4821136	**6,026,428**
2020 Projected	1246266	4985060	**6231326**
2021 Projected	1288639	5154552	**6443191**
2022 Projected	1332452	5329808	**6662260**
2023 Projected	1377756	5511021	**6888777**
2024 Projected	1424599	5698396	**7122995**
2025 Projected	1473036	5892141	**7365177**
2028 Projected	1628452	6513805	**8142257**
2030 Projected	1741060	6964283	**8705343**

Data in Table 3 show the rural-urban composition of the population in Akwa Ibom State. Based on the data, the ratio of rural and urban residents from 2006-2017 was 8:2. This implies that 80% of the population in the state lives in the rural areas while 20% of the population lived in urban areas. From 2018, the trend changed due to urban expansion and rural-urban migration. The consequences are many, varying from urban population explosion,

increase unemployment and poverty in the urban areas of the state, congestion, security issues, increase in wastes disposal and possibility of epidemiologic problems, child morbidity and mortality and cut down of savings and challenges of private investment. Thus is detrimental and a slowdown of effort toward the achievement of demographic dividend.

Table 4: Sex Composition of Akwa Ibom State Population

Year	Sex		
	Male	Female	Both Sexes
2006	1,983,202	1,918,849	3,902,051
2010	2,266,987	2,193 ,426	4,460,413
2011	2,344,065	2,268,002	4,768,877
2012	2,423,763	2,345,114	4,768,877
2013	2,506,172	2,424,848	4,931,020
2014	2,591,382	2,507,293	5,098,675
2015	2,679,488	2,592,541	5,272,029
2016	2,770,590	2,680,687	5,451,277
2017	2,864,791	2,771,831	5,636,622
2018	2,962,193	2,866,073	5,828,267

Table 4 shows the age composition of Akwa Ibom State Population. The data show that in 2006, there was a slight variation between the number of males (50.82%) and the number of females (49.18%) in the population. As at 2018, the variation between the number of males and that of the female's population remains the same. That is, in all the years there are more males than females in the population.

Table 5: **Fertility Level and Rates in Akwa Ibom State**

Year	2013	2014	2015	2016	2017	2018 as at June
Fertility Rate	0.3	0.87	0.9	1.1	0.97	0.31
TFR	0.3	0.87	0.9	1.1	0.97	0.31

Data in Table 5 indicate that Akwa Ibom State has one of the highest fertility rates in Nigeria. The data show the changes in the fertility rates in the state from 2013-2017 and part of 2018. Evidently, high fertility rates have the demographic effect of increasing the proportionate number of children. Younger persons under 15 years of age are significant consumers but insignificant producers. Large families including many children with consequent low incomes per family member are poor contributors to domestic saving. Low savings per capita are associated with young population and high fertility. With continued high fertility or a disposition to large family size by most people in the population, the burden of dependency will increase for both the state and families in the future. Such will also be a challenge to the envisaged demographic transition.

Table 6: Classification of the Population b y Economic Age

	Male Pop.	Female Pop.	Total Pop.	% Male	% Female	Total
Underage	760311	696609	1456920	19.48	17.85	37.33
Working age	1148432	1169723	2318155	29.43	29.98	59.41
Aged	74459	52517	126976	1.91	1.35	3.26
Total	1983202	1918849	3902051	50.82	49.18	100

The classification of the population of the state according to economic purpose is shown in Table 6. The data show underage (0-14), working age (15-64) and the aged (65+) as presented in the table. Records show that the underage population in the state has ever been expanding. According to 2006 National Population Census, the total underage population of Akwa Ibom State stands at 1456920, accounting for 37.34% of the total population of the state. The underage segment of the population comprises 760311 males (52.19%) and 696609 females (47.81%). The underage in the cohort of 0-4 accounts for 477993 (32.81%), those in the age cohort of 5-9 accounts for 508827 (34.92%), whereas others in the cohort of 10 - 14 accounts for 470100 (32.27%). Table 11 gives a statistical analysis of the underage proportion in the state population.

Data in the Table also indicate that the estimated number of persons that fall within the working age in the state is 2318155, approximately, 59.5% of the total population of the state. The working age segment of the population is made up of males, 1148432 (49.54%) and females, 1169723 (50.46%). The age cohort of 15-19 accounts for 458814 (19.79%) of the total working age population, the cohort of 20-24 accounts for 388866 (16.77%) while the cohort of 25-29 accounts for 336925 (14.53%). Also, the cohort of 30-34 accounts for 260231 (11.23%), the cohort 35-39 accounts for 223213 (9.63%) whereas the cohorts of 40-44 and 45-49 account for 197821 (8.53%) and 158234 (6.83%), respectively. Still as indicated in the table, the age cohort 50-54 accounts for 137025 (5.91%) of the total working age population compared with the cohort of 55-59 which accounts for 71134 (3.07%) and the age cohort of 60 - 64 which accounts for 85892 (3.71%) of the total working age population.

Also, as indicated in the Table, the estimated aged population of the state is at 126976, about 3.25% of the total population of the state. The aged segment of the population is made up of 74459 (58.64%) males and 52517 (41.36%) females. In the break down, the age cohort of 65 - 69 accounts for 41917 (33.01%) of the total while the cohort of 70 - 74 accounts for 37857 (29.81%). Similarly, the age cohort of 75 – 79 accounts for 16501 (13.00%) whereas the age cohorts of 80 - 84 and that of 85 and above account for 15512 (12.22%) and 15189 (11.96%) respectively, in the total aged population of the state. From the analysis, the state has more of a dependent population because despite the large number of youth in the population, only 458814 (19.79%) in the cohort of 15-19 years and 388866 (16.77%) in the cohort of 20-24 years are economically active or productive.

Burden of Dependency

Dependency refers to the reliance of people younger in age and those older on persons in 15-64 years of age. Dependency is a burden in Akwa Ibom State. Based on the 2006 census result, the dependent ratio in the state is 1.5 while in 2018, it is 68.3. The implication is that with additional persons added to the population of the state, the ratio of dependency increases. This is affecting and will continue to hinder the attainment of full demographic dividends if nothing is done not only to limit fertility level of the population, promotes women health, education and economic empowerment.

Dependency Ratio 2006

$$= \frac{59.4\% \text{ of the population}}{40.6\% \text{ of the population}}$$

Dependency Ratio 2018

$$= \frac{37.34\% \text{ (underage population)} + 3.25\% \text{ (Aged populatic}}{59.41\% \text{ (Working population)}}$$

$$= \frac{40.59\% \text{ of the population}}{59.41\% \text{ of the population}}$$

Findings and Discussion

There are quite a number of findings made in this study. Primarily, it has been found that large and growing population of the state is basically a consumer population. The several skills and potentials acquired by the youths in the population have remained un tapped and harnessed due to political reasons, corruption, favouritism, age barriers and spatial differences among many other factors. The youths that are given opportunity in different government programmes and even employed, most often are selected on man-no-man. The study found that despite several policy measures such as the National Directorate of Employment (NDE), Third National Development Plan, Better Life Programme, Fourth National Development Plan, National Poverty Eradication Programme (NAPEP), Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), National Youth Policy, Seven Point Agenda, National Employment Policy, National Economic Empowerment and Development Strategy (NEEDS), Youth Enterprise with Innovation in Nigeria (YouWin), Graduate Internship Scheme (GIS), Nigerian Youth Employment Action Plan (NIYEAP), Subsidy Reinvestment and Empowerment Programme (SURE-P), Graduate Job Creation Loan Guarantee Scheme, N-Power Programme (such as N-Tech, N-Teach, N-Agro, N-Health, N-Build and N-Creative), Youth Empowerment in Agricultural Programme and National Youth Development Agenda, ever adopted at different times to mitigate the rate of unemployment generally in the country, there is still a wide gap in parts of the state particularly in the rural areas due to the afore-stated reasons. There is lack of official records in the state to ascertain the number of youth that ever benefited from the policies and the extent of reduction in unemployment and cut down in poverty rates courtesy of the policies as such data is not known even by the state government.

In agreement with the findings of this study, Akaninyene, Essien and Ejeje (2022) that reported that the failure to exploit the potentials in the youth aged 15-24 years in substantial economic activities made them less productive. According to Akaninyene, Essien and Ejeje (2022) in most cases the youths were constrained by lack of initial capital, lack of land, high cost of agricultural inputs, lack of market for agricultural produce, low returns (profit), lack of agribusiness knowledge, poor incentive, lack of access to credit, lack of agricultural insurance, lack of facilities and lack of interest due to lack of connection and other constraints. The finding of this study has also collaborated Nkechi and Udeze (2023) who argued that youth continue to be a country's greatest resource and lifeline and Ajahi (2008) who maintained that youth employment is a necessity for every country's economic progress and means of existence.

Recommendations

In view of the findings of this study, it is recommended that:

i) The constraining factors, namely, political reasons, corruption, favouritism, age barriers and spatial differences that characterize employment, education and training, development, among others should be checked using appropriate laws

ii) The issue of youth and women empowerment should be open to all and no sentiment attached. This will encourage youth productivity, check unemployment and reduce poverty.

iii) There should more emphasis on gender equality in all ramifications to allow for articulation and harnessing of the potentials in every individual for effective economic participation, income generation, savings and re-investment.

iv) The issue of family planning and contraception should be given proactive attention by government since they are the main instruments of fertility control to check unnecessary explosion of the population.

Conclusion

There is still a window of opportunity for the state to benefit from the high population and engender development but this depends on meeting certain preconditions. Such lie in sustaining the declining fertility rate that is a feature of the state population. Already Akwa Ibom State has a male dominated population even

in the very active working age group (15-59). This is a potential asset which can be exploited adequately to maximize the productive and output capacity of the state. Government needs to take advantage of the growing working-age group in the population to effect significant alteration in its economic and development programmes. Furthermore, since the decline in fertility implies a reduction in the number of new born, expenses on health care and education, it means some parts of income earned are left for savings and investments. The increase in the number of investments consequently creates job opportunities to absorb more persons in the working age. Subsequently, the burden of dependency that may increase due to a sustained reduction in fertility and the transition into the elderly age group by a number of persons, can be contend through investments in both human and material resources.

Existing data reveal that Akwa Ibom State has probability of demographic bonus and windows of opportunities because the size of its population less than 15 years of age is more than 30% and the dependency ratio is more than 50. This experience is likely to continue even in the future. The expanding youthful population in the state does not accrue any demographic bonus unless the overall burden of dependency drops below 50 and the size of people 0-14 years also drops below 30%. As at now, the expanding youthful population is a burden to the household and the state. What is required is a strict emphasis on limiting fertility through the use of contraceptives and investment in the education of the women. There is need also to address concretely the issue of unmet needs for family planning as a way of encouraging full participation by all irrespective of status. This can be through investment in good governance, institutionalization of transparency in governance, adoption of vibrant and sustainable economic policies, and investment in youth empowerment, women education and abolishing of barriers against the women.

Similarly, there must be opened and unrestricted access to quality health services, educational and employment opportunities, to guarantee a healthy, skilled and robust workforce in the state. The fight against the dreaded HIV/AIDS disease should be taken seriously most especially among the youths and working age group who constitute the labour base of the state. In this guise, Akwa Ibom State will be transformed into a prosperous, highly educated, technology driven, ethnically harmonious, caring and pace-setting state in Nigeria through the formulation and implementation of strategic policies and programmes for achieving those attributes and for assisting individuals, institutions and communities achieve their optimum potentials. In order to avoid future problems associated with high fertility, there should be strong emphasis on family planning, sex education and sexual reproductive health to help regulate the current trend in fertility in the states population.

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THE CHALLENGES OF CONDUCTING AN ACCEPTABLE POPULATION AND HOUSING CENSUS IN NIGERIA

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Abstract:
population headcount and housing census has ever remained a controversial issue and its impact on development planning has seemingly affected development efforts in Nigeria. Census history has been bedeviled with census falsification, ethnicity, religious connotation and politicization of census figures, controversy even among members of census boards or commission and on the floor of parliaments, further weeping unprogressive sentiments in spite of the enormous resources expended in the conduct of population and housing census over the years. A well conducted census must have the following four major characteristics: namely individual enumeration, universality within a defined territory, simultaneity; and defined periodicity (usually 10 years) as stipulated by the United Nations. With the deployment of relevant technologies: geographical information system(GIS) and remote sensing (RS) platforms, trained professional census experts, proper enumeration demarcation, adequate financial and logistics as well as increased awareness and participation of the populace on census, Nigeria would be positioned for reasoned planning and advancement in economic development in line with the 2030 sustainable development goals as census results would provide needed sectoral roadmaps in planning and contriving development programmes in Nigeria. Above all concerted efforts should be made by all stakeholders including the Nigeria populace to set aside political cum ethnic sentiments and support government and its agencies as the country looks forward to conducting a population and housing census in the not too distant future. The study will employ the use of personal and focused-group interviews, review literature on the existing challenges of conducting an acceptable population and housing census and make relevant conclusions to guide policy recommendations.

Keywords: population census, housing, planning, enumeration, challenges, NPC

Introduction

Population issues has over the years attracted the attention of researchers, academics as well as policy makers. In 1798, Thomas Malthus a foremost political economist discussed the issue of population growth and development in his widely published work titled “Essays on the principles of population" where he stated that while population grows geometrically 2,4,8,10 subsistence or food production grew arithmetically 1,2,3,4 thus stating that food crisis, hunger and starvation will take over the populace if the trend is not checked thus proposing "preventive measures" and "positive checks" Preventive measures relating to family planning, contraception, delayed marriages and abstinence while positive checks is related to wars, famine, disasters amongst other natural hazards. This is in spite of several criticisms from writers like Esther Boserup, Karl Marx amongst others, his position

is applauded for bringing the attention of the world to the issues of population and thus enabled a strategic collation of knowledge and ideas to address development as it relates to the issue of population numbers becomes relevant., thus the importance of population census and recently the adoption of housing count alongside population census. United Nations (1998) indicated population census, as the total process of collecting, compiling, evaluating, analyzing, publishing and disseminating demographic, economic and social data pertaining at a specific time, to all persons in a country or a well-defined part of a country. Government need population census information for assessing demographic trends, analyze socioeconomic conditions, formulate interventions to poverty reduction, monitor and evaluate effectiveness of policies, tract progress as it relates to national development and compare statistics with internationally agreed development goals

The relevance of population data collection can be seen in resource distribution and allocation, enable national planning, enhance equitable decision making and evaluation of findings, knowledge on the sectors needing urgent attention especially unemployment, population control, population projection and guide future plans, provide information on ratio of male to female, determine political representation, provide relevant information to attract international aid and assistance as well as information on population size, density and distribution.

A population and housing census is of great relevance to the economic, political and socio-cultural planning of a country. Reliable and detailed data on the size, structure, distribution and socio-economic, demographic characteristics of a country's population is required for planning, policy interventions, monitoring of demographic dividends and other development programs. A population census is the major source of data required for this purpose. The housing condition of the population provides a reliable indicator of citizens' well-being. Information on housing is indispensable to planners and policy makers in evaluating housing conditions, estimating housing needs and formulating housing policies. (NPC, 2023)

A population census is the total process of collecting, compiling, evaluating, analyzing and publishing or otherwise disseminating demographic, economic and social data at the smallest geographical level appropriate pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country. (NPC, 2023) A housing census is the total process of collecting, compiling, evaluating, analyzing and publishing or otherwise disseminating statistical data relating to the number and condition of housing units and facilities as available to the households pertaining, at a specified time, to all living quarters and occupants thereof in a country or in a well delimited part of a country. (NPC, 2023)

Literature Review on Population and Housing Census in Nigeria

Successive Nigeria governments both colonial and post-colonial, at independence until present times appreciate the importance of accurate population census, the reason why it was given priority attention in the various development plans, thus regarding census as the basic tool for good development planning in a country. An accurate and adequate knowledge of the population characteristics (age, sex, marital status, and education amongst other features) as well as spatial and temporal trends of a country are, a sine qua non for meaningful development in the country. This is so, because development which involves optimum utilization of the nation's human and natural resources to improve the conditions of living cannot take place without planning. Lack of population census data in sufficient quantity and quality has been generally accepted as one of the major factors militating against efficient planning and administration of development plans in Nigeria (Salihu.B, 2015)

With a current population projection exceeding 220 million, Nigeria is the seventh-largest country in the world and the most populous in Africa. Despite the introduction of policies and programs over the last 50 years to address Nigeria's rapid population growth and the challenges it poses for development, the country is projected to become the third-largest nation in the world after China and India by mid-century (United Nations Population Division, 2015). In other words, no issue has generated controversy, intense debate and ethnic antagonism than that of

manipulation of national census figures. This no doubt has cost the nation a great deal in terms of actualizing development targets and image among international agencies that could have contributed by way of donor assistance in the nation's development efforts.

According to the NPC manual of instruction 2022 it was revealed that the first census was in 1871 in a restricted part of urban Lagos. The censuses of 1871, 1886 and 1896, were restricted to Lagos Island and parts of Lagos Mainland. The censuses of 1901, 1911 and 1921 covered a few more urban towns in the colony. Most of these censuses were actually population estimates. Although the Census of 1952/53 was elaborate in organization, its non-simultaneity, which had implications for possible double counting, is considered its weakest point.

The first post-independence census in Nigeria was carried out in 1962. This was out-rightly cancelled and another conducted in 1963. The 1963 census results became official figures and were used until 1991 census results were accepted. There was a census in 1973 but the results were declared unacceptable on account of massive inaccuracies. The 1991 census is said to have broken the myth of failed censuses in Nigeria.

Joshua Y. Gwanshak1 and Amos Hyeladi 2019 stated in an article “Contemporary Issues of Population Census in Nigeria” that Nigeria conducted the first census under British colony in 1866. Subsequently, other censuses were conducted in 1871, 1896, 1901, 1911 and 1921. All the above censuses were conducted in the Southern protectorate. The first census that included the Northern Protectorate was conducted in 1952. This attempt yielded a total population figure of 31.6 million within the current boundaries of the country as at that time. The 1952 census of Nigeria indicated that Northern Nigeria had the largest share of the population, and so they dominated the first post-colonial government set up after independence in 1960. After independence in 1960, the new government ordered a head count or census to be taken in 1962, but the results showed that the north accounted for only 30 percent of the population. A ―recount‖ in 1963 led somewhat suspiciously to the north accounting for 67 percent of the population (Library of Congress, 1999). The 1963 census was the first, after Nigeria's independence to give an officially recognized result- a total population of 55.6 million. The census conducted in 1973 census was also controversial as there were disagreements among the Census Board members themselves over its accuracy and thereafter varied called for its total and outright cancellation. The results could thus not be published and eventually the government cancelled the census as a result of controversies (within and outside the Census Board) that raged the release of provisional figures to the public which made it the second conducted controversial census exercise in just twenty years of 1962/63 and 70 (Kurfi, 2004). It had a grand total of 79, 758, 969 (Kurfi, 2004& Owuche et al, 1991) with North having 51m or (64%) and South (East and West) 28m or (35.6%). With stipulation of an interval of 10 years, government could not conducted census until 1991.The 1991 census result shows that Nigeria had a population of 88, 992, 220 persons out of which the North had 47,369,237 of Nigeria's population while the South had 41,622,983 and was partly successful and least controversial because sensitive and controversial questions relating to religion and ethnicity were avoided in the secondary variable questions (Kurfi, 2004). The last headcount conducted by NPC was in 2006, it was supposed to be conducted between 2001 or 2003. This put Nigeria's population at 140 million. For the 2006 census, the estimated population threshold of Enumeration Areas for the urban areas was 500 persons per Enumeration Area while the rural areas were put at population threshold of 200 persons per Enumeration Area. From the 2006 census, further projections by the National Population Commission reveal that the population rose to about 167.9 or 168 million by October 2011. It was also projected that Nigeria's population will be 177 million by July 2013; and 194.8 million by July 2016 and 221 million by July, 2020. These projections are based on 3.2 percent annual growth rate calculated using the 2006 census figures. It is clear that between 2006 and 2011, Nigeria's population has by the projection increased from 140 million to 168 million.

Reuben K. Udo 2006 in his book 'The politics of population census in Nigeria' in one of his comments stated, yet the importance of an accurate and complete census for a developing

country like Nigeria can hardly be exaggerated. A complete enumeration providing information on sex and age composition, the spatial distribution of the population in each local government area and movements of population between different parts of the country and from rural to urban areas is an important tool for social and economic research and is indispensable for planning purposes. An accurate count is also required for the allocation of parliamentary seats in a country like Nigeria where the basis of representation in parliament is population. Because of the challenges and the enormous cost implications of creating and maintaining a database for vital statistics given other issues of manpower and logistics involved in data gathering, aside from the cultural and tradition as well as myths attached to issues of headcount in some cultures and the concerns of gender restriction as well as population migration in crisis situations, population and housing census problems are indeed overwhelming as lack of trust hinder expected communication amongst the citizens. In spite of the fact that population number represents an important substance of any country, as it relates to planning, most of the developing Countries are faced with contemporary issues that have been affecting accurate and utilization of population census data.

These challenges were faced right from inception of head counting and recently house count as transmitted to a contemporary time as such. Every population census held in Nigeria before and after independence has ended in national controversy, strong allegations of population falsification and in fact no general consensus among the populace as to the size of the total population of Nigeria (Eniayejuni, A. T. and Agoyi, M, 2011). During the preparations for the election into the federal House of Representatives, the data from the 1952/53 census were used as the basis for allocating 50% representation to the North. This to a great extent indicates fundamentally the relationship between population counts and political strength and influence. Population issues precipitated the Constitutional Crisis in the country in 1962. They played a major role in the crisis of the old Western Region of 1965, and were largely responsible for the military take-over in 1966. They also contributed greatly to the fall of Gowon‟s regime in 1975 and still loom large in the minds of many Nigerians with the incessant demand for the creation of more states soon after the return to civilian rule.

It has been observed that, out of several censuses conducted in Nigeria, the figures were irregular and controversial. It was only the 1963 and 1991 census figures that were accepted and used for general planning. The 2006 population census was to a reasonable degree accepted, despite the fact that the exercise witnessed some controversies. For instance, the Lagos State government declared to the public that their population was under-estimated by the National population commission. The 2006 Nigerian census is argued to be one of the most heated and politicized in the history of Nigerian census counts irrespective of the various preparations as well as huge sums of money that was provided for the exercise from the international communities such as the European Union and the World Bank (Bamgbose, 2009). The enumerators alleged that some powerful politicians in the state hijacked the recruitment of census officials, replacing trained officials with names of their favorites (Suleiman, 2006). The same scenario was found in Benin, Edo state. In Benin, the nonpayment of enumerators‟ allowances and substitution of names of trained officials with names of favorites of political leaders almost stopped the census exercise there, especially as the move was protested against, leading to a clash between enumerators and policemen. Powerful politicians hijacked the recruitment of census officials, replacing names of trained officials with names of their loyalists (Suleiman, 2006)

From the above narratives on the limitations of an acceptable population and housing census in Nigeria other key issues arising from falsification of census reports, ethnic segregation and religious profiling occupy prominent positions on the national development efforts in Nigeria. Indeed population figures even in the United States is used in the distribution of political representation to the federating states, so Nigeria adopting the approach is not out of place. Instances exist where certain segments of the country refuse to come to be counted while others presumed that it was used for enlistment into the military during war situations also others who avoided to be counted as a means of evading taxes

yet still some areas were denied being counted by political leaders as a way of preventing some segments of the population from having a proportional input in government. In all, several reasons have been adduced for Nigeria's inability to conduct an acceptable population and housing census, especially the politicization of population census matters from the time of the British colonialists, the post-independence period, the military era, up to present era of democratic rule. Inadequate infrastructure, Illiteracy and Lack of finances.

Fostering a Way Forward

The issue of population headcount is a technical matter and the decision to have the census commission report to the council of state and the Executive President before figures are made public does not grant full autonomy to the census body and this is an infraction that would hinder transparency and objectivity of the exercise. A brief summary of the issues militating against the conduct of an acceptable population and housing census in Nigeria includes and are not limited to the following: corruption of respondents and officials, lack of professional population census experts, remoteness of some locations and settlements, cultural beliefs and traditions against counting of persons: gender undertones especially amongst Muslim women(Purdah), the expensive and huge financial implications involved in conducting a census in the face of limited resources at the disposal of government, overwhelming politicization of census, high illiteracy levels in Nigeria, insufficient and ineffective census education and awareness, poor demographical maps and lack of up to date digital maps and poor road networks hampering proper logistics.

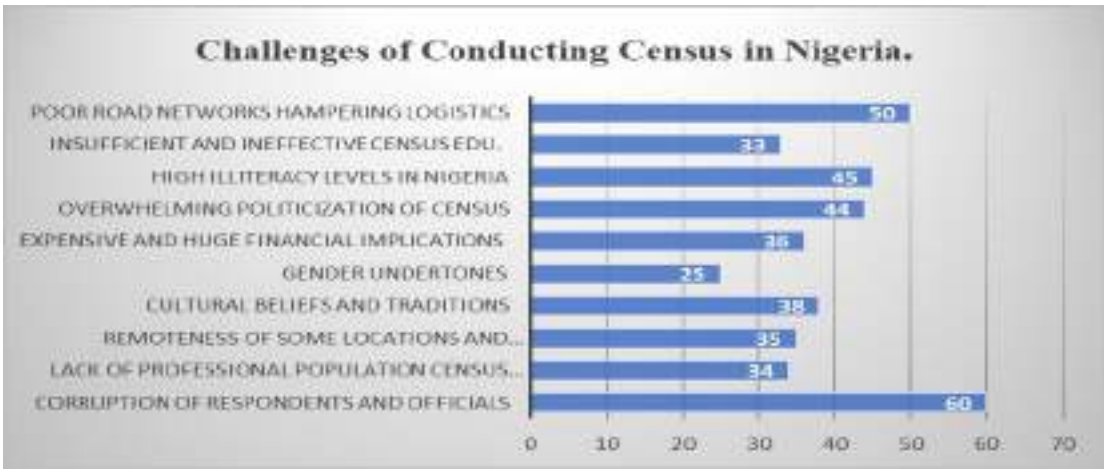


Fig 1: Distribution of established challenges in conducting census exercise in Nigeria.
Source: Field Survey, 2023.

Many factors have been identified by respondents from focal point interviews as challenges of conducting census in Nigeria as displayed on the bar chart above. However, responses show that most respondents are of the opinion that corruption is a recurring challenge distorting the success an accurate census exercise in Nigeria. Other factors like poor road network and high illiteracy level were as well identified as common factors militating against the success of a reliable and decennial census exercise in Nigeria.

The international agencies especially the United Nations have adopted the 10 years regime (decennial) within which nations of the world, especially the developing countries of the global south should embark on census. Recent adoption of a universal template is envisioned to serve as guidelines for comparison of Human Development Index of nations in the line with 2030 Sustainable Development Goals.

Indeed the history of population headcount has witnessed much controversies and has, overtime hindered the actualization of an acceptable population and housing census in Nigeria. The Buhari administration has invested a lot of resources in material as well as training of manpower for the 2023 census. Also requisite technology and the international community

through the European Union and relevant United Nations agencies whose major focus is on population has made relevant inputs to actualize the census gets the deserved attention and the results acceptable to the generality of the Nigeria people and thus provide the guide and direction for policy formulation and implementation. It is pertinent to mention at this point, certain fundamental issues which has overtime bedeviled the actualization of an acceptable census and amongst others includes the peculiarities of our federal system as compared to the type of federalism practiced in the United States which is purported to have copied from, the need for the establishment of a truly independent National Population Commission whose financing would be from the consolidated revenue funds just like it obtains for the Judicial arm of government.

This very well needs the attention of the National Assembly as relevant sections of the nation's constitution needs to be reviewed. The size of the reconstituted commission should be streamlined and structured and thus do much to preserve the integrity of the commission. Issues like working towards equal representation in national parliament should be reexamined with the adoption of a single legislative option of having only the Senate as the state assemblies would be made more responsive to the aspirations of legislation at the grassroots which is closer to the people. Other issues like revenue allocation, the involvement of public officers in population census, preparation for the census: publicity and awareness creation without emplacing political undertones, the structure of the questionnaires and ensuring that issues like, religion, state of origin and other politically and sensitive questions are removed. The de-facto option should be adopted for the headcount.

Conclusion

To guarantee the actualization of an acceptable population and housing census the resolve for early, proper and adequate preparation and planning for the census becomes imperative given the enormity of the assignment and the need to positively engage the people on the relevance of population census. This should be done through the deployment of all relevant media avenues to get the people aware of the need to participate actively in the census exercise. Conducting an acceptable census demands the removal of bottlenecks like manual processes and ensuring as much as possible the emplacement of digital methods through the deployment of GIS and RS technology, as this would help to reduce and possibly eliminate errors in enumeration and collation of population data and guarantee transparency of the census exercise. To eliminate the challenges of omission, duplication and possible double counting, the deployment and use of Bio-metric systems in image capturing as a positive and acceptable option is a veritable tool towards actualizing the aims and objectives of the census administration.

The financial and logistics demands of a census exercise are indeed enormous and governments at various points at the federal, state and local governments needs to make adequate budgetary allocation and timely deployment of funds and requisite manpower to man the various segments and coordinating units of the exercise. The quality of questions and the perception it creates in the minds of the respondents provides insights into what the responses can be used for and by implication could devalue the relevance of the census thus the need to avoid ethnic, religious undertones on questions put to respondents. There is need to seek and obtain the contribution of the international community in terms of manpower support, technology/equipment and funding for the exercise especially in technical areas of the census. There is need for well-planned provision of equipment and logistics pre-census, during census and post census period as this would guarantee a seamless process flow for the census. Regularity of conducting census, without failing, advisable in every 10 years. There is need to involve other experts in science, technology as well as environmental science disciplines. Urban and Town Planners need be involved as the pace of urbanization is on the increase, as professionals planners would provide insights as regards sectoral information on land use especially delimitation of areas that are set aside for residential housing development, industrial development, educational and health services as the outcome of the census would provide relevant feedback that would guide development planning for the future.

Nigeria, which in 2015 was noted as the

fastest growing economy in sub-Saharan Africa cannot to date conduct effective and reliable census data due to issues of politicization, falsification and tampering of population census result, religious rivalry, ethnicity and fluctuation of period of conducting census serves as impediments against accuracy of population census figures. It is important that concerted efforts be made by all stakeholders including the Nigeria populace to set aside political sentiments and support government and its agencies as the country looks forward to conducting a population and housing census under the new regime of President Bola Ahmed Tinubu in the not too distant future. Aside from conducting a population census the UN annual projection published by relevant agencies should be used religiously as it provides data estimates which can guide and provide direction in Nigeria's quest for meaningful political and socio-economic development.

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DEMOGRAPHIC DIVIDEND, A WINDOW FOR ECONOMIC OPPORTUNITY: THE CASE OF CROSS RIVER STATE

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Abstract
The main object of this paper is to x-ray: *Demographic dividend, a window for economic opportunity: The case of Cross River State.* Demographic Dividend (DD) happens when the age distribution is changed by a declining birth rate, such that the requirements of the youngest age cohorts need fewer investments for human capital development, and resources are made available for investment in economic development and family welfare. The implication is that the labour force grows faster than the population that is dependent on it, thus creating a window of opportunity for faster economic growth and family welfare. Nevertheless, fertility rate has been on the falling in recent years in Nigeria and Cross River State, the emergence and magnitude of DD is an empirical issue that needs to be determined to inform policy direction. The empirical approach used in the paper was dependent on the Cross River State Bureau of Statistics. A decline in the fertility rate and dependent ratio can enable households to growth investments. When the share of the population under age 15 is less than 30 percent, "a window of opportunity" usually opens for a "demographic bonus" of a large labour force, with a potential to increase productivity, savings and investments, drive economic growth and development. Cross River State should take advantage of the growing share of the working population (15 – 59) as potential asset through deliberate "investment" by institutionalizing good and visionary governance, promotion of social and economic policies that emphasize human capital development. Such policies should expand access to quality health services, educational and employment opportunities, to ensure a healthy, skilled and productively employed workforce.

Keywords: Demographic, dividend, distribution, investment, economic opportunity, economic growth, work force and development, family welfare.

Introduction

Available statistics indicate that fertility rate has been on the decline in recent times in Nigeria and Cross River State in particular. The socio-demographic outcomes of limited or non – existence of this important basic human right of access to right information by the "Right Holders" results in high sustained total fertility rate of 5.8 (averagely 6 children per Cross River State woman) (MICS 4, 2011), 4.4 in 2016/17 (MICS 5) and now 3.1 in 2021 (MICS 6).

Cross River State has witnessed tremendous improvement in mortality conditions. The estimate of infant mortality rate revealed that the rate declined from 80 infant deaths per 1,000 live births in 2011 (MICS 4) to 38 in 2016 – 17 (MICS 5) signifying 52.5 per cent reduction and slightly increase to 41 in 2021 (MICS 6) per cent representing 7.32 per cent. Similarly, under – five mortality rate, dropped from 127 under – five mortality deaths per 1,000 live births (MICS 4, 2011) to 52 per cent (MICS 5, 2016/17) representing 60 per cent reduction and then increase to 67 per cent in 2021 (MICS 6) representing 22.39 per cent. With the implementation of the State Health Insurance Scheme in 2022, the figures for both mortalities would reduce drastically.

Cross River State is leveraging on the growing working-age population through institutionalizing good and visionary governance, in order to reap the potential demographic dividend it offers. The "Window of Opportunity" does not last forever, and reaping of the demographic dividend is not automatic. The dividend can only be guaranteed through deliberate "investment" by institutionalizing good and visionary governance, promotion of social

and economic policies that emphasize human capital development. Such policies should expand access to quality health services, educational and employment opportunities, to ensure a healthy, skilled and gainfully employed workforce. This is the precondition that will unleash the potential of the labour force to enhance productivity, savings and investments to drive economic growth and sustainable development.

Cross River State over three decades has been involved in development planning, budget preparation and implementation and service delivery and has not attained democratic dividend. The bane of the State is not planning demographically. Our development plans over the years are not demographic sensitive thereby eluding the window of economic opportunity which is impeding economic growth and sustainable development.

The main purpose of this write – up therefore is to enable the government plan demographically to offer a window of opportunity to harness demographic dividend for sustainable development. Demographic dividend is a window of opportunity, which opens and closes within a specific period given the speed of demographic transition of a State. Hence, the sustainable development of the State is dependent on how the State is able to plan demographically to harness the dividend therein.

Geography and Socio-Demographic Characteristics of Cross River State

Cross River State is situated in the South-South geopolitical zone of Nigerian with capital in Calabar. The State is located within the tropical rain forest belt of Nigeria, lying between latitude 4° 28' and 6° 55' North of the Equator and longitude 7° 50' and 9° 28' East of the Greenwich meridian. It shares common boundaries with the Cameroon Republic in the east, Benue State in the north, Ebonyi and Abia States in the west, Akwa Ibom State in the southwest and the Atlantic Ocean in the south. The land mass of the state is about 22,431 sq. km.

The topography is characterized by the Obudu Plateau (Sankwala massif) in the North and Oban Hills in the South. Cross River flows westward (in-between this major elevation), from the Cameroon Mountains, meanders southwards and south eastwards into the Atlantic Ocean (Cross River Estuary). The Oban and Sankwala massifs lend credence to the mineral expression and rich soils that characterize the State's geology.

The climate is tropical-humid with wet and dry seasons. The average temperature ranges between 15 degrees and 30 degrees Celsius, with the Obudu Plateau recording the lowest temperatures all year round.

Cross River's vegetation varies from the South to the North of the State. The land cover tapers northwards, from the tropical rain forests in the south to the stunted woodlands and lush grasslands (Guinea Savannah) of the northern extremes of the State.

Minerals include but are not limited to limestone, granite, laterite, barite, kaolin, iron ore, galena, chalcopyrite, mica, mosafeldspar, manganese ore, quartz, rocksalt/ brine, talc, coal, amethyst, tourmaline, chalcedony/ onyx, sand, uranium, lithium. Traces of crude oil and gas exist. These are either in traces, partially or fully investigated by the private and public sectors.

The State has 18 Local Government Areas: Abi, Akamkpa, Akpabuyo, Bakassi, Bekwarra, Biase, Boki, Calabar Municipal, Calabar South, Etung, Ikom, Obanliku, Obubra, Obudu, Odukpani, Ogoja, Yakurr and Yala LGAs. The major economic activities include agriculture, fishing, hunting, lumbering, mining/ quarrying, transportation, commerce, hospitality, tourism and others.

The State projected population is about 4,787,895 people in 2023, with a density of about 221 people per square kilometre. (State Bureau of Statistics, 2022). The male population is estimated at 51% while the females account for 49%. The population age groups are: 0 - 14 years - account for 38.2% of the population, 15 - 64 years - 58.7% and 65+ years - approximately 3.1%. Over 50% of this population is made up of young agile men and women between the ages of 15 - 64 years. Total literacy for women is 41.3% while for men the value is higher and stands at 51.4% (State Bureau of Statistics, 2022).

The occupations profile across the State is diversified and many citizens between the ages of 15 - 49 are involved in agriculture; 42.1% for women and 48.2% for men. Sales and service work ranked second; 47.1% in women and 28.1% in men. 6.1% of women and 9.0% of men are involved in professional, technical managerial

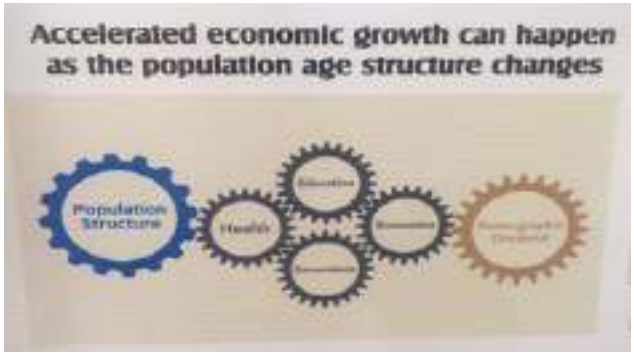
activities (NDHS, 2018). Women practice less skilled and unskilled manual work and are rated respectively at 1.0% and 0.2%. However, men predominate skilled and unskilled work with the rates of 7.3% and 6.8%. Occupation choices appear to be determined not so much in terms of capacity but in terms of sex in so far as women are predominantly within some occupational fields specifically education and medicine.

Cross River State had one of the lowest fertility rate in Nigeria in 2021 projections at 3.1% (MICS, 2021). This indicates a higher use of contraception for pregnancy prevention and family planning. However, over a period of five years, the contraception use has soared from 23.0% in 2016 to 33.1% in 2021.

Concept of Demographic Dividend

The demographic dividend is the accelerated economic growth that may result from a decline in a country's mortality and fertility and the subsequent change in the age structure of the population. With fewer births each year, a country's young dependent population grows smaller in relation to the working age population. With fewer people to support, a country has a window for rapid economic growth if the right social and economic policies developed and investments made.

Figure 1: Population Age Structure and Demographic Dividend



Demographic dividend is the economic growth potential that can result from shifts in a population's age structure, mainly when the share of the working-age population (15 to 64) is larger than the non-working-age (14 and younger, and 65 and older}. This means that there is a boost in economic productivity that occurs when there are growing numbers of people in the workforce relative to the number of dependents. The dividend does not happen automatically.

The demographic transition and changes in the population structure should be accompanied by sustained investments in education, skills development, health, job creation and good governance. (Lagos State Demographic Dividend, 2015). It is only a State/Country with both increasing numbers of young people and declining fertility that has the potential to reap a demographic dividend (Bloom et al, 2002). Simply put, demographic dividend refers to the growth in an economy that is the resultant effect of a change in the age structure of a country's or state's population. The change in age structure is typically brought by decline in fertility and mortality rates.

Demographic dividend is economic growth achieved by having proportionally more people of working age. A boost in economic growth that occurs when there is a larger number of people in working age (15-64yrs) than those below (<14yrs) or above (>65yrs) working age. A large cohort of working age population presents the “opportunity” to stimulate economic growth through increased productivity, greater household savings, and lower costs for basic social services. A demographic dividend requires multiple intersecting investments to empower, educate and employ the young people.

There are two phases/types of demographic dividends. The first dividend, which potentially occurs as a consequence of demographic transition, is time bound and can only last for 30 – 50 years. If well harnessed, it can lead to the second demographic dividend. The second dividend is associated with population ageing, and where there has been anticipation of the future decline in the support ratio this leads to an increase in wealth and possibly assets, the second dividend is a consequence of the actions and policies taken during the period of the first dividend. The extent to which the first dividend is harness will determine the degree to which the second dividend will be realized. The first dividend yields a transitory bonus while the second transforms that bonus into greater assets and sustainable development. These outcomes, as indicated earlier, are not automatic but depend on the implementation of effective policies (Lee and Mason, 2006). Unfortunately, there are limited evidences on the nature and magnitude of the

dividends that African countries stand to gain as well as the ways of harnessing them.

However, the best opportunity many times turn out to be the biggest challenges. Demographic dividend comes with its own complexities and will need nurture and complementary policies. A demographic dividend can however degenerate into a violent youth bulge, which can lead to a 'demographic disaster' or 'demographic doom'. Reaping the demographic dividend means that the productive population is engaged. However, the current population growth puts substantial pressure on the country's capacity to provide quality social services such as new schools, more clinics, adequate sanitation, as well as food and provisions to meet basics needs.

Demographic Dividend Enabling Factors and Approach

The enabling factors of demographic dividend include: declining maternal / child mortality rate, declining fertility rate, increasing education enrolment, high productivity jobs for young People and good governance.

Demographic Dividend occurs when the distribution is altered by a falling birth rate, such that the needs of the youngest age groups require fewer investments for human capital development, and resources are freed up for investment and family welfare. The implication is that the labour force grows faster than the population that is dependent on it, thus creating a window of opportunity for faster economic growth and family welfare. Given that countries experience the process of decline in fertility rate at different times, with varying enabling opportunities, the nature and magnitude, and commencement of DD are bound to differ. Though fertility rate has been on the decline in recent years in Cross River State and Nigeria, the emergence and magnitude of DD is an empirical issue that needs to be ascertained to inform policy direction.

The empirical approach used in the paper was dependent on the Cross River State Bureau of Statistics. Some studies on Demographic Dividends have been conducted in some states of the Federation such as Lagos and Ebonyi. This is the first in Cross River State, and attempt was made to synthesis all the existing evidence in the State and beyond through method of systematic review. A systematic review is often considered the gold standard in research as a rigorous approach that carefully maps out all methodological aspects of its undertaking such that it can be replicated in the future and in order to inform policy and programming. The systematic literature review was conducted to identify peer-journal articles and research reports on demographic issues.

Engagement of four (4) Researchers and two (2) Data Analysts (including a Cartographer) by the State Bureau of Statistics, the implementing agency to identify and conduct/collate research that gave account of demographic profile about the State in order to define the age structure, distribution, sex, growth, composition and its implications to development.

The secondary data analysis explored the following national and State datasets to examine different questions to unpack new strategies and policies based on available resources to ensure optimal harnessing, utilization and distribution of demographic dividends for the wellbeing of the population in different age brackets.

The following datasets were analyzed:

i. Nigeria Demographic and Health Survey (NDHS), 2008 and 2013
ii. Multiple Indicator Cluster Survey [MICS 4], 2011
iii. Multiple Indicator Cluster Survey [MICS 5], 2016/2017
iv. Lagos State Demographic Dividend, 2015
v. Population Dynamics and Development Issues in Ebonyi State, 2017.

Literature Review

According to Kalu (2017), lower fertility and slower population growth would temporarily increase the relative size of the working-age population, resulting in a decline in dependency ratio. A fall in the number of dependents can enable households to increase investments-particularly in the human capital of their children. A rise in the number of the working-age population can expand a nation's productive potential and output. These windows of opportunities at the household and national levels are central to the concept of demographic bonus (UNFPA, 2011). Although no precise index has been formulated to identify the unset of this demographic bonus, it has been suggested that

when the share of the population under age 15 is less than 30 percent, a "window of opportunity" usually opens for a "demographic bonus" of a large labour force, with a potential to increase productivity, savings and investments, and drive economic growth and development. Meanwhile, the current large and increasing share of the working-age population (15-59) is a potential asset that can be empowered to drive economic growth and development. Cross River State should leverage on the growing working-age population through institutionalizing good and visionary governance, in order to reap the potential demographic dividend it offers. The "Window of Opportunity" does not last forever, and reaping of the demographic dividend is not automatic. The dividend can only be guaranteed through deliberate "investment" by institutionalizing good and visionary governance, promotion of social and economic policies that emphasize human capital development. Such policies should expand access to quality health services, educational and employment opportunities, to ensure a healthy, skilled and gainfully employed workforce. This is the precondition that will unleash the potential of the labour force to enhance productivity, savings and investments to drive economic growth and sustainable development.

In East Asia, where poverty has dropped dramatically, this demographic bonus is estimated to have accounted for about one third of the region's unprecedented economic growth from 1965 to 1990. The Republic of Korea serves as an example of a country that has successfully reaped the demographic bonus: as her birth rate fell in the mid-1960s, the population of children of elementary school age declined and funds previously allocated for elementary education were used to improve the quality of education at higher levels. The result was a highly educated and skilled labour force (Ross, 2004). The window of opportunity is open for a limited time; in time the age distribution changes again as the large adult population moves into the older, less-productive age brackets and become dependents. At the same time, the smaller cohorts arising from declining fertility, replace the working-age population. This transition in age-structure tends to increase the burden of dependence on the adult population. But the old-age dependency burden on the working-age population could be mitigated if the now elderly population were empowered when they were young, and were able to have made savings and investments. Now is the time to plan to hasten the arrival of this window of opportunity and to create the enabling environment to ensure the dividends are reaped before the window closes.

Findings

The Shifting Age-Structure

With a population growth rate of 3.2 percent, and the total fertility rate of 3.1 (MICS 6, 2021) child per woman in the child-bearing ages, the population of Cross River State will still be growing at a fast rate. For instance, if the current growth rate were to persist, the present 2017 population of 4,090,942 will double in barely 22 years (i.e. by 2039). The existence of a large and growing number of females in the childbearing ages provides an in-built force that can sustain population growth at least for some decades, even if total fertility rate drops to replacement level of slightly over 2 children per woman. This calls for continued emphasis on family planning and sexual reproductive health education to sustain the declining trend in fertility. There is therefore the need for clear policy priorities for the future that should address specific population issues based on the different age brackets.

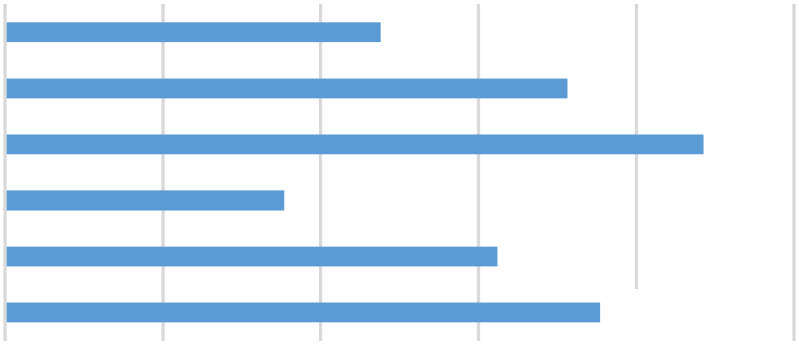
Poverty

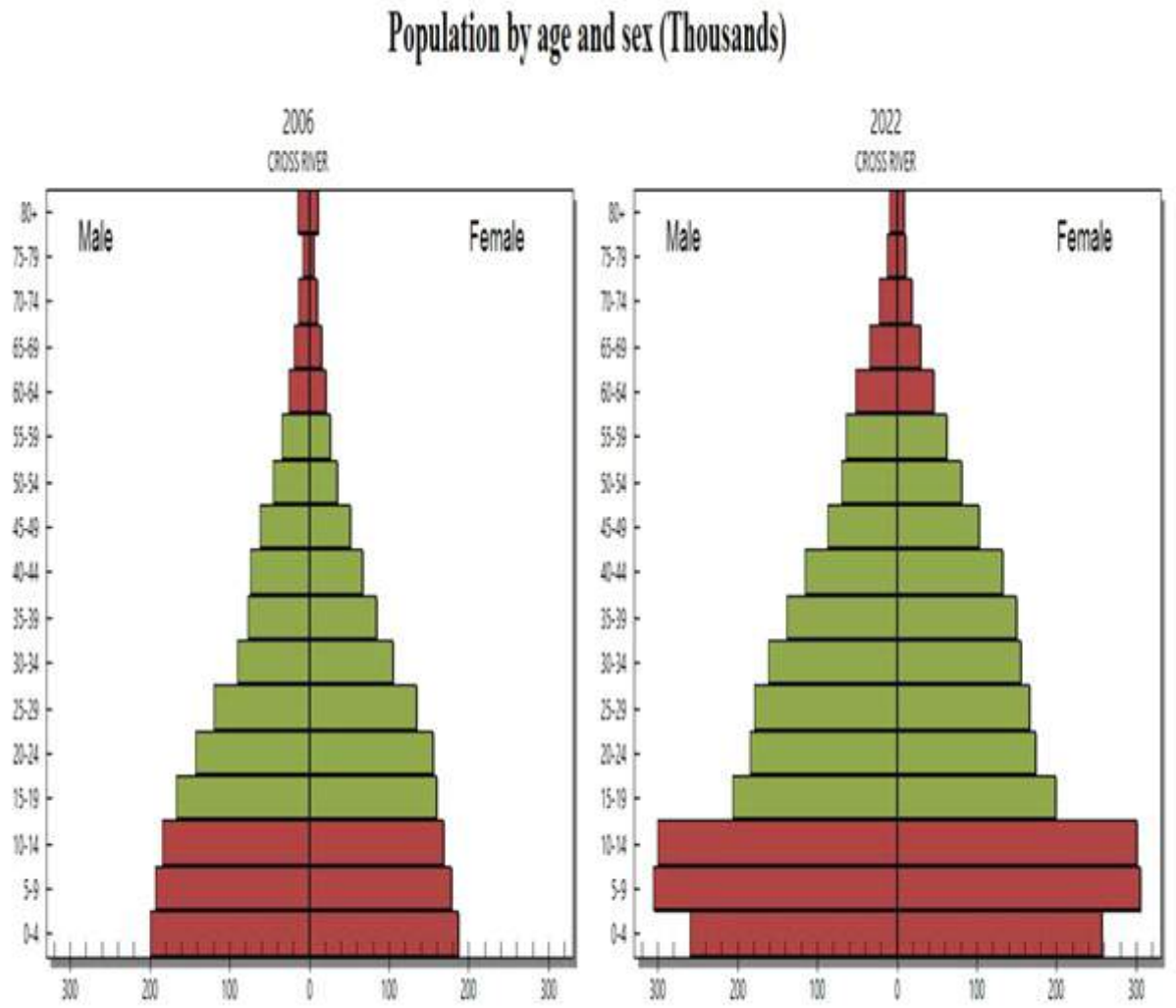
It is worthy of note that, among the South – South States of Nigeria, Cross River State has recorded one of the highest rate of poverty. This high rate of poverty in Cross River State can be checked, through component of population change: birth rate, death rate and migration.

In 2015, Cross River State was rated as the 19th poorest State in Nigeria, with a poverty rate of 33.1 percent (United Nation's Global Multi-Dimensional Poverty Index Report, 2015). In 2018, the poverty rate rise 36.3% using the monetary approach. Similarly, in 2022 the poverty stood at 75.5% (NMPI, 2022).

Again, multidimensional poverty by states show that Cross River State has a Child MPI of 0.321 and poverty incidence (Head count) of 87.5%. Senatorially, Cross River Central has Child MPI of 0.298 and poverty incidence (Head count) of 82.2%, Cross River North has a Child MPI of 0.356 and poverty incidence (Head count) of 96.0% while Cross River South has a Child MPI of 0.294 and poverty incidence (Head count) of 81.1% (MPI, 2022).

Figure 2: The multidimensional poverty rates in the six South-South States, 2022





Education

The aim to ensure that children everywhere, in respective of sex, complete primary school requires the knowledge of the stream of population of children entering school-going ages and the spatial distribution. This is important so as to balance growth in enrolment with expected corresponding increase in educational facilities, materials, infrastructure and teachers. Without factoring in such population variables for example, there will be the risk of dearth in these supplies which may compromise the quality of education, or there could be over-supply of materials etc in some locations leading to wastage of resources. Available evidence on school attendance ratios for Cross River State, indicate a net attendance ratio of 85.7 percent at the primary school level for both sexes in 2021 (MICS, 2021). This suggests that 3 percent of the primary school age (6-12 years) population was out-of school. Net attendance ratio at the primary school level was slightly higher for females (85.9 percent) than for males (86.1 percent). This suggests that 2.4 percent and 3.6 per cent of the primary school age (6-12 years) for males and females populations were out-of school respectively (MICS 6, 2021).

Similarly, at the upper secondary school level, the net attendance ratio was a low 71.5 percent, implying that 21.3 percent of the secondary school age (13-18 year) population was out of school. Net attendance ratio at the secondary school level was slightly higher for females (75.7 percent) than for males (68.3 percent). This suggests that 21.1 percent and 21.5 per cent of the secondary school age (13-18 years) for males and females populations were out-of school respectively. (MICS 6, 2021)

Preparation for transition from primary to secondary school, or vocational school, as well as

from secondary school to tertiary institutions should endeavour to build a human capital with diverse and competitive skills needed for both national and state development.

Employment

More than half (58.66 percent) of the population of Cross River State is in the active and working-age group. This large and growing labour is a potential asset and not a liability to enhance productivity and stimulate economic growth through profitable engagement in economic activities and gainful employment. Unemployment rate rose from 24 percent in 2014 to as high as 53.70 percent level in 2020 (SBS, 2020). High unemployment rate undermines economic growth, increases the economic burden and dependency on those who are gainfully employed, and exacerbates poverty. The current substantial shift in the balance between the dependent and working-age populations while ageing is still a distant phenomenon, can be taken advantage of to enhance sustainable development. What are needed are visionary and evidence based policies to expand educational, including vocational training and employment opportunities and improve access to quality health services to ensure a skilled and healthy workforce that is gainfully employed.

For the working population to be productively engaged in wealth generation and poverty reduction, there should be appropriate investments in education, including vocational training, health and job creation now.

Health

Health is wealth. Achieving universal health coverage (UHC) is a goal we must accomplish with the vehicle of Health Insurance. Access to qualitative health is imperative. Preventive and curative health services, especially regarding child, sexual and reproductive health remains vital. Health needs of a population vary by age and sex and the group age-structure implications are argued as follows.

Most early childhood deaths are caused by preventable diseases. This means that achieving 100 percent immunization coverage of children under 2 years will significantly reduce high early childhood mortality. In 2017, only 49.9 percent full coverage was achieved (MICS 5, 2016/17). Emphasis should be placed on achieving and sustaining 100 percent immunization coverage of children in the State.

In Cross River State, the Contraceptive Rate for modern FP methods is estimated to be 16.1 per cent (i.e. Population of married women of child bearing age that are currently using modern methods of contraceptives) with unmet need for family planning 26.2 per cent (both spacing -18.0 and limiting-8.2) lower than that of the National average, 27.6 per cent and a Total Fertility Rate of (TFR) of 4.4 per cent. (MICS 5, 2016/17). High Maternal Mortality Ratio of 545/100,000 live births in Cross River State. Similarly, maternal mortality has remained at 576 deaths/100,000 live births at National (NDHS, 2013).

Domesticating or adopting and implementing the family planning/child spacing work plan, as well as launching the new FP Logo will contribute immensely to the improvement of family planning programming, the promotion of public visibility for Family Planning Service delivery points (SDPs) as well as empowerment of the public on key benefits of family planning/child spacing services, thereby increasing uptake of family planning services and contributing to the attainment of the National FP goal of 27 per cent mCPR by 2020.

Health is a major concern in old age, especially among the older age groups that are more prone to ailments or sickness. The susceptibility of the elderly, particularly women has increased in recent times owing to the loss of the old support system for the aged persons. The elderly should be registered by the Government in the State Health Insurance Scheme and treated as indigent; and be given free quality health by the Government. Old peoples' home could also be established to take care of elderly persons who have no relations to take care of them. Government should collaborate with Society of Saint Vincent de Paul to take care of the poor, needy and indigent.

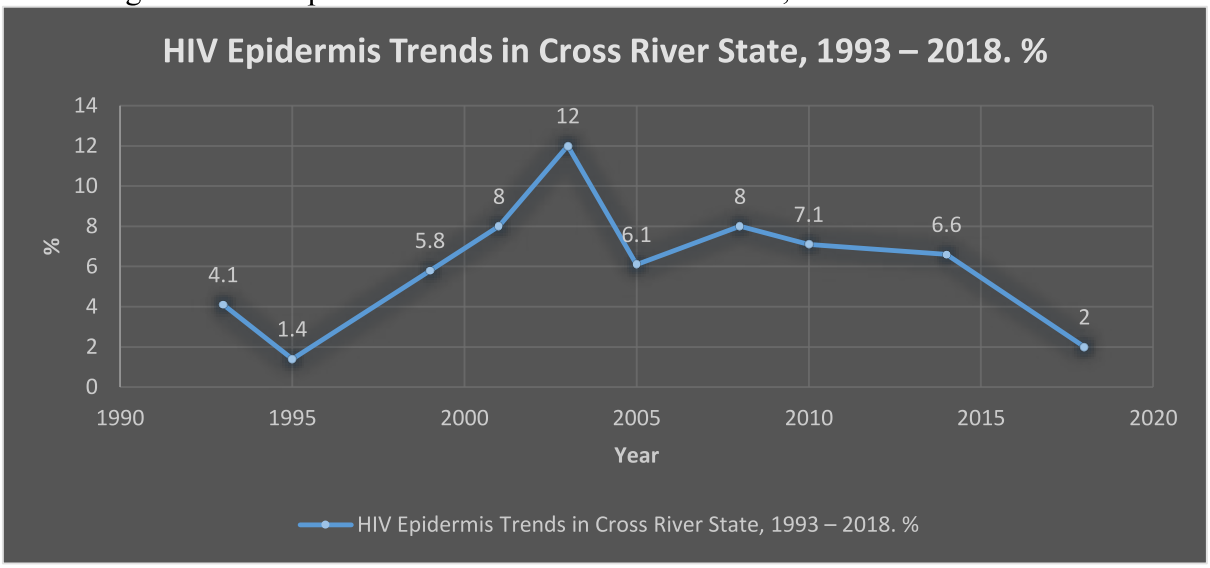
HIV and AIDS

The HIV and AIDS is not a death sentence though a major health and development issues with social, economic and cultural concerns. It has far-reaching implications for development because it kills adults at the prime of their lives. This

deprives families, communities, the State and the nation of their young and productive people, thus reducing labour productivity, increasing the number of orphans, and deepening and spreading poverty. Sustained and comprehensive response should continue to put HIV/AIDS prevention and treatment at the centre of the development agenda'

Cross River State HIV epidemic trend has witnessed an increase from 4.1% in 1993 and declined to 1.4% in 1995. It however, rose steadily to 5.8% in 1999, 8.0% in 2001 and reached an alarming rate of 12% in 2003 ranking 1st among all 36+1 States. It declined sharply to 6.1% in 2005, rose to 8.0% in 2008 and declined again to 7.1% in 2010, and further declined to 6.6% in 2014 (FMOH ANC Report) , and further dropped to 2.0% in 2018 (NAIIS). See

Figure 4: HIV Epidermis Trends in Cross River State, 1993 – 2018.



The 2014 Antenatal HIV Sentinel Survey reported that HIV prevalence in Cross River by facility and location is highest in the urban areas (Calabar-9% and Ikom-6.3%) than the rural areas (Akampka-4.7% and Gakem-4.0%). It was in recognition of the enormity of HIV and AIDS that the Cross River State Agency for the Control of AIDS (CRSACA) was transformed from a Committee into an Agency in 2007, and saddled with the responsibility to coordinate, build capacity, mobilise resources, monitor and evaluate the multisectoral HIV and AIDS response to effectively address the issue, as well as, ensure that CRSACA was part of the planning and budgetary processes in the State. At present, the State has the second highest burden of HIV infection in the South South zone, with about 237,600 people infected, and 27,443 people currently on treatment. This shows that there is a huge gap of people who should have been on treatment but are not.

The State Government in partnership with Development Partners, CSOs and other stakeholders has made progress towards achieving the UNAIDS 90-90-90 targets by ensuring that HIV prevention and treatment services are available to those who really need them in communities across the State. These include among others scaling up of treatment, prevention, care and support, the development and costing of the State Strategic Plan (SSP) (2017 – 2021), among others. Despite these achievements made by the State Government and stakeholders, the State HIV prevalence is higher than the National and Zonal averages. In spite of these commendable achievements, CRSACA is seriously constrained to fulfilled its mandate because of non-release of HIV and AIDS budgetary allocation, and the private sector organisations are not adequately contributing to the response. The Cross River State HIV and AIDS response is thus highly dependent on international funds channelled through Direct Bilateral and Multilateral agencies. Furthermore,

the Mode of Transmission survey conducted in the State showed that more than 70% of new HIV infections will emanate from low risk heterosexual and causal heterosexuals in the State if prevention is not scaled up.

The need for domestic resource mobilisation for the State response has become very important in view of the fact that the State's HIV prevalence shows that the rate of infection is on the rise and presently above the national and zonal level. Recent studies carried out in the State reveals that new infections trends coming from hitherto low risk segments of the population. Low contribution from the State Government and private sector, and dwindling donors financial support due to the close out of the project lifespan of some implementing partners that have been supporting the State response has created a wide gap in terms of sustainability of HIV and AIDS programmes. Therefore, the need for the State Government to improve the current level of funding of HIV and AIDS response through adoption of a resource mobilisation strategy, directly or indirectly in a manner that is efficient, equitable, sustainable, and transparent with a view to improving the quality of care. These strategies include among others: Tax revenues, public sector user fees, involvement of private sector and the inclusion of HIV and AIDS services in the benefit package of the Cross River State Health Insurance Scheme (SHIS).

Migration and Urbanization

Migration is one of the products of population. It has been with us right from time immemorial. People are compelled to move from one location to the other for various reasons. Basically, people move in search of greener pasture. Other reasons could be in search of infrastructure, social amenities, knowledge, mate, fertile farming land, employment, etc. Movement is mostly skewed in favour of urban areas for the obvious aforementioned reasons. Rural-urban migration is, as in most populations are age and sex selective, and mostly teenage preponderate. This deprives the rural areas of the critical agricultural labour force and has implication for food security. The urban share of the State population was estimated at 25 percent in 2006 and is growing. (SPC, 2009). This requires a corresponding growth and development in basic physical infrastructure such as housing and social amenities; otherwise it will put pressure on existing amenities, create slums, and undermine sanitation which affects the welfare and health of the urban people. For instance, in Cross River State urbanisation is posing a lot of challenge. The rate of population growth is far ahead of the rate of growth of social amenities, making more people struggle for the available infrastructure. The resultant effects are traffic congestions on our roads, imbalances in students - teacher ratio in our schools, doctor – patients' ratio in our hospitals and health centres; even water supply becoming inadequate. So in terms of development planning, it is for us to understand that the population growth rate demands a corresponding increase in the provision of social economic utilities to support for the growing population. Meaning road networks will have to expand, more schools built, more teachers also recruited, and health facilities expanded especially in the urban areas because of the growth in population and pressure on social amenities and infrastructures.

Cross River State has made the attempt to improve urban development in the State by creating specific urban development agencies for the major cities (Calabar, Ogoja, Ikom, Obudu and Ugep Development Authorities) and by streamlining and improving the procedures for obtaining the various approvals and permits required to erect private residential and commercial buildings as part of its overall urban development strategy. Thus in addition to the Government planning and developing new cities and housing estates, the private sector is also being encouraged to participate in the delivery of new buildings

Public supply of potable water in Cross River State comes from water works, boreholes and protected dug wells. Attempt is made to supply the major cities through the water works while for the rural areas, the emphasis is usually on boreholes and protected dug wells. Table 1 presents information on the total number of water facilities in Cross River State by LGAs as at 2020. A total of 2132 water facilities were provided as at 2020 out of which 929 (43.57%) were functional.

Table 1: TOTAL NUMBER OF WATER FACILITIES IN CROSS RIVER STATE BY LOCAL GOVERNMENT AREA, 2020

LOCAL GOVT. AREA	TOTAL NO. HPBH	TOTAL NO. OF HPBH FUNCTIONAL	TOTAL NO. MBH	TOTAL NO. OF MBH FUNCTIONAL	TOTAL NO. OF WP	TOTAL NO. OF FUNCTIONAL WP	% FUNCTIONAL	TOTAL BENEFICIARY COVERAGE	TOTAL BENEFICIARY ACCESS
ABI	109	39	34	14	143	53	37	69,750	27,250
AKAMKPA	34	6	41	9	75	15	20	59,750	12,750
AKPABUYO	32	3	43	13	75	16	21.3	61,750	17,000
BAKASSI	26	0	33	7	59	7	11.8	47,750	87,000
BEKWARRA	77	34	50	22	127	56	44.1	81,750	3,600
BIASE	41	10	21	7	62	17	27.4	36,500	3,600
BOKI	245	181	74	35	319	216	77.1	36,500	11,250
CAL. MUN	7	0	28	15	35	15	42.9	153,750	89,000
CAL. SOUTH	10	1	29	16	39	17	43.7	20,500	18,750
ETUNG	44	8	11	1	55	9	16.4	17,750	25,250
IKOM	63	19	24	6	87	25	28.7	45,750	3,250
OBANLIKU	62	33	18	15	80	48	47.5	38,000	12,250
OBUBRA	96	34	18	5	114	39	34.2	46,500	23,500
OBUDU	148	61	85	30	233	91	39	143,250	14,750
ODUKPANI	59	7	96	33	155	40	25.8	134,750	52,750
OGOJA	68	36	55	26	123	62	50.4	85,750	43,000
YAKURR	217	132	28	12	245	144	58.8	89,250	48,000
YALA	77	44	29	15	106	59	55.7	55,500	29,270
TOTAL	**1,415**	**648**	**717**	**281**	**2,132**	**929**	**43.57**	**1,224,500**	**522,220**

Source: RUWATSSA, Calabar **NB:** MBH – Motorized Borehole, HPBH- Hand Pump Borehole

In 2016/17, only 53.9 percent of households in Cross River State are using improved sources of drinking water, this is lower than the National average 64.1 per cent. To alleviate this condition according to Kalu (2017),

Coordinated effort by relevant agencies in planning, developing and managing human settlements in urban areas should be encouraged. This will ensure infrastructural development and creation of jobs that will mitigate the negative impact of rural-urban migration.

There is need to invest in modernizing and mechanizing the agricultural sector to create job opportunities and ensure food security.

Population, Environment and Development

Utilization of land and water resources by populations has a direct impact on environmental sustainability, and therefore on sustainable development. Ensuring that population pressure on the environment does not result in over utilization of natural resources and degradation of natural habitat remains a major challenge (Kalu 2017).

Population pressure on land has been on the rise, from 130 persons per square kilometers in 2006 to 189 in 2018 and projected to 236 in 2025 and 518 in 2050. Because of uneven spatial distribution of the population, the pressure on land varied markedly across Local Government Areas of the State. This has implication for agricultural activities, food production, waste management and sustainable development. This requires appropriate measures to ensure a healthy environment for sustainable human and infrastructural development in Cross River State.

Cross River State in an attempt to achieve sustainable development is providing an enabling environment for the economic development of the State thereby promoting the wellbeing of the population or people. The enabling environment should be able to support gradual but continuous transformation of the state's agriculture from subsistence to commercial one, provide adequate support for tourism sub-sector thus making the State the preferred business and leisure destination within Nigeria and West Africa, promote the industrialization of the State and ensure the physical and environmental resources of the State are sustainably developed for the

wellbeing of the people.

Integrating Population Dynamics in Development Framework

The situation of rapid population growth in the State is not limited to birth rate only, but migration from other troubled areas such as other Niger Delta States owing to militancy, refugees from Benue State and Cameroon, Bakassi returnees, other people seeking haven perhaps because of its peaceful nature, clean, green and very accommodating people.

The recent State's industrialisation policies (for instance, where anybody who intends to establish an industry or a company that would employ not less than 20 persons within six months is entitled to free land at the Ayade Industrial Park (which already has infrastructure such as electricity, access roads, security, water, and Wi-Fi). The State presently has the lowest crime rate in the country.

The government needs to plan to grow social amenities at even more than 3.2% to be able to cope with the increasing population; otherwise, we have more people on the road that cannot be transported, more people seeking admission in schools or institutions, but carrying capacities of the institutions are limited.

Harnessing the Demographic Dividend in the State for Economic Growth and Development

The government planning process should be demographic, that is, taking into consideration the various age group and their peculiarity. Besides, the government should encourage manpower development, In-Service Training and Continuing Education (IST'/CE) for skills and improved productivity, strengthen its industrialization efforts as these would create more employment opportunities and stem youth restiveness as well as curb the tempo of crime and poverty that is very high, 75.4% (MPI, 2022).

The State Health Insurance Scheme should ensure access to quality health care to achieve universal health coverage (UHC). Mobilise young people and strengthen women's participation in both social and economic development as well as in governance.

Partner traditional leaders for harnessing demographic dividends at all levels especially supporting projects that stimulate economic activities at community level. Government and development partners should collaborate in the areas of innovative and continuous engagement of the populace through capacity building, consultations and support for community interventions for harnessing the demographic dividends.

CONCLUSION/ RECOMMENDATIONS

Harnessing demographic dividend depends on appropriate policies in education, health, economic growth and good governance. In changing the population age structure, there has to be a decline in the fertility rate so as to fully maximise the opportunities to harnessing the demographic dividend. More commitments in terms of investments in voluntary family planning can be put in place in order to reduce the total fertility rate. Besides, agitations towards the education and empowerment of the girl child and women can go a long way in reducing fertility. Various schemes both in the public and private sectors will provide opportunities for the youths to be engaged in productive activities. (Demographic Dividend Report of Nigeria, 2018).

Cross River State government has the potential to harness Demographic Dividend for accelerated economic growth through her policies on Health, Education, Economy and governance. Government should plan demographically to realise demographic dividend.

The State is seriously and strategically committed to investment in good governance in tandem with its "People First" agenda, quality and affordable health care through the State Health Insurance Scheme and family planning, industrialization policies and efforts to generate employment and improve the living standard of her citizenry and inclusive and functional education.

For an effective population, we need to plan demographically and strategically with statistical data, statistical information and conduct empirical research to develop our human capital to tackle poverty, unemployment, inequality and provide opportunities for the citizens.

The government needs to develop a Demographic Dividend Roadmap to enable the

State achieve Demographic Dividend within the first five years of the implementation of the Growth Development Strategy (GDS) to provide the required opportunities for economic growth and sustainable development.

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POPULATION AND HOUSING CENSUSES: IMPERATIVES FOR SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

Throughout the world, population census has from time immemorial remained the most veritable source of information on population and households in terms of their numerical strengths, livelihoods, lifestyles, race, gender and other demographic characteristics necessary for an effective development planning, this paper adopts the qualitative technique of analysis using secondary data and examines populations census in the run-up to the attainment of sustainable development against the background of Sustainable Development Goals. The paper examines population censuses as the ultimate reservoir of vital demographic data, good measures of living standards among nations, indicators of spatial distribution of human societies within a given geographical space and as such an indispensable instrument for governanceas well as astandard guide in effective development planning. The paper further considers a chronicle of basic issues and challenges facing population census in Nigeria such as geopolitical controversies bases on ethnicity and religion, difficult natural terrains, heavy capital outlay, security inadequacies, inadequate funding, misappropriation and technological deficiencies among others bias like falsification of result and poor road links. The paper suggests greater financial commitment, objective assessment of census results among other post census activities and harmonization of the diverse ethnic compositions in the census process as measures to enhance the process of population census for effective pursuit of sustainable development in Nigeria.

Introduction

Throughout the world over-head count of all the people within a geographical space at a given time has actively remained the single most veritable tool that guaranteed information on population and households in terms of their multiple manifestations of race, numerical strength, gender, age , livelihoods, lifestyle and other demographic affiliations such as migration and growth trends including spatial distribution. According to Aidi, Emecheta and Nwudiobu (2021), these multiple variables of population in all their manifestations represent vital ingredients whose clear identity, compilation and analysis is central to an effective development planning that gears towards the attainment of sustainable development. However tedious the process of census is, without census data, countries will remain is great anarchy in their routine process of providing adequately for their citizens, (Skinner,

2018). This explains why population and housing census has steadily been assuming move relevance in both developed and developing economies across the globe. This fact has been aptly evidence by the world body, the United Nations Department of Economic and Social Affairs' Population Division which has evolved a documentary on population census concerns spanning from pre-census through actual and post-census operational guidelines which are expected to aid countries in conducting hitch-free population and housing censuses before, during and after the global pandemic of Covid 19 in the year 2020, (United Nations Statistics Division, 2020).

On the general note, population and housing census is expected to present an over-all picture of the demographic characteristics of a whole country or a geo- political entity in part thereof as well as other variables of populations such as migration, spatial distribution and livelihoods which define the economic and social aspects of life. It is only when a clear view of these scenarios comes up that strategic economic planning involving what is most needed and at a given locality at agiven time against the background of the Sustainable Development Goals hereinafter referred to as SDGs can be fully determined, (Esu and Udonwa, 2016).Meanwhile the import of this paper rests substantially on the links between population census and sustainable development within the context of a complementary relationship whereby at the initial stage, population and housing census sets the necessary machinery in motion to stimulate unending economic transformation which in its advance stage will in turn enhance the overall process of population census. Similarly, Ben and Okon (2020), noted that living standard and environmental quality involves a healthy and friendly interaction between population and the natural environment whereby increasing human population sizes can be balanced up through commensurable checks on his activities that are detrimental to sound environment health such as intensive agriculture, harp-hazard urbanization through industrialization and other aspects of deforestation and the concept sustainable development which according to world summit on Environment and Development (2002), is meeting demand of the present generation without inhibiting chances of future generations to also meet their needs.

It is interesting to mote here that the SDGs as modified by the world body dwell essentially on three critical areas comprising the natural environment upon which all developmental activities rest, economic growth which is expected to foster endeavours targeted at environmental health and social development and lastly human sustainability. From those three aspects, the United Nations in their historic summit of 15th September evolved 17 items which were unanimously adopted by world leaders and officially came into force on 1st January 2016. The items essentially revolve around four critical areas of sustainability as follows: human sustainability, social sustainability, economic sustainability and environmental sustainability, (UNESCO, 2021). The respective areas aim at achieving greater human health and capital through development of skills by way of education, improvement in attitudes involving equity between and within generations of multiple ethnic identities and peaceful coexistence. The SDGs in the same vein look forward to improving the quality of the natural environment through various conservation practices and efficient utilization ofthe attributes of nature, (Ejiroghene et al,2022). Through effective commitment and mobilization, the world body expects that these goals matures by the year 2030 and among vital indices, population censuses are central in the area of data provision.

A historical perspective of Nigeria's population and housing census shows that population censuses have been conducted at various points even prior to the amalgamation of the Northern and Southern Protectorates. Table 1.1 is a detailed coverage of censuses and shows that the first ever census in Nigeria was conducted in 1886 by the colonial administration then led by Sir Lord Lugard. It is interesting to note here that sustainable development as a global concept on its part also has set targets. This concept is a developmental philosophy instituted by world leaders of member states of the United Nations during their Millennium Summit in New York. The summit attended by 189 member States declared and adopted eight (8) items as set goals caption them as the Millennium Development Goals (MDGs), viz :

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. promote gender equality and women empowerment
4. Improve maternal health
5. Combat HIV/AIDS, Malaria and other diseases
6. Develop a global partnership for development.
7. Reduce child mortality
8. Ensure environmental sustainability.

The United Nations Conference on Sustainable Development held in Rio de Janeiro, Brazil in June 2012 however harmonized the goals adopting them as Sustainable Development Goals (SDGs) but with same content under its international development agenda to work on the targets between the years 2015 to 2030, (Kumar, Vive&Kadhish, 2016).In September of 2015 however, another extra-ordinary meeting of world leaders expanded the contents into 17 items in a more elaborate statement still revolving around the same subject matter of human sustainability, economic sustainability, social sustainability and the natural environment. The foregoing which revolves around the concept of development and its sustainability points to the fact that there is a strong relationship existing between the environment and development on the one hand, between the human society and the environment on the other as well as between humanity and development, which according to Oyeshola, (2008), encompasses environmental, social and economic sustainability. Sustainable development is therefore an umbrella that seeks to bring the natural environment, the human society and the routine process of modernization to equilibrium where all will survive without adversely affecting one another, (Sharachchandra 1991, Todaro& Smith, 2011).

Consequently upon above issues, for any population census to be able to serve as a prelude and or an imperative to sustainable development anywhere, such census must adequately provide for an enabling atmosphere under which the articulations of nature and socio economic life will effectively operate side by side where the environment flourisheswith increasing biodiversity and the humans will live improved livelihoods, enhanced lifestyles, exhibit better social attitudes which recognise the need for equity within and between generations of the multiple ethnic identities across the country and beyond. According to Talibi et al, (2022), this noble course can be further facilitated through free internal and international interactions under globalization within the context of peaceful coexistence while making provision for environmental sustainability through continuous innovations in science and technology.

Table 1.1 Population Censuses in Nigeria over time.

S/N	Year	Remarks
1.	1886	Conducted by Britain before amalgamation
2.	1871	Conducted by Britain before amalgamation
3.	1896	Conducted by Britain before amalgamation
4.	1901	Conducted by Britain before amalgamation
5.	1911	Conducted by Britain before amalgamation
6.	1921	Conducted under colonial adm. of Lord Lugard
7.	1953	Conducted but highly disputed
8.	1962	Rejected
9.	1963	Disputed but officially accepted and used
10.	1973	Not accepted
11.	1991	Officially accepted and used though disputed
12.	2006	Officially accepted and used though disputed
13.	2023	Proposed with preliminaries undertaken but suspended

Source: National Population Commission website, 2022.

Table 1.1 shows that population censuses are not a new development in Nigeria and that the 2006 National Population and Housing Census has been the last in the country from which projections are usually made on the basis of the 3.2 percent annual growth rate over the last seventeen (17) years -too long a period. According to Ingiabuna and Uzobo (2018), the role played by population variables in the routine process of development is directly linked to the efficacy with which man-earth relationship operates which is further linked to social attitudes and educational attainment which are important indices of socioeconomic status that factor man-earth association. It is therefore imperative to examine population census against the background of its importance in the attainment of sustainable development in Nigeria given that demographic and socioeconomic data are comprehensively covered by censuses.

Many countries have used housing and population censuses to achieve sustainable development initiatives in their climes as follows : In Singapore, the Housing Development Board (HDB) has used population data to plan and build housing that meets the needs of the population which has helped to create a more sustainable and livable city in that country (Kheng –L iang,2012). In South Korea,the Korean National Statistical Office has used population and housing data to develop policies and programs that have improved living conditions and quality of life. This has helped to reduce poverty and improve health outcomes, contributing to sustainable development. Similarly in Netherlands, the national statistics office has developed a "Sustainable Housing Monitor" that tracks progress on a number of sustainability indicators, such as energy use, material use, and carbon emissions. This data is used to inform policies and programs aimed at creating sustainable housing and communities. Another example is Canada, where the national statistics office has developed a "Sustainable Communities Indicator Framework" that tracks progress on a number of sustainability indicators, including housing affordability, transportation options, and access .New Zealand has also used population and housing data to achieve sustainable development in New Zealand. Here the national statistics office has developed a set of indicators to measure progress on sustainable development, including a housing indicator that tracks the affordability, quality, and availability of housing. This data is used to inform policies and programs that aim to improve housing and living conditions for all New Zealanders. One specific example of how New Zealand has used this data is the "Affordable Housing Initiative," which is a government program that provides financial assistance for the construction of affordable housing (Onn, 2015). This initiative has helped to increase the supply of affordable housing and reduce homelessness.

Conceptual Clarification

This segment of the paper attempts to explain terms and concepts as used in this paper as against its rigid meaning.

Population

This refers to all the inhabitants of a particular place at a given time. According to Griffiths et al (2016), the population of any life form refers to all members of a specie at a given geographical space at a given time. The human population therefore refers to the total number of people in a country or a part thereof as indicated in a census.

Population census

The United Nations defines population census as the total process of colleting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic and socioeconomic data pertaining to a specified time to all persons in a country or a well-defined part of it.

Sustainable development

Sustainable development as simply put is development that is well articulated to go on and on without ceasing. The World Summit on the Environment and Development held in Johannesburg, South Africa in September 2002 defines sustainable development as development that meets the needs of a current generation without jeopardizing the ability of the future generations to also meet their needs.

Environment

The term environment refers to the totality of a given locality expressed in terms of the attributes of nature that influence the life of organisms. Wright and Boorse (2011) see the environment as the complex of physical, chemical and biological

affiliations that act upon organisms or an ecological community in a given locality thereby factoring their survival and form. For the purpose of this paper, the environment is considered as the geophysical socioeconomic surrounding of which census operations take place.

Aim and Objectives

This paper aims to examine population census under the following objectives.

1. To analyse the relevance of population census data against the background of development planning.

2. To examine the relevance of population census data in governance.

3. To analyse the relevance of census data in making population estimates and projections.

4. To examine the extent to which census data can be used in ultimately scheming for the actualization of the sustainable development agenda in Nigeria.

5.

Methodology

This paper as already stated adopts a descriptive approach in its data analysis using secondary sources which form the background of qualitative analysis based on the findings of the respective opinion against the background of the objectives of this paper as stated in the preceding pages.

Roles of Population and Housing Census in Sustainable Development

This segment looks at the roles played by population and housing census in the pursuit of sustainable development. The roles are basically concerned with development of a sound data based on socio-economic statuses of the masses upon which censuses are conducted. The following among the other are some of the area's population and housing census aids in the overall process of sustainable development.

Information Reservoir

Population censuses usually convey wide ranges of information about which they are conducted. The 2006 National Housing and population census conducted in Nigeria for instance was fashioned up after demographic characteristics of the country's population and hence its caption.Accordingly, the 2006 census in the country was designed such that information on age, sex, race, ethnicity, income, education, home ownership, marital statuses and family sizes as well as health statuses were obtained effectively and documented for future use and future reference. According to Akanni, Uche and Isiugo (2004), such information is vital in building sound knowledge on the age and gender distribution and hence determination of the median age and necessary follow ups to the implication of same which for males was 17.9 and 18.4 for females with average aptly standing at 18 years approximately.

In the same vein, livelihoods through information on incomes and spatial distribution which defines population density can be effectively noted through a simple glimpse into the results of population censuses. Such reservoirs of vital information on socio-economic affiliations cutting across all works of social and economic life are indeed a great potential in the march to sustainable development. It is worthy to state here that information on size, density and employment statuses as well as lifestyles of the population are necessary in providing links on the level of direct dependence on the endowments of nature. Such will give advance insight on the type of interaction between the population and its environment even without a visit. This explains why the United States of America, China, Japan and Singapore as well as Britain do not joke with issues of population census.

Development Planning

The overall process of collecting milestones and goals by individuals, organisations or a whole country entails a careful reference to population census result. The reservoir of information from population censuses play vital roles in development planning not just in Nigeria but Africa and the entire globe. Extensive records on demographic structures such as age and gender as well as education, incomes and migration can adequately present a picture of poverty situations especially as in the case of Nigeria and other developing countries and basic needs of society at any given time.

According to Veckalne and Tambovceva (2022), sustainability depends on three pillars of the environment, society and economy. It therefore becomes imperative to upgrade society through reference to population and housing census records so as to improve livelihoods and enhance environmental quality and then economic advancement. By the time these three (3) pillars become highly supportive of each other, there would be a proactive effect which will in turn amplify the development process making it sustainable. It is worthy to note here that the natural environment of our planet earth is the primary source and as such the chief custodian of all ingredients for use in the process of production of goods and services under all ramifications while on the other hand, it is the only home of mankind in the entire cosmic articulations, (Saxena, 2013).

Against the foregoing background, there is therefore every need to conserve the environment so as to fully benefit from its diverse socioeconomic applications. Similarly, man's social attitudes also count greatly in the overall process of development. This explains why with enormous potentialities of development, no nation can achieve economic development where management of such resources is not informed by the objectives of development. This is highly exemplified in Nigeria, a country full of economic resources but highly characterized by social attitudes that are detrimental to economic progress, the latter of which is necessary to protect both the environment and sound minds as well as skills .It follows in essence that the environment, man and economy must be brought to equilibrium before sustainable development can be achieved, (Cluines, Forsyth &Hug 2009, Abashidze et al, 2016). All these have to be built around a framework of sound decisions by development stakeholders including government, individuals and non-governmental agencies (NGOs). This is in other words stating categorically that population and housing census provide a great deal of the framework around which sustainable development builds. The oceanic island nation of Singapore has very effectively made us of population data in relation to social needs and has over the years made special economic progressrating the country as the Asian tiger.

Instrument of Governance

Population and housing censuses have long remained and effectively served as the backbone of our democratic systems and government. In a study on the importance of population census accuracy, O'Hare (2019), notes that accurate census result have earned government across the globe great popularity stressing that a substantial number of decisions in the public and private sectors are taken after due consultations with census result and or vital registration. According to Ingiabuna and Uzobo (2018), population census result and development in Nigeria from all-around consideration of social, economic cultural and religious perspectives have manifested common links meaning that the census result play vital roles in the democratic process which translate to sustainable development by way of fixing up issues of environment, poverty and other socioeconomic concerns raised in census result. Thus, it is imperative to logically conclude that population and housing census result have served greatly as instruments in our routine democratic systems and governance at local and national and international levels.

Basis for Population Projections and Estimates

It is of great importance to note that the organizational framework for an effective and reliable population census in its entire demographic manifestations is capital intensive. According to Okolo (1999), census operational involvements of collecting analysing, interpreting and publishing of data affiliated to demographic characteristics and other socioeconomic statuses involves geographical activities of GIS/GPS maps, publicity, drawing up questionnaires, personnel recruitment, pre-test and actual head count are both time consuming and expensive. It is against this background that census result once certified are usually brought under reference to serve as basis for projections and estimates from time to time. In Nigeria for instance, the 1991 census was followed by that of 2006 well over a timeframe of 15 years. Thereafter, there has been no census and all figures of the current population size of just over 200 million people are based on projection from annual growth rate of 3.2 percent. Projection from

the 2006 census for all over seventeen (17) years is a clear indication that population census result serves as basis for annual projections and estimates which are brought under reference for all developmental process of decision and policy making.

Environmental Management

Census data constitute vital source of information for planning and managing our immediate natural surroundings. Demographic and Socio economic data for instance, which derives from age sex, household characteristics and occupational choice and literary status are very useful in determine techniques of environmental pollution and control involving sewage and other waste disposal affiliations. According to Amedu, Emejulu and Aighew (2020), household sizes and population density which are all census attributes are vital in the process of deciding on how environmental management in the area of pollution control are managed. The density of population which according to Kamaraju, Anradha and Kranti (2017),defines the number of people per square kilometre and its changing pattern urban and rural localities all count in the process of deciding which management technique is employed in the routine activities aimed at environmental protection for the ultimate benefit of both the environment itself and man. This explains why Environmental Impact Assessment (EIA) has become a rule rather than exception in the preliminary activities for project execution whether in rural or urban areas.

Urban and Regional Planning

Urban and regional planning are some of the most essential planning types in the global scenery today given the increasing need for it as a basis to improve both the urban environment and human health therein. According to Zhang, Xu, Qin and Tian, (2018), understanding the population size, density and spatial distribution requires close watch on the population census data. Such data aids in urban development in terms of basic allocations, emergency management and risk analysis all of which provides vital basis for the design of structural facilities such as building types, road networks and types and the kind of social services in urban centres. It is of great importance that population census be carefully compiled and kept for its vital importance in urban and regional planning.

Provision of Social Services

Diverse information from population and housing census provides for easy identification of priorities in the area of social services for the masses. This is done by referring to the median age which according to Weeks (2005), is that age which measures the age above which is found half of the population and below which is another half. In essence, the median age is that age that divides the population of a country into two equal parts. In Nigeria, the median age which is approximately 18 years implies therefore that development planners in their bid to effectively provide social services will have to consult population census data to be able to determine projects most suitable such as health, education and other related projects based on priorities defined by median age. From the foregoing, it follows that for sustainable development to be effectively on course in any country, there must be up to date from regular and routine national census so as to be better placed to determine priorities in the corporate effort to provide social services such as schools, health establishments and other related necessities of life, (Ikechukwu, Olise, Idam &Nwokolo, 2020).

Basis for Resource Allocation

Population census has long served as a source of reference for revenue allocation in many parts of the world including Nigeria. According to Reamer, (2018), data on census of population and housing provides details of the population characteristics and the quality of life of a people. Such details serve in the collective process of providing essential material and financial aids to support projects in the urban and rural areas. This is what has made other countries to speedily advance in the area of economic development. Among them are Ghana in West Africa, Cameroon in Central Africa, Tanzania and Kenya in the east and Botswana in Southern Afrfica.

Basis for Scientific Research

Population census figures serve greatly in the area of scientific research in the academia. It is

of great importance to note that research plays great roles in the overall process of economic development especially where such development is designed to sustain. According to Ajiboye (2021), scientific research based on population census is tangible road maps to effective planning and implementation of long-term development and hence sustainable development. It is therefore imperative to conduct census accurately so as to obtain accurate data. On the other hand, research has helped greatly in the area of monitoring geographical imbalance in the distribution of multiple phenomena that are central to the smooth operation of natural and socioeconomic concerns which ultimately affect sustainable development, for instance population and housing censuses provide data on the nature of health work force, health infrastructures, educational and occupational characteristics among others. According to Gupta, Zum, Diallo and Poz (2003), these are necessary ingredients that feed or equip scientific researches with dependable bases for verifications, finding and conclusions at the fateful end of which recommendations are made that go a long way in enhancing sustainable development.

Challenges of Population Census

Despite the vital role of population and housing Census in the process of attaining sustainable development, census is faced with multiple problems which must be tackled so as to ensure that its indispensible roles are actualized. Among them include the following.

Heavy Capital Outlay

The very process of conducting census involving population and housing is substantially demanding. From geographic activities of comprising employment of Geographic Information System (GIS) and GPS Maps with list of places, publicity, census questionnaires and recruitment of personnel as well as pre-census test, there is huge financial implication- as lots of computer or soft and hardware are extensively and intensively involved, (Okolo, 1991). For instance, the recently postponed census in Nigeria scheduled to have held between 29th March to 2nd April 2023 has its financial implication pegged at eight hundred and sixty-nine billion naira (N869) billion including pre-test and post census activities according to the Minister of state for Budget and National Planning. Earlier the National Population and Housing Census of the year 2006 cost a pretty 266 million US Dollar, (N53 billion) naira approximately, and about half of the money was funded by the European Union and other international donor agencies. It becomes imperative to note here that organizing a population census is really a herculean task.

Geopolitical Controversies based on ethnicity

Another major problem associated with population census in Nigeria is substantially rooted in the multiplicity of ethnic identities in the country. For instance, the south west region of Nigeria is made up mainly of the Yoruba tribe; the middle belt is a mixture of many identical but different tribes.All these ethnic tribes harbour some secret or unique political, cultural and socioeconomic interests that are personal to them and for which they are prepared to defend at all cost. These differentials are all brought to bear on census result which renders result inefficient and unreliable. According to Ezeah, Iyanda and Nwangwu (2013), the 1962 census which was the first in the country's political independence saw all the multiple ethnic identities taking advantage to mobilize against northern domination. The final result of the census was bastardized and rejected due to observed gross deficiencies leading to manipulation of the figures.

Religious and Cultural Controversies

The multiple ethnic tribes in Nigeria have religious and cultural under-tones characterizing them which go a long way in influencing census operations. This is manifested in the urge to dominate in which the two main religious in the country: Christianity and Islam have vested interest in dominating socio-economic life which often translate to tempering with census figures.

Misappropriation

The Nigeria society is highly characterized by corruption in high places. Consequent upon this development, the highly articulated nature of national census process tends to be grossly undermined as huge finances pumped into the exercise end up been siphoned

for personal gains. According to Nweze (2013), so many efforts have been made to stamp out corruption from the face of official concerns in Nigeria but have yielded inconsequential results. Thus, the bulk of the strenuous effort involving formidable planning policy formulation and executing aimed at achieving positive results and ultimately sustainable development becomes a mirage (Ohaegbulem, 2015).

Difficult Natural Terrains

The population of Nigeria is found all over hilly terrains and mountainous topography which abound in large expanse in central area, the western uplands of the Yoruba and the eastern mountains including Adamawa and Mambila Plateau. In Benue and cross Rivers States these hills are rampant in Kwande Local Government Area while the difficult terrains of Boki, Obanliku and Boki areas are respectively difficult for easy passages just like the forest areas. These constitute obstacles during conduct of census as most of them are not accessible and left out during census period.

Discussion of Findings

This paper in a review of secondary sources so far consulted shows that population and housing census is of great relevance in the routine process of scheming for speedy attainment of sustainable development. This finding corroborates with the views of Akanni et al, (2022), when they noted that population census data serves as information reservoir to which reference can be made of in the routine process of development planning which has also been attested to by Saxena, (2013).

The paper also found that governments across the world make effective use of population census data in taking far reaching decisions in the direction of economic planning and execution of development projects. This finding is against the background of views by Uzobo. (2018), in which the author found that major decisions on social and infrastructural facilities are taken in line with population estimates and projections defining what is most needed based on the median age.

Similarly, this paper found that census results are important in urban and regional planning according to a review by Xhanetal (2019), whereby the design of structural facilities and general outlay of the urban environment is based on data on distribution involving density.

On the other hand, this paper also found that there are some basic challenges that limit the extent to which census can be conducted and its data used maximally. These include heavy capital outlay, difficult terrain, geopolitical and ethnic challenges as well as religious and cultural affiliations as contained in the works of Okolo, (1991), and Nweze, (2013).

Conclusion

This paper has examined the role of population and housing census in the Nigeria against the background of the current global emphasis on sustainable development and accordingly notes that censuses play indispensable roles by way of providing critical data on demographical profile and socio economic characteristics of the populace while at the same time serving as a basis for population projection and vital instrument of governance among other important concerns that border around development planning and policy making. The paper notes as well that due to the heavy capital demands and lots of socio economic insecurity such as religious and ethnic conflicts, terrorist attacks, kidnapping, banditry and other ills revolving around geo-physical affiliations, the extent to which population and housing census would have contributed to sustainable development is limited and all hands must therefore be on deck in order to correct the abnormally.

The population and housing census is a valuable tool for measuring and monitoring progress towards sustainable development goals. While some countries have successfully used census data to achieve these goals, others are facing challenges in doing so. Nigeria in particular has struggled to effectively utilize census data for sustainable development. However by learning from the experiences of other countries, and addressing the specific challenges it faces, Nigeria can make more effective use of census data to improve the lives of each citizens and build a more sustainable feature.

Suggestions

Consequent upon the foregoing, the following measures are suggested as strategies for addressing problems of population and housing

census in Nigeria so as to enhance the quality of data collected and to boost its role in pursuit of sustainable development.

❖ Greater financial commitment in the conduct of population and housing census so as to achieve accurate and reliable data through adequate coverage of all census requirements. This can take the form of releasing enough census funds in good to the appropriate census officials and personnel.

❖ Harmonization of ethnic composition in the multiple processes of census administration so as to balance up regional interest in census and avoid controversies based on ethnic and religious difference which incubates distrust.

❖ Objective assessment of census through appropriate post enumeration actions so as to identify and correct possible areas of weakness. In this case, appropriate samples that adequately represent localities should be drawn out from the post enumeration exercise and re-examined through the same process of head count.

❖ Strict census laws and guidelines on conduct of census for smooth census administration.

❖ Harsh punitive measures for corruption cases associated with conduct of national census if any. This can take the form of long jail terms without option of fine.

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POPULATION CENSUS: A TOOL FOR EFFECTIVE ECONOMIC PLANNING IN NIGERIA.

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ABSTRACT

Population is an important factor to be considered in National planning and economic development. The importance of planning cannot be relegated to the background, as government and policy-makers will require data on the population for the purposes of projection and planning. A reliable, accurate and an acceptable population census therefore becomes imperative. Population census figure to a great extent influenced revenue allocation, representation in government and perhaps states and local government creation among others. Previous census in Nigeria had suffered from lots of setbacks, including; lack of adequate and or well trained census enumerators, improper demarcation of census areas, inaccessibility to some difficult terrain, especially riverine areas and the "purdah" system practiced in the Northern part of the country. All these constituted to the unreliability, inaccuracy and unacceptability of population census figures in Nigeria. The paper concluded with a call on the government to be specific by maintaining the periodic population census in Nigeria. This paper also recommended adequate funding of the National population commission, training of staff and enumerators.

INTRODUCTION

According to the United Nations organization, U.N.O. (2008). Population is the total process of collecting, compiling, evaluating, analyzing and publishing or disseminating demographic, economic and social data pertaining to a specified time or times to all persons in a country or delimited territory. Population of a country or other areas is the total member of people who live in it. It is pertinent to note that population changes as a result of migration and is usually conducted every ten years.

Statistics is an indispensable tool for economic transformation, growth and development. In other words, census data is essential for effective planning decision-making and resource allocation. Meaningful development and planning activities cannot occur without statistics, figures or data from population census.

Population growth in Nigeria has acquired a tremendous momentum, Obot (2015: 360). The 1991 census puts the population of Nigeria's population at 170 million people. Accordingly, the 2006 population and housing census places Nigeria population at 170, (NPC, 2005) 17 years after, the country's population is estimated to be 200 million. The 2023 population and housing census which was scheduled for March, 2023 by the Muhammadu Buhari administration was shifted to April, 2023. Up till the hand-over date on May 29, 2023, nothing significant took place. The government of President Bola Ahmed Tinubu is to implement the census, meanwhile, a whooping sum of N190 billion was allocated and release for the census exercise by the previous regime of Buhari.

STATEMENT OF THE PROBLEM

What necessitated the problem is the absence of available and up to date data, statistics and so on in National Planning. Most programmes of the Nigerian government like the Home School feeding programme, the trader money programme among others have no data to back up the implementation of these programmes and owing to the fact that the last census was conducted almost 20 years ago. It is only recently that the now suspended Minister of Humanitarian Affairs and Poverty Alleviation, Betta Edu tried to contract firms to come up with figures, numbers, and statistics for the various poverty alleviation programmes.

The purdah system is equally a challenge because men, even if of Muslim belief/origin cannot enter some households, except the head of the households. The inadequate number of female enumerators may also pose a challenge. There is also the doubt that even the advent of technology may not solve this problem.

OBJECTIVES OF THE STUDY

The main objective of the study was to examine the effect of population census as a tool for effective economic planning in Nigeria. Other specific objectives include:

- To determine the effect of lack of available and current data in National Planning.
- To investigate the relationship between population census, revenue allocation and fiscal policies of the government.

SOURCE OF DATA

Data was obtained mostly from secondary sources such as information from textbooks, journals, internet and other printed materials.

METHODOLOGY AND RESEARCH DESIGN

Ex-post facto research design was used in this study. Ex-post facto means after the fact. Ndijo (2005:74) submits that "Ex-post facto research is a systematic empirical study in which the research does not in any way control or manipulate independent variables because the situation for the study already exists or has already taken place.

The researcher can create a situation that can generate the necessary data for analysis.

THE USEFULNESS OF POPULATION CENSUS

Admittedly census plays a crucial role in economic development. Eze (2017), submitted that census holds a central place in a nation's data provision for planning socioeconomic development. Data and or information collected during the census exercise is used to assess the immediate welfare needs of the population as well as project future needs to assist planners make reliable futuristic development needs. On the relevance of census data, Undelikwo and Enang (2018), noted that data is an indispensable tool for economic transformation, growth and development. A country's planning and development efforts can be forestalled by the absence of reliable data.

In economic planning, particularly the issues of manpower and labour force matters, census data will enable as us to know how many persons are in the country, how many are employed and how many are unemployed. For the planning of employment opportunities, whether short or long term, government need to have an idea of the labour force characteristics which are easily provided by the census, Shimawua (2020).

Census aids in establishing the level of employment and unemployment for future planning and job creation by way of data on the number of people who are employed and the type of work, they do; the distribution of unemployed persons and so on Umoh (2001), submitted that in Nigeria, the problem of unemployment is so frightening, we need to know how many persons are in the labour force, how many are retiring and the member that is entering every year. Census also provides information on the number of persons engaged in specific economic pursuits, which information is necessary in economic planning as it shows the contribution of the citizens of the country and different sectors of the economy to her development. Eze (2017), opined that census also equally furnishes us with data on the number of persons who can read and write (literacy level) and the level of educational status (Education attained), by those who have been to schools, which will boost the understanding of the quality of our manpower and help inform necessary policy options for manpower planning

purposes. It is pertinent to note that data obtained from census can be utilized in the forecasting of future needs, including manpower needs to guide future development and goals particularly in the areas of manpower resources.

For example, census information on the number of children as well as when they are due for school will guide planners on training and recruitment of needed teaching manpower, (Shimawua, 2020).

Information gotten from census figures is needed for making concrete critical and evidence based national decisions. One of the goals of the population policy is to improve the standard of living and the quality of life of the people of the nation, Ottong (2005: 234).

THE POLITICS OF REVENUE ALLOCATION

Population has always been an issue of concern in the allocation of federal revenue in Nigeria. The Raisman Commission Introduced and adopted the distributable pool account, the target was balanced development, which informed its decision and guided by the principles of financial stability of the federal government need (to be determined by population) amongst others. The then federal military government in the 70's change the revenue allocation formulae based on two factors; population and equality of states on a fifty-fifty basis. Population figures in this case was met with great resentment. It was actually a great error owing to the unavailability of authentic population figures in the country. In all the censuses conducted in Nigeria, there has always been the loss of confidence in figures, accusations and counter-accusations of inflated figures, Dike and Iwuamadi (2005).

The Danjuma fiscal commission of 1988 assigned 30% to population. The low percentage assigned to derivation and the disproportionate weight given to population and population related factors was manipulative. The principles adduced by the committee was discriminatory in application, inconsistent and highly filled with multi-collinearly factors. The revenue mobilization and fiscal commission (RMAFC) in 2002, adopted 25.60% for population. Population plays a key role in the allocation of revenue and other resource, this account for why the various regions and ethnic bloc will always manipulate the process to gained advantage over others. According to Dike and Iwuamadi (2005), one of the principle of revenue allocation is the principle of population/school enrolment with emphasis on the welfare of the individual members of the country which is the ultimate goal of all revenue allocations.

Population therefore is a necessary criterion for consideration in every fiscal policy of the state. Every revenue allocation formula should be of benefit to every member of the society. Population is at the forefront of development as it attracts attention and concern for consideration. With special reference to the Nigerian context, population and the use of school enrolment are factors of controversy and multi-collinearity. This is due to the fact that our population census is considered inaccurate and unreliable for use.

THE NEED FOR ACCEPTABLE CENSUS IN NIGERIA

Before and after independence in Nigeria, every population census had ended in national controversy, strong allegations of population fasification and lack of consensus among the populace as to the size of the total population of Nigeria, Shimawua (2020). Udo (2000:1) shared this view when he stated that since national independence in 1960, population census has remained one of the most controversial issues in the politics and administration of Nigeria. More than half a century, Nigeria is yet to resolve the population census impasse.

This picture clearly x-rays the supremacy struggle by the dominant ethnic groups in the country. Census taking in Nigeria has become political

However, enlightened Nigerians have realized the usefulness and the great need for a reliable, accurate and acceptable census data devoid of manipulations and other infractions associated with it. A modern census is the main source of basic information about any country as, it provides data on the spatial distribution of the population, the age and sex composition of the population, size of the total urban population and of individual settlements. Statistical data on the labour force, occupations and literacy are also derived from census figures which aids in the computing of birth and death rates and for future population growth trends. Population census assumes greater importance as a source of

population data, Udo (2000). Countries of the world accord prominence to census exercises, even the third world countries, as figures obtained from the exercise is useful for national planning, irrespective of the cost implication.

CONCLUSION

Obviously, population census is an indispensable tool for economic transformation, growth and effective economic planning, which will in turn enhanced National development. Unfortunately, Nigeria has not maintained the ten years periodic span for the conduct of population census exercise. The last census was conducted in 2006 and the next one was to be in 2016, approaching 2026 (20 years), nothing serious has been done. It is therefore imperative and worthwhile for the Nigerian government to maintain this ten years periodic population exercise census in order to have current and up to date data for planning.

RECOMMENDATIONS

The following is recommended for the attention of government, policy makers and planners;

i. Sufficient budgetary allocation should be made at least a year to the conduct of a population census exercise and funds released in time to the National Population commission for prompt and timely operations
ii. The government should come up with a clear-cut population policy in Nigeria and muster the political will to implement it.
iii. In addition, there should be a synergy with other agencies of government, like the National Planning Commission, National Bureau of Statistics, among others.

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SETTLEMENT PATTERNS AND CENSUS TAKING IN NIGERIA

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Abstract
The paper examines: settlement patterns and census taking in Nigeria. The paper adopts Muller-Wille classification of settlements which are based on the degree of permanence of physical, social, economic and household activities within the human population which are the fundamental elements in conducting decennial population and housing census in Nigeria. Building numbering and household systems during census taking are done within the demarcated areas of the settlement. Census demographic data like types of household, locality, building pattern and information on special populations are obtained within the settlement. The history and development of settlement patterns are linked to the period of hunters and gatherers while the pattern is based on ancient and modern civilizations. The nexus between settlement pattern and census taking is ubiquitous and ancient in nature. Settlements have evolved in different shapes and patterns based on the level of human and geographical development in relation to the prevailing socio-cultural determinants. The shape, size, pattern, cultural traits, nature of settlements and economic activities of the population are basic data during census taking. In Methodology, the paper adopts expository discourse in explaining settlement patterns and census taking in Nigeria. Secondary materials were also used in the study. The study used content analysis method to analyzed the data obtained from the secondary sources. Therefore, the paper recommends sensitization of the settlement dwellers to synergized with the census functionaries for accurate and effective census taking irrespective of any settlement pattern. The paper also recommends the use of modern technologies in census taking for accurate and reliable data collection.
Keywords: Settlement, Patterns, Census and Nigeria.

Introduction

Settlement patterns and census-taking in Nigeria are important aspects of understanding the demographics, social structure, and economic dynamics of Nigeria. Therefore, settlement is a place that contains buildings in which people live, this may contain many or few houses, it may cover many square kilometers, and contains not only houses but also shops, schools, offices, industries, factories, government buildings and many other buildings. Settlements could be permanent or temporary; it comes in different

shapes, sizes and locations. The function of a settlement can be identified by looking at its shape, size, site and situation (Jinadu, 2004). Settlement patterns in Nigeria reflect a complex interplay of historical, cultural, economic, and environmental factors. From early hunter-gatherer communities to the development of urban centers of today, Nigeria's of evolution of settlement pattern has been shaped by a dynamic blend of indigenous traditions, transcontinental trade, colonial legacy, and contemporary urbanization trends (Balogun, 2001).

Settlement patterns and census taking are integral components of socio-demographic landscape of any nation including Nigeria. The interplay between settlement patterns and census data provides invaluable insights into the dynamics of population distribution and the socio-economic conditions of the people in any given locality. Nigeria, with its vast expanse of diverse geographical features ranging from savannahs to rainforests, is home to over 200 million people, making it the most populated nation state in Africa and this also reflect in the settlement pattern of her population. The nation's population distribution is characterized by a complex web of rural, urban, and peri-urban settlements with unique cultural, economic, and social attributes (Balogun, 2001).

These tends to reflect in the conduct of population and housing census. Understanding the spatial distribution of these settlements is essential to the effective planning and conduct of population and housing census in Nigeria. Settlements are the basis on which any form of village, town, city or mega polis are built, a settlement may have known historical structures such as the date, painting, inscription or era in which it was first settled by a particular people. The concept of settlement pattern in conducting population and housing census focused on the household arrangement. Therefore, a household consists of a person or a group of persons living together usually under the same roof or in the same building/compound, who share the same source of food and recognize themselves as a social unit with a head of household (Doe, 2015). A recognized household within any settlement pattern most possessed these characteristics: 'presence of a recognized head of household', 'sharing of catering arrangement' and 'feeling of belonging together as a social unit' in any settlement patterns of in habitat.

Literature review

Origins and evolution of settlement pattern in Nigeria

The origins and evolution of settlement patterns in Nigeria are linked with the diverse cultures, geographical and demographic features of the people. For instance, the earliest populations of Nigerian society were majorly nomadic groups of hunter-gatherers (Smith, 2000). These people were highly peripatetic, following seasonal patterns of plant and animal availability. Hence, there was no form of settlement pattern amongst the people at this era. **Emergence of Agricultural Communities (1000 BCE - 500 CE) brought a paradigm shift** from hunting and gathering to settled agriculture led to the establishment of more permanent villages and communities within the farm settlement. By the first millennium, composite societies and urban centers began to emerge. For example, the ancient city-states of Ife and Benin in Nigeria, known for their advanced artistic and metallurgical skills, Kanem-Bornu Empire in the north and the Hausa city-states in the northwest played crucial roles in shaping regional settlement patterns of Nigeria (Brown, 2012). The trans-Saharan trade routes greatly influenced settlement patterns in northern Nigeria. Cities like Kano and Timbuktu became major trade hubs, fostering the growth of urban centers and facilitating cultural exchange between North Africa and Sub-Saharan Africa.

Therefore, culture and commercial activities were the determining factors of settlement patterns in Nigeria. During the colonial period (late 19th to mid-20th century), there were significant changes in country's settlement patterns. Coastal cities like Lagos and Calabar became rapidly urbanized due to the establishment of trading posts and administrative centers (Smith, 2000). The Nigerian independence of 1960 also contributed to the change in Nigerian settlement pattern. Lagos, for instance was transformed into one of the largest mega-cities in Africa. This rapid urbanization brought about challenges related to infrastructure, housing, and social services.

Patterns of settlement formations and census taking

Dispersed settlements Patterns and census taking**;** There is a demographic relationship between Dispersed settlement pattern and census taking especially on accuracy of demographic data. A traditional dispersed settlement with its residential and landscape structure, distinctive building culture, and social and cultural peculiarities have created unique manifestations of material and spiritual heritage that relates to census taking (Ján, 2021).

The influence of dispersed settlement patterns on census taking is critical for careful planning, adequate resources, and appropriate technology to ensure accurate and representative data collection. However, the demographic relationship between Dispersed settlement pattern and census taking include: In dispersed settlements, households are spread out over a wide area. This can make it more challenging and costly for census enumerators to reach every household, especially in remote or hard-to-reach areas (Peter, 2003). In dispersed settlements, it may be more difficult to accurately identify and enumerate all households. Unlike in compact settlements where households are clustered together, in dispersed areas, households may be spread out over a large area, making them harder to locate thereby affecting the quality of census data (Amate, Villa, Jimenéz and De Molina, 2016).

Dispersed settlements can lead to undercounting or over counting of the population. Undercounting may occur if enumerators have difficulty reaching remote households, or if households are missed due to their isolated location. On the other hand, over counting may occur if multiple enumerators visit the same area, leading to duplicate counts during the enumeration periods. This affect the quality of census data. **Cultural and Linguistic Considerations also affect census taking in this settlement pattern** (Balogun, 2001)**.**

Linear settlements pattern and census taking; settlements clustered along rivers, creeks and streams. This trend continued along road, river, or coastline. Population and housing census activities in this settlement pattern is easier for census enumerators to reach households and gather data. the linear settlement pattern can significantly influence how census data is collected, analyzed, and used for various purposes, including urban planning, resource allocation, disaster preparedness, and understanding unique cultural and social dynamics of the enumeration areas.

The linear layout can provide a clear structure for enumeration, making it more efficient and provide accurate census data. Demographic profiling of population and housing census in linear settlements often have unique demographic characteristics. For example, settlements along a coast may have a higher proportion of fishing-related occupations, while those along a major transportation route may have a more diverse population due to increased economic opportunities (Urbieta, Fernandez, Ramos, Martínez, Bento, 2019).

Nuclear settlement patterns and census taking; Nuclear settlement patterns involved a concentration of people in urban areas (cities) and a dispersion in rural areas (villages). Nuclear settlement patterns provide the necessary information for the census functionaries during census taking for accurate data collection. Population and housing census taking in this settlement provide data on the proportion of the population in each category within the settlement. (Tatem, Campiz, Gething, Snow, Linard, 2011). The census provides detailed demographic information, including age, gender, ethnicity, and household composition. This information is valuable in understanding the social dynamics within nuclear settlement patterns.

Methodology

The article adopts expository thesis in explaining settlement patterns and census taking in Nigeria. Secondary materials were also used in the study. The study used content inquiry method to analyzed the data obtained from the secondary sources.

TABLE ON HOUSEHOLD WITHIN SETTLEMENT PATTERNS IN NIGERIA

Distribution of Population by Type of Household and Sex

Household Type	Total No. of Households	Sex		
		Both Sexes	Males	Females
Nigeria				
Regular	28,197,085	133,716,506	67,115,402	66,601,104
Institutional/Census Functionaries	382,880	5,013,486	3,260,584	1,752,902
Homeless Household	38,825	210,977	124,347	86,630
Homeless Person	47,674	189,069	145,578	43,491
Nomadic Household	176,046	946,122	489,511	456,611
Transient Persons/Household	22,932	133,070	84,546	48,524
Fishing and Hunting Persons/Household	35,050	222,560	125,520	97,040
Total	28,900,492	140,431,790	71,345,488	69,086,302

SOURCE: *National and state population and housing census priority table, national population commission, 2006*

Distribution of Population by Type of Household and Sex - State in Nigeria

Household Type	Total No. of Households	Sex		
		Both Sexes	Males	Females
Cross River				
Regular	645,251	2,800,802	1,416,320	1,384,482
Institutional/Census Functionaries	6,836	69,195	41,958	27,237
Homeless Household	1,029	5,692	3,071	2,621
Homeless Person	633	1,944	1,359	585
Nomadic Household	241	1,161	672	489
Transient Persons/Household	521	3,012	2,065	947
Fishing and Hunting Persons/Household	2,190	11,182	6,522	4,660
Total	656,701	2,892,988	1,471,967	1,421,021

SOURCE: *National and state population and housing census priority table, national population commission, 2006*

Distribution of Population by Size Class of
and Sex National

Size Clas		Sex	
Household	Both Sexe	Males	Females
Nigeria			
1 Person	3,609,746	2,782,030	827,716
2 Persons	8,206,626	4,139,715	4,066,911
3 Persons	11,220,708	5,399,323	5,821,385
4 Persons	15,196,072	7,424,644	7,771,428
5 Persons	17,025,805	8,416,123	8,609,682
6 Persons	17,695,152	8,799,826	8,895,326
7 Persons	18,244,947	9,078,536	9,166,411
8 Persons	21,369,096	10,929,41	10,439,677
> 8 Person	27,863,638	14,375,87	13,487,766
Total	140,431,79	71,345,48	69,086,302

SOURCE: *National and state population and housing census priority table, national population commis*

Conclusion/recommendations

Settlement patterns and census taking in Nigeria provides valuable understandings into the dynamic relationship between urban and rural areas as well as Patterns of settlement formations (dispersed, linear and Nuclear**).** Nigeria's diverse and rapidly growing population presents a unique set of circumstances that require careful consideration and strategic planning in settlement pattern and infrastructural development based on the trend of urbanization in Nigeria.

In achieving accurate data of population and housing census result within the Nigerian settlement patterns, the paper recommends the use of modern census technologies. Modern technologies, such as digital data collection, geospatial mapping, and satellite imagery, to enhance the accuracy and efficiency of census exercises will not be limited by any settlement pattern within a census enumerated areas. The modern technologies are apt to accurate census taking because it will help in capturing comprehensive and up-to-date data on settlement patterns, population distribution, and other demographic trends. The paper also recommends sensitization of the settlement dwellers to synergized with the census functionaries to remove the barriers of settlement patterns for accurate and effective census taking.

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NIGERIA CENSUS IN RETROSPECT: A PENACEA FOR FUTURE EFFECTIVE CENSUS-TAKING

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ABSTRACT
The research is entitled Nigeria Population Census in retrospect: A panacea for future effective census taking. The theoretical perspective is the game theory. The methodology is documentary sources. The literature review identified three factors responsible for disputed census results. The first was insincerity by Nigerians and the census enumerators. The second was the falsification of census results by authorities of the regions or states to give the northern states the highest population figures to gain the highest federal budget allocations. Third the 1963 census results sowed the seed of discord that truncated the first republic.
The findings identified obstacles to prevent a credible future census. These are the enormous costs of decennial censuses; security challenges in the country are a challenge for a population census. Finally, the idiosyncrasy of Nigerians to falsify results is a major obstacle.
Conclusion: As long as budget allocation and higher representation to the National Assembly are based on the census figures, politicians and stakeholders will repeat the tactics of the past double count and falsify census results with the cooperation of the enumerators. Unless there is idiosyncratic change, there will be no panacea for an effective census in the future.
Recommendations: the government should not link budget allocations to the most populous states. The Senate should be scrapped to save the cost of governance. Similarly, all the states should have equal representation in the House of Representatives. The government should employ more military and police personnel to protect enumerators and ordinary Nigerians who are at risk of being killed. There must be a change in the idiosyncrasy of deceit and dishonesty.

Keywords: Census, Deceit, Inflated figures, Ethnicity

INTRODUCTION

According to the United Nations "A population census is the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country" (2008). A national census is a method used for accumulating statistical data about a population, which is acclaimed to be vital to development (Osinaike, Aiyeola & Alao (2006). In other words, census is a public procedure, which mandates officials of a population commission to physically sight individuals in households and count them for onward collation of the figures. Unlike periodic projections, census process entails a practical exercise in which there is a numerical head count of citizens and another category of residents in a particular country. A credible census entails enumerators counting sighted humans in designated houses in a rural or urban precinct in respective geographical areas of a country. The overarching aim of a periodic census is to assist policy makers in identifying the demographic changes over a certain time frame between the previous national censuses.

A national census helps policy planners to build and maintain infrastructure and create an enabling environment for investors to key into the economic and commercial interest in a country. It also enables policy makers in respective

administrative tiers of government to know the statistics of people in each city town village and rural settlement to plan in times of emergency and social needs as it impacts education, housing, disaster relief, health, agriculture security, and infrastructural development, implementation of population policy, public planning and development (NPC, 2023). In addition, the statistics of youths, middle age and seniors desiring employment are highly pertinent to drive the economic prospects of the country. A census also gives relevant information about the percentage of those unemployed; what age cohort they belong to, which demographic group is more vulnerable to unemployment, and the number of elderly males and females who are unemployed and seek urgent assistance. Census results are published for businesses to know the level of unemployment in the country that way they can advertise vacant positions for employment. The role of the federal and state governments is to provide an enabling environment for investors and businesses to thrive so as to provide employment. Without a periodic population census, it will be arduous for policy makers to estimate the level of socioeconomic problems, unemployment, poverty and homelessness to trigger intervention (UNISAP, n.d).

What remains puzzling is the fact that since 2006, Nigeria has not organised a national population census. Despite the reasons for not holding a national census, it is opprobrious that for almost two decades, citizens of the acclaimed giant of Africa have yet to know the precise number of Nigerians resident in the country. It is the absence of periodic census that made an international organisation to give a daily estimated population of the country (Worldometre, 2024). Their inability to release an estimated statistics of the population of villages and towns including Local Government areas has not been helpful when it comes to knowing the overall population of the country. In reality, it is not their fault to give an estimated population of the country. Since the Nigerian government has abdicated its responsibility to conduct periodic censuses every ten years, willing foreigners enthusiastic about population censuses have stepped in to fulfil one of the functions of the Nigerian government, which is organise a periodic census and release credible results decanally.

This research has a road map. The preceding section was the introduction; then the theoretical perspective, methodology and literature review. It is followed by the Nigerian census in retrospect and factors to consider before a population census. The next is the discussion, conclusion and recommendations

THEORETICAL PERSPECTIVE

The most appropriate theoretical perspective to be applied in this study is the game theory. This is the mathematical study of strategies for dealing with competitive situations where the outcome of a participant's choice of action depends critically on the actions of other participants (Oxford Dictionary n.d.). Put differently the game theory is "the formal study of the rational, consistent expectations that participants can have about each other's choices (Schelling, 1980 cited in (Idike & Eme 2015). Riggs and Plano (1982) cited in Idike &Eme (2015) define game theory as a body of thought dealing with rational decision strategies in situations of conflict and competition when each participant or player seeks to maximize gains and minimize losses.

The game theory applies to post independence censuses from 1962 to 2006 when results of each census determined the number of seats each region sent to the federal parliament. Post-independence census also determined the most populous regions or states and the tendency to allocate such states with the largest revenue allocation. The game theory therefore identifies with the common saying which asserts that 'politics is a game of numbers' where the major ethnic groups struggle to assert their will to influence census enumerators in order to gain the highest share of the count. This game left minority ethnic groups without a say as the major ethnic groups bickered and criticised the outcome of each censuses. This left minority ethnic groups side lined in this game of numbers which favoured Hausa/Fulani, Yoruba and Ibo ethnic groups . This observation compelled Idike and Eme to issue the statement

The game theory of politics has substantially proved itself to be a good analytical tool for this study, since it brought into focus the fact that politics is a game of numbers, and that man is a rational-self-interested actor who tends

to consider first his interest before considering that of any other actor in a game. Nigerian politics in general and census politics in particular have indeed been characterized by the notion of 'winner takes it all'. This is why the major ethnic nationalities inflate and hyper-inflate census figures to have or be said to have higher population figure which exists as a precondition for determining who 'wins' greater revenue cum other resources in the country. All the above-mentioned reasons exist to portray the fact that the Game theory is indeed an appropriate analytical instrument for the study (2015: 55).

METHODOLOGY

The methodology comprises qualitative documentary method. This involves published results of past Nigerian censuses that are archived in documents. A document is a 'written text' that "must be studied as socially situated products" (Scott, 1990: 34). In other words "any written material other than a record that was not prepared specifically in response to some requests from the investigator" is a document (Guba and Lincoln, 1981:228). Silverman (1993) went further and provided a classification of documents as i) files, ii) statistical records, iii) records of official proceedings and iv) images. Guba and Lincoln (1981) distinguish between documents and records. They define a record as "any written statement prepared by an individual or an agency for the purpose of attesting to an event or providing an accounting" (Guba and Lincoln cited in Ahmed 2010: 2). From the above definitions and description, the documentary methodology is appropriate for this study. National Population Commission NPC has documents regarding past censuses that have been preserved for researchers to analyse and publish their opinions about the conduct of past censuses.

LITERATURE REVIEW

As earlier asserted; census is "An official count of the people of a country or district including age sex employment etc." (Merriam Webster Dictionary, 1999). In other words, a census is a numerical exercise that can also be perceived as a process where the demographic count of people reveals statistical indications that is within the geographical frontiers of a country (Osam, 2019). A population census is too relevant for any country to ignore.

Population census dates back to antiquity and stand as the most important source of demographic data in the ancient and contemporary world for all civilisations empires and modern nations. Historical records have evidence that census started as far back as 3,000 B.C. This was why ancient civilizations such as Egypt, Persia, Babylonia, Greece, Rome, Japan and China conducted census to achiever their military objectives of tax collection and drafting able bodied men of fighting age into the armed forces to confront external challenges (Australia Bureau of Statistics, n.d.). There are other reasons for conducting a census one of it is to avoid the problem of overpopulation in the country. According to Osam (2019: 184)

From observation overpopulation is the exponential increase in the number of people in a given geographical area; such increase is disproportionately across the demographics of a population and exceeds the overall statistical figures derived from the most recent national population census. Seemingly, if such disproportionate number of people exceeds the available resources of a country and stretches the limits of policy makers to plan development strategies, it becomes overpopulation. In this paper, the criterion for overpopulation is procreating more than three children in a life time and the ensuing consequences.

It is imperative for government to conduct decennial census to put in place birth control measures to stem over population which has a strong correlation to social consequences and social problems (Osam, 2019; 2023). The other reasons for the census are

I) To establish how much will be required for food, education, health, housing and welfare settlement, industry, technology and others in the light of material resources. ii) Identify population problems created as a result of trends and levels in living conditions to develop appropriate population policies. iii) Estimate targets in respect to manpower development and utilization, conducive to the stage of the economy (Adamu, 1989 cited in Bamgbose, 2009: 312).

A lot has been published on the controversies and intricacies of past censuses in Nigeria. Gleaning from the work of Aluko (1965), Ekanem, 1972,

Bamgbose, 2009; Adepoju, 1981; Ayodele, 2007; Elaigwu, 1986; Kolapo , Obasola & Ibona (2007). Maduagba 1987; Momoh & Adejumobi (eds) 1989; Muogbo, Fagbemi & Subair (2007), Babalola (2011), Okolo, 1999 and others too numerous to identify, the history of censuses in Nigerian remains the most dividing social problem save for periodic presidential and gubernatorial elections.

Based on the publication of a history of censuses in England and Wales, there is no doubt that the country placed high relevance to conducting censuses (Office of National Statistics UK). It was no surprise when the colonial office in Nigeria organised the first census in Lagos 1871. "This started the process of decennial censuses in the country. This was repeated at ten-yearly intervals up to 1931. The 1871 population stood at 29,000; in 1881, it was 37,000; in 1891, 33,000; in 1901, 42,000; in 1911, 74,000; in 1921, 100,000 and in 1931, 126,000" (Aluko, 1965 in Bamgbose, 2009: 313). The 1941 census was suspended during the Second World War.

Following the 1898 Selbourne committee which was to consider the future administration of Nigeria, the Lagos colony was merged with the Southern protectorate of Nigeria (Ballard, 1971 Okafor 1981 in Bamgbose, 2009). Consequently, the population census of 1911 was conducted but restricted to certain parts of the Southern protectorate. The amalgamation of northern and southern protectorates by Lord Lugard in 1914 that made it possible for future censuses to have a national spread even under the colonial government (Aluko 1965 in Bamgbose, 2009).

In terms of accessibility, the colonial officials faced limitations due to the remoteness of designated areas of future censuses notably in villages and towns and interior settlements. The terrain was rough as they were no access roads. In most cases access to remote villages and towns were through the rivers and creeks especially in the Niger Delta areas where rivers transverse the geographical terrain. Due to the challenge of accessibility, initial censuses were restricted to Lagos Island and part of the Mainland in 1866, 1871 and 1896. Many urban towns were included in the censuses of 1911 and 1921. There were variations in the Northern and Southern Protectorate as regards the census conducted in 1931 (NPC 1998 in Babalola, 2011: 4).

The analysis of the history of Nigerian census problems excludes prior pre-colonial censuses of 1871, 1911, 1921 and 1952/53 which were organised by the British colonial rulers. Bamgbose, (2009) argued that there was nothing at stake as Nigeria was yet to be independent.

The understanding of the relevance of a population census became clear after political independence in 1960. In other words, the aggressive and desperate nature of our politicians became more threatening when they realised the relevance of census figures could determine the number of representatives that would be elected to the federal parliament. The electoral process could simultaneously determine the largest share of revenue allocation to the most populous regions. Their intent to gain the highest numerical figures by any dishonest means remain the undoing of the Nigerian elites from the three major ethnic groups.

After political independence, the National Census Board NCB was responsible for organising the 1962 census. The result was 45.26 million, northern Nigeria had 22.01million and the other three regions had 23.25 million respectively. Prime Minister Alhaji Tafawa Balewa and the Premier of the northern region Sir Ahamadu Bello strongly opposed the result which was annulled in favour of organising another census. The 1963 census that was organised gave the total population of 56 million; the north had 31 million people implying that an additional 8.5 million votes were added to the northern region (Aluko, 1965). This was opposed by all the southern regions including the newly created Mid-Western regional Premier Chief Osadebe.

Serva & Jerven (2013), identified the role of the Nigerian press in heightening tensions after the results were released. They asserted that political chieftains were responsible for the distrust and disharmony among the major ethnic groups led by Chief Michael Okpara the Premier of the Eastern region and Sir Ahmadu Bello the Premier of the Northern region. Both chieftains cursed each other by using inappropriate language that was incendiary resentful and threatened the peace of Nigerians. The vituperations were so fierce such that the premier of the Eastern region Chief Michael Okpara took the National Census Board to the Supreme Court

with prayers to annul that census results. The case was defeated as the Mid-West and the Western regions were persuaded to accept the result (Serra & Jerven, 2021). In spite of that defeat, the famous Economist Samuel Aluko published details of that census with the rhetorical question "How many Nigerians" (Aluko, 1965). The cursing and counter insults apparently laid the ground work for the mutual hatred of the Igbo and Hausa/Fulani ethnic groups leading to the elevation of tension and mutual vilification of both ethnic groups. These events later led to the next coup d'état in January 1966 in which Major Kaduna Nzeogwu overthrew and killed the civilian government of a sitting Prime Minister Alhaji Tafawa Balewa, the Premier of the Northern Region Ahmadu Bello and his family members. And other Yoruba and Mid-Western regional ministers except top Igbo senior politicians were deliberately spared. Sensing it was an Igbo coup d'état, things became worse when Gen Agui Ironsi refused to prosecute and possibly execute the perpetrators of the bloody coup. The centralisation decree by Gen Ironsi whittled the power of the four regions in favour of the federal government. This led to a bloody counter coup by senior northern military officers led by Lt Col. Murtala Mohammad in July 1966, which installed Gen Yakubu Gowon as Head of State. However, Gen Gowon couldn't stop the mass pogrom of indigenes of South Eastern region based in the entire northern region of the country. After his unilateral creation of `12 states, it heralded Lt Col Odumegu Ojukwu's declaration of the Republic of Biafra in 1967. A bitter civil war ensured from 1967 to 1970 which destabilised the South Eastern region of the country and killed over 2 million easterners (Heerten & Moses, 2014).

Barely three years after the end of the civil war, Gen. Gowon organised a national population census. The result showed 79.76 million people. The results was cancelled and never published because there were loud claims of irregularities and falsification of the results across the entire Nigeria states. Gen Gowon was later overthrown in July 1975 by Brigadier Murtala Muhammad. After his assassination on February 13, 1976, Gen Obasanjo took over as the most senior military officer who ruled until he handed over power to Alhaji Shehu Shagari on Oct 1, 1979.

The 1991 census was conducted under the leadership of Gen Babangida's administration. The NPC gave a figure of 91 million Nigerians; equally, it consisted of allegations of inaccuracies and falsification of results. Given his strong belief in periodic census, President Obasanjo made a major declaration that "census is indispensable to the nation's quest of sustainable national development" (2006). From his directive, the 2006 population census was organised by the National Population Commission NPC which gave the total population of Nigeria as 140 million people (NPC, 2008). That apparently would have restored hope to past discredited censuses. Critics assert that the enumeration exercise consisted of inflation of figures to the extent that Kano state was adjudged to be the most populous state in Nigeria! Lagos state came second even though little evidence suggested any veracity from Kano being the most populated state. In his detailed research Bamgbose, (2009) gave valid points to debunk the claim of Kano being more populated than Lagos. He cited the different ethnic conflicts which comprised violence and killings across Kano state, the North Eastern states, North Western states and the middle belt states of Plateau and the present Nasarrawa state. This led to mass migration from the affected northern states to the southern states as evidence that the National Population Census NPC figures could not be reliable. By constantly allocating the highest figures to the northern states, it implies that the revenue allocation tilted in favour of the northern state of Kano.

The problem of credibility in conducting periodic censuses has made it difficult to know the accurate population of Nigeria. This is due to the myriad of problems that were responsible for contested censuses stemming from the waning decade of colonial rule in the 1950s to post-colonial era where the four regional governments held sway over public administration (Okolo, 1999). In spite of past disputes vituperations and vilification from political actors about skewed figures in favour of a certain region, the 2006 population census remain the basis for revenue allocation.

IGERIA CENSUS IN RETROSPECT: ANY PENACEA FOR A FUTURE CENSUS? FINDINGS

From the literature, evidence exists to show that every census that was conducted since political independence attracted criticism condemnation and outright rejection by regions or states that had lower population figures. Given the contentious history of census and acrimony, the following obstacles have been identified to disprove the fact that there is a panacea for future census.

Budget allocations and numerical strength

The most significant factor responsible for heightened tension vilification threats and even clamour for violence is the fact that allocation of seats to the federal legislature is based on the most populous states with the highest number of collated figures from the population census results. That is the motivating factor responsible for the falsification of results and violations of census laws. There is a popular saying "Bad habits hardly die," even if every perceived problem were rectified, the albatross that has beset past censuses are the falsification of census figures. This will likely reoccur in any future census.

Security challenges

Over the past decade, Nigeria has faced serious insurrections and other security problems that are based on banditry, kidnapping for ransom, Fulani herdsmen attacks and abductions for ritual and daily criminal violence that is so vicious (Akinyetun, Ebonine & Ambrose 2023). How a census can be organised with these challenges is what one cannot explain. Census enumerators risk abductions by venturing into towns villages and remote settlements without adequate security. Even with robust security personnel, the numbers must be so large to counter attacks against terrorists who have sophisticated assault weapons. There is nowhere that is safe; houses schools worship centres and other public spaces are targets. Nigeria is in the precipice of daily attacks and killings something urgent must be done to stop insecurity.

The Idiosyncratic factor

The idiosyncrasy refers to the nature of character perception attitudes and behaviour of individuals that are based on the internal choices that individuals make to achieve an aim. The behaviour of our public officials in government has not been normal even as they are one of the most corrupt in the world (Transparency International, 2023). Despite regulatory agencies, bribes are on-going. That is why public office holders can violate the constitution which they swore to uphold and display stolen assets without any consequences from EFCC (Annaba et al, 2022). The laws against double counting of people and the falsification of census results are violated with impunity across the country with no one prosecuted. Census inspectors and enumerators manipulated figures according to the instructions given (Bamgbose, 2009) Kolawole (2023) reported warnings by the NPC Chairman about enumerators accepting bribes in the proposed census.

The high cost of census

Although the challenges in contemporary Nigeria seem very different from when the first and succeeding censuses were conducted, that challenge has become astronomical considering the cost of conducting a national census. It is so costly that Nigerian policy makers have to rely on international funders to help conduct the 1991 census (Eme & et al, 2020). With global problems and challenges of wars in Ukraine and many troubled spots in the world, it will be daunting to attract donors.

RELEVANT FACTORS TO CONSIDER BEFORE A NATIONAL POPULATION CENSUS

Feasibility study

We are all aware that without the conduct of a census, it will be impossible to know the estimated population of a country. As the most populous Black Country on earth, the government ought to lay a solid ground work before the exercise commences. The body charged with the conduct of the census is the National Population Commission NPC. That body ought to conduct a feasibility study through available Geography Information System GIS to have advanced knowledge of the ethnic groups and geographical locations of each state and LGA of Nigeria. Enumerators must interview people about general problems and challenges in each state and LGA of

the country. The most vital factor to note is the security architecture of the country, its challenges and potential problems for its inhabitants and potential enumerators. Census officials must figure out logistic problems regarding vehicular movement of census materials to reach interior communities. There are riverine communities in South- South Nigerian states, Delta communities and coastal areas of South West Nigeria. Accessibility is a huge challenge to future enumerators.

Cost of Censuses

It is over eighteen years since Nigeria organised the 2006 national census. It is a fact that major alterations have altered the conduct of census in contemporary Nigeria than during the 1960 era when the country gained political independence. The economic cost of censuses in those post-independence years pales in comparison to what will be spent in contemporary Nigeria. The last census cost over N286 billion (Adegbamigbe 2016), a figure lower than the 272 billion estimates provided by Eme et al (2020). Half of the expenses were grants donated by the European Union and other international agencies.

Critical questions

There are a few rhetorical questions that may arise. Which ethnic enumerator collates census figures? Which ethnic official supervises the collation and recording of numbers? Are these enumerators from different parts of the country and not from the state of origin? Is there a transparency provision to safeguard the census results? What measures are in place to prevent the collection of bribes by corrupt officials who desire to inflate the results? Are foreigners coming to supervise the proposed census? Is there funding to pay enumerators and foreigners to ensure the process is smooth sailing? These are all critical questions to be answered if a credible census were to hold.

DISCUSSION

There is an observation about the game theory. In a literal game of sports, the rules are fair and equal to all competitors. There are rules guiding competitors and grounds for disqualification if such rules are breached. In practice that is not the case with the Nigerian censuses, it seems the majority ethnic groups fiercely participate in the game of census at the expense of hundreds of other minority ethnic groups. When evidence exists of the violation of census laws such as failure to sight people before counting and also prohibiting double counting of individuals, the relevant punishments are not enforced due to the ethnic and religious affinity of census enumerators and their inspectors. There was political interference from their rulers who owed their allegiance to the overall Emir of the state with strong links to the civilian government in power. Due to their covert plan to inflate the numbers, northerners do not allow enumerators to see all family members living in their respective households due to the Islamic laws of purdah which restrict the overt appearance of women in the public space. Seemingly, the heads of households gave arbitrary numbers to the enumerators who may have accepted brown envelopes from authorities before the commencement of the population census. During the census exercise, supervisors and enumerators looked the other way as infractions were perpetrated (Yen, 2006; Bamgbose, 2009). This factor is the most significant in the history of censuses as they are expected to have the highest numerical count. The only exception was in 1962 census where the population of the north fell below the threshold of their imagination (Aluko, 1965; Bamgbose 2009).

The deteriorating security sector has left more problems in Nigeria. There is a near absence of government in remote areas in the Northwest, North Central and North East and some places in South East that is unstable. Non-state actors have been fighting and killing or kidnapping innocent school children. There is the inability to stem the proliferation of weapons belonging to terrorists groups, bandits; criminal Fulani herdsmen equipped with advanced assault weapons to kill Nigerians (Akinyetun, Ebonine & Ambrose 2023). The proliferation of this weapons has made the security architecture inadequate to combat disorder and violence during the census. Situation and circumstances have radically changed such that no one can compare the era of 1960 to 2024. Seemingly, organising a credible population census in contemporary times require careful planning and the mobilisation of stake holders including inviting funders from the

international community to help. Given Nigeria has become the killing field of bandits, terrorists, kidnappers and rogue Fulani herdsmen, (Akinyetun et al, 2023), the government must recruit more personnel into the Army, Police and paramilitary forces to protect census enumerators and citizens and foreigners resident in Nigeria in their respective places of residences. If this is impossible consideration to establish state police may be the best option to stem this lawlessness.

CONCLUSION

Nigeria is a strange country where nothing in the form of law works. When an opportunity for a census is announced, critical stake holder's devise various means of subverting the exercise. It is this history of dishonesty and inflation of census figures over the past sixty years that future census exercises can be considered a waste of resources which will produce a repetitive pattern of manipulation and falsification of figures.. The inability of Nigerians to be disciplined, honest, patriotic, and show genuine commitment to Nigeria has set back the gains of what would have been credible population censuses. Unless budgetary allocation to the most populous state is revised to make it equal and the number of seats allocated by constituency is radically reduced to equal seats for each state, census exercise will remain a charade. Given the above presentation, there is no panacea for future censuses in Nigeria.

RECOMMENDATIONS

Through constitutional amendments of the 1999 constitution the following changes can strengthen future censuses

- The federal government should allocate revenue equally to all the component states of the federation.
- The federal government should abolish the Senate to cut the cost of government. The House of Representative should be equal according to the number of the states in Nigeria.
- The government has to employ more Nigerians to join the armed force which is less than 400,000 personnel. Equally the Nigerian Police ought to get more personnel to increase their ranks. In a country of over 200 million, Nigeria ought to have over 2 million personnel in Army, Air force, Navy and the Police Force which ought to have 3 million personnel due to their direct interface with the Nigerian public.
- The violation of census laws ought to be enforced with punishment. Double counting and the reliance on the leaders of the households for the number of family members must be outlawed. Female census enumerators must go into the secluded rooms prohibited for men to count residents. Equally female soldiers must escort females to ensure their safety.
- Attitudinal change of Nigerians is needed for future census to ever succeed. We should learn to be honest and patriotic. The general dishonesty can never lead to a credible census.

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INSECURITY AND CHALLENGES OF POPULATION AND HOUSING CENSUS IN NIGERIA

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Abstract
The paper examines: Insecurity and challenges of population and housing census in Nigeria. The paper is aimed at examining how insecurity affect the conduct of population and housing census. Over the years, Nigerians have experienced serious insecurity crises, ranging from Boko Haram attacks, farmer-herder conflicts, kidnapping for ransom, militancy, communal conflict, inter-tribal war and amongst others. The growing rate of insecurity in Nigeria have caused bloodshed, internal displacement, forced migration, loss of livelihood and general economic disruption. The study adopts expository survey as a designed framework and secondary sources of data collections were used to identified insecurity and other challenges affecting census taking in Nigeria. The finding revealed that insecurity have a serious impact on the conduct of population and housing censuses especially at the northern parts of Nigeria. Therefore, the paper recommends communal and harmonious co-existence among the Nigerian population to curb the growing rate of insecurity in Nigeria. Effective communication strategies on the benefits of population and housing census should be propagated to reduce the growing rates of insecurity. Also, the paper recommends collaboration between census functionaries, local communities and stakeholders in addressing insecurity in order to achieve accurate and reliable census results.
Keywords: Insecurity, challenges, population, housing, census and Nigeria.

Introduction

The rationale behind the idea of conducting population and housing censuses in any nation periodically is to guarantee better performance in terms of planning, sustainable development, resource allocation, and the attainment of holistic development at a faster pace. Ashkpour (2019), The population and housing census of any nation in the world is designed upon the conviction that clear-cut population data lies at the heart of the roadmap that enables good planning, execution, and defined sustainable development. Population data involve a collection of socio-economic, administrative, cultural, and demographic information in a given country for the purpose of planning within a given period of time (Ushie, Egidi, Ushie, and Isokon, 2022). The functionality of population data is ubiquitous and ancient in nature. This is because most countries, like the Roman Empire, Ancient Greece, Athens, Italy, India, and China, among others, have effectively utilized population data in planning for taxation, economic recovery and growth plans, international security, and military strategy (Harald, 2016). The regular head count of the human population has remained a reliable source of population data.

According to the United Nations (1954), a census is seen as "the simultaneous recording of demographic data by the government at a particular time pertaining to all persons who live in a particular country" (Ushie, Egidi, Ushie, and Isokon, 2022). Nigeria has not been able to fulfill these purposes because of challenges like insecurities. The population and housing census in Nigeria and many other African countries faces several hurdles and insecurities. These challenges can affect the accuracy and reliability of the census data collected. Some of the key challenges and insecurities associated with the population and housing census in Nigeria include insurgency, communal conflicts, and banditry. Nigeria has diverse geographical features, including dense forests, swamps, and difficult terrain. These situations can make it difficult to conduct a census in certain areas due to the safety of census materials and functionaries. Nigeria experiences significant internal migration, particularly from rural to urban areas. This population mobility can lead to challenges in accurately counting and categorizing people in their places of usual residence; therefore, human mobility is also a challenge to population and housing census taking in Nigeria (Adeniyi, 2017). The Nigerian settlement pattern, like slums in urban areas, affects data collection during the census. These areas are often characterized by rapid and unplanned growth, which can make it difficult to accurately estimate the population and housing conditions. Over time and from pre-independence to date, several head and housing counts have been conducted to obtain the total number of persons in Nigeria over given periods. Those were particularly important, as no meaningful planning and development could be made and successfully implemented without knowing who and how many to plan for, what to plan, and at what time. Without these, no sustainable development can be achieved (Babatope, 2021).

Research questions

The work is set to attempt the following research questions;

1. How does insecurity affect population and housing census taking?
2. How does attack on census functionaries affect population and housing census taking?

Objectives

The general objective is to examine Insecurity and Population and Housing Census taking in Nigeria. The other specific objectives include;

1. To examine how insecurity, affect population and housing census taking
2. To examine how attacks on census functionaries affect population and housing census taking

Literature review

Insecurity, population, and housing census

Insecurity poses a significant challenge to the successful conduct of population and housing censuses globally. The fundamental purpose of a census is to provide accurate and comprehensive data on a population's demographic, social, and economic characteristics, which in turn informs policymaking, resource allocation, and development planning. However, in some states

of Nigeria plagued by insecurity, conducting a census becomes a formidable task fraught with numerous obstacles and risks. Efficient management of the economic and social affairs of a country rests on evidence-based decision-making, which is derivable from population and housing census data. The central purpose of a census is usually to provide an accurate count of the total population for each of the administrative regions of a country. In terms of public administration, such counts are required for the equitable distribution of funds and the electoral process (Okonkwo, 2019). A census usually also collects information on characteristics of the population, such as age and employment, and their housing, to help ensure that the allocation of funds meets the needs of different regions and population groups (United Nations Handbook on the Management of Population and Housing Censuses, 2020).

The conduct of population and housing censuses is critical for the following functions, according to the United Nations Handbook on the Management of Population and Housing Censuses (2020).

1. Public administration. The results of a census are used as a critical reference to ensure equity in the distribution of wealth, government services, and representation nationwide, including distributing and allocating government funds among various regions and districts for education and health services, delineating electoral districts at the national and local levels, and measuring the impact of industrial development. Establishing a public consensus on priorities would be almost impossible to achieve if it were not built on census counts. A wide range of other users, including the corporate sector, academia, civil society, and individuals, make use of census outputs.

2. Master sampling frame. The census also plays an essential role in all elements of the national statistical system. Census statistics are used as benchmarks for statistical compilation or as a sampling frame for sample surveys. Without the sampling frame and population benchmarks derived from the population and housing census, the national statistical system would face difficulties in providing reliable official statistics for use by the government and the general public.

3. Small-area estimates. The basic function of the census is to generate statistics on small areas and small population groups with no or minimum sampling errors. While statistics on small areas are useful in their own right, they are important because they can be used to produce statistics on any geographical unit with arbitrary boundaries.

4. The census results are used as a benchmark for research and analysis. Population projections are one of the most important analytical outputs based on census data; future population projections are crucial for all segments of the public and private sectors. However, the conduct of population and housing censuses in most developing countries of the world is marred by insecurity and other demographic challenges. Insecurity as a concept is not new to societies and has existed over time. Insecurity has a profound effect on the conduct and results of the population and housing censuses of any nation in the world. Adofu and Alhassan (2018) perceive security as a social contract in which the people willingly surrender their rights to the government, which oversees their survival. Some of the security threats affecting census taking in Nigeria include terrorism, insurgency, armed banditry, and kidnapping, among others (Olaniyan, 2017). For instance, in Nigeria, the rising challenges of insurgence have negative impacts on the planning and conduct of population and housing censuses because of forced migration, internal displacement, food insecurity, and an increased mortality rate. These have affected the conduct of the decennial population and housing census in Nigeria.

The phenomenon of insurgency has been a longstanding challenge for governments and societies worldwide. Insurgency, characterized by organized armed conflict within a state, often leads to multifaceted consequences that permeate various aspects of society. One critical area significantly impacted by insurgency is the accurate and comprehensive conduct of population and housing censuses (Ogunmola, 2018). A population census stands as a

cornerstone of any nation's governance, providing essential demographic data that informs policy-making, resource allocation, and development planning. It offers crucial insights into the composition, distribution, and dynamics of a population, forming the basis for informed decision-making across various sectors (Fadahunsi, 2019). But insurgencies have hampered accurate population and census taking. Another security threat is that terrorism can have significant impacts on the conduct of a population and housing census. Terrorism creates an atmosphere of fear and insecurity. This can hinder the movement of census functionaries and respondents, especially in areas captured for terrorist activities. Enumerators may be reluctant to enter certain neighborhoods or regions due to safety concerns (Ituen, 2016).

Terrorism often leads to population displacement and migration. People may flee their homes to seek safety in other areas, both within the country and across borders. This can lead to difficulties in accurately counting and categorizing populations, as well as challenges in determining the usual place of residence for those who have been displaced (Smith, 2020). The other challenges include: funding; Limited budget allocation for census activities can result in a lack of resources for training, data collection, and processing. This may lead to rushed or incomplete enumeration, reducing the quality of the data collected. The census budget is highly cyclical, with relatively low levels of spending through the preparatory and dissemination phases and a large peak during the mapping, enumeration, and processing phases.

However, in most developing countries of the world, funding presents a challenge to the conduct of population and housing censuses, which affect the census outcomes. Challenges of logistic support**:** Many countries draw heavily upon other government agencies in the preparation and conduct of the census (Adebayo, 2018). That support may be provided either as part of the continuing work of those other agencies or may require the census agency to provide funding. Another problem is the logistical capacity**.** This is primarily due to the bulk movement of materials (such as questionnaires, manuals, and tablets) into the field and their return to the processing centers. It requires sufficient infrastructure, like roads and railways, and other transport facilities, like trucks, cars, boats, and aircraft. But the Nigerian logistics capacity supporting census taking has been inadequate. For countries using handheld electronic devices for population and housing census enumeration, a number of technical constraints also need to be addressed related to the availability of networks to ensure the transmission of records from the field to the portal to promote the reliability of the result (Gana, 2020).

The problem of unskilled census functionaries has been a bane to accurate census results. The introduction of devices and other technological advancements in population and housing censuses requires the retraining of staff to migrate from paper-based to technological methods of census taking. The absence of census functionaries training has promoted dependency on consultants, leading to brain drain and labor migration of expertise. The issue of security had also affected the population and housing census. Nigeria has faced security challenges for many years, including insurgency, communal clashes, and criminal activities. These factors can make it difficult for enumerators and other census functionaries to access certain crisis areas.

Attacks on census functionaries and population and housing census taking

Attacks on census functionaries in Nigeria have occurred in the context of various socio-political and security challenges facing the country. Nigeria has a history of conducting national censuses to gather demographic data for planning and resource allocation. However, conducting a census in Nigeria has often been fraught with challenges ranging from logistical difficulties to security threats (Kozah, 2023). Attacks on census functionaries refer to instances where individuals involved in conducting census activities are subjected to violence, harassment, or other forms of aggression. Census functionaries are individuals who are employed or engaged in various roles related to conducting census operations, including enumerators, supervisors, data collectors, and administrative staff, amongst others. The attacks include physical assaults, threats, or attacks on census workers while they

are conducting fieldwork, which may result in injuries or even fatalities. Census functionaries may face intimidation tactics aimed at dissuading them from carrying out their duties effectively. This can include verbal threats, coercion, or harassment from individuals or groups seeking to obstruct the census process (Idike and Eme, 2015). Others include blocking access to certain areas, interfering with data collection activities, or damaging census materials or equipment.

Methodology

An expository survey was used to explain the insecurity and challenges of the population and housing census in Nigeria. Secondary sources of data collection were used to identify insecurity and other challenges affecting census taking in Nigeria. The study used the content inquiry method to analyze the data obtained from secondary sources, and it revealed that insecurity affects accurate and reliable data collection during census taking. The scope of the study was limited to insecurity and the conduct of population and housing censuses in Nigeria.

Conclusion/recommendations

Insecurity poses significant challenges to the conduct of population and housing censuses in Nigeria. The population and housing census in Nigeria is an indispensable tool for effective governance, policy formulation, and resource allocation. However, it is not without its fair share of challenges, like insecurity. This ranges from conflicts and insurgencies to urban crime, all of which have a detrimental impact on the accuracy and completeness of census data. Insecurity disturbs the accounting process, leading to undercounting in affected regions and an inaccurate representation of demographic and housing characteristics. Effective communication strategies on the benefits of population and housing censuses should be encouraged. Also, the paper recommends collaboration between census functionaries, local communities, and stakeholders to achieve accurate and reliable census results. The paper recommends that strengthening security measures in regions prone to conflicts and insurgencies is imperative. This may involve deploying security forces to safeguard census functionaries and respondents during the data collection process. Proactive measures and strategic interventions can help mitigate these issues. The paper also recommends conducting thorough risk assessments prior to census activities, which can help identify potential security challenges. Providing specialized training for enumerators operating in insecure regions is crucial. This training should include conflict resolution skills, safety protocols, and situational awareness.

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THE DEMOGRAPHIC, SOCIO-CULTURAL AND ECONOMIC DIMENSIONS OF THE PRACTICE OF VITAL REGISTRATION IN THE FEDERAL CAPITAL TERRITORY, NIGERIA.

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Abstract
Reliable demographic data is required to assist in national planning and development. Vital event registration provides an opportunity for the continuous collection, recording, collation, analysis, presentation and distribution of data on the occurrences and characteristics of vital events, such as live birth, death, foetal death, marriage, divorce, adoption, legitimization of birth, recognition of parenthood, annulment of marriage, or legal separation the continuous. Vital registration has the advantage of being continuous, as different from censuses and surveys which are conducted at time intervals. The study assessed the influence of demographic, socio-cultural and economic characteristics on the practice of vital FCT. The study obtained primary data from questionnaires administered to 1,266 residents selected through a multistage sampling process. The data were analyzed using STATA version 12 and the result was presented using descriptive statistical tools in the form of tables, simple percentages, charts, qualitative analytical methods, and bivariate analysis. Overall, 72.8% of residents had registered a vital event (birth or death) in the FCT. The probit regression of the data indicated that respondents' demographic, socio-cultural and economic characteristics significantly influenced the practice of vital registration. Married respondents as well as respondents with higher education and income levels were observed to have registered for more vital events than those with lower educational and income levels.

Key words: Vital, Registration, Awareness, Knowledge, Practice

Background

Planning for national growth and development requires demographic data because, Population is at the centre of every planning initiative. The inability to measure performance on the key SDG indicators has been traced to the non-availability of accurate demographic information for the measurement of development goals (Uzobo and Ogbanga, 2017)

Population issues elicit much interest as there is an intrinsic tie between population change and development on the one hand and the quality of life of people on the other. It is in this regard that it is generally agreed that the only way to make everyone count, is by counting everyone (Setel, Macfarlane, Szreter, Mikkelsen, Jha, Stout and AbouZahr. 2007)

The major source of demographic information is the population census. How ever, census issues in Nigeria has been mired in controversies of acceptability by stakeholders. These controversies are driven by perceptions of its use for shaping geopolitical, state and ethnic relations and benefits as well as the role of population in the balance of political power (Ezeah, Iyanda & Nwangwu, 2013; Ikande, 2018).

Since 2006, demographic data have been mostly drawn from estimates and projections of that years national population census. Planning for development based on such projections cannot be expected to yield positive outcomes in

terms of improving the lives of the people. Moreover, an estimate can only be as good as the data from which it is drawn. The population of Nigeria in 2020 was estimated at 206,139,589 people at mid-year according to United Nations (UN) data (UNFP, 2021).

The three primary sources of demographic data are censuses, surveys and through the registration of vital events. Mahmud (2020) has added sample enumeration in census as an additional source of demographic data. Censuses provide more detailed information about the population as it can capture several variables and characteristics of the population. Between population census, sample estimate of the census, household surveys and administrative records, a country should be able to derive all demographic information required for planning and development. While censuses and surveys are conducted periodically, the latter (vital registration) is expected to be collected on a continuous basis to update the former (Pai, 2017).

In the face of irregular censuses and persistent controversies around census figures, administrative records from vital registration provide an opportunity to collect vital population statistics. Vital registration can provide accurate information that will inform regional and national planning decisions. Vital registration is particularly important for providing reliable data for planning between censuses and it also helps to circumvent the institutional, political and social challenges associated with implementing a census of population (Feyi-Waboso, 2016)

Vital registration (also commonly referred to as civil registration) is the continuous collection, recording, collation, analysis, presentation and distribution of data on the occurrences and characteristics of vital events, such as live birth, death, foetal death, marriage, divorce, adoption, legitimization of birth, recognition of parenthood, annulment of marriage, or legal separation (United Nations 2014). These events are termed “vital” because they relate to happenings that affect the individual's entry into or departure from life, including changes affecting the individual's civil status during his/her lifetime (Okereka, 2015). Records from these events provide vital statistics that can be used for planning for development (Mikkelsen, Lopez, and Phillips, 2015).

Apart from the fact that vital registration and statistics are an important data source for demographic and public health research, it can provide incessant, instantaneous, and localised flows of information regarding health and social issues (Mikkelsen et al, 2015). Another advantage of registering vital events is that they are more detailed than periodic surveys and are more relevant for demographic and socioeconomic policy development (Muñoz, Daniel, and deSavigny, 2018).

Nigeria is a signatory to conventions that established the compulsory registration of births and deaths. At the country level, the enabling legislation for vital registration is Act 39 of 1979 and Act 69 of 1992. The compulsory registration of births, deaths and other related matters is also reinforced under section 23 of the 3rd schedule of the Constitution of the Federal Republic of Nigeria as amended.

Countries with functioning vital/civil registration systems have been found to have better health outcomes than countries with weaker systems, irrespective of income and other factors that are likely to affect the health status of the population (Phillips, AbouZahr, Lopez, Mikkelsen, deSavigny, Lozano, Wilmoth, and Setel, 2015).

Vital registration and statistics are highly practiced in developed countries such as the United Kingdom with a rate of 100% in 2019 (United Nations Children's Fund-UNICEF, 2019). This is not the case in developing countries where about 51 million births remain unregistered every year despite government, civil society, UNICEF and international organisations' efforts to universalise birth registration in a free and timely manner (Isara and Atimati, 2015). In the quest for data for social and economic development planning, developing countries have repeatedly struggled with information that is incomplete or is not available at the time it is needed (Williams, 2014).

Nigeria's birth registration coverage from 1994 to 2007 ranged from 0.01% to 23.9% (NPC, 2008). A nationwide survey by the National Bureau of Statistics (NBS) put birth registration completeness in the country at 30.2% in 2003 and subsequently rose to 42% in 2011 (National Bureau of Statistics, 2017; Abbas 2014). Birth registration completeness was 43% while the

completeness of death registration was 10% in 2018 (UNICEF, 2018). This is far below the NPC target to achieve universal registration (100%) by 2015.

The current weak vital event registration systems in Nigeria, characterised by incompleteness and low coverage, as well as major deficiencies in quality and timeliness, statistics generated from the current vital registration efforts will not be able to fill the gaps in the use of population census for planning purposes. If the need to provide individuals with the legal benefits of civil registration systems is also considered, an improved vital registration system is indispensable (WHO, 2010; IDRC, 2019),

It is based on these observable trends and patterns of the vital registration practice in Nigeria especially in the context of its low coverage and consequent inability to make generalizations for planning and development that the present study was carried out to understand the demographic, socio-cultural and economic dimensions of vital registration in Nigeria with the FCT as case study. The mean birth registration for children above five years of age for the FCT in 2016 was 33.2%., lower than the national average of 35.7%. For children between the ages of 1 and 4 years, the mean registration for the FCT was 20.7%, lower than the national average of 31.1%. It is only the registration rate for children under the age of 1 year that the FCT surpassed the national average of 33.1% at a mean registration rate of 46.21% (NBS, 2017). The scope of the study was on the registration of births and deaths, because these are the most registered vital events and for which data are mostly available.

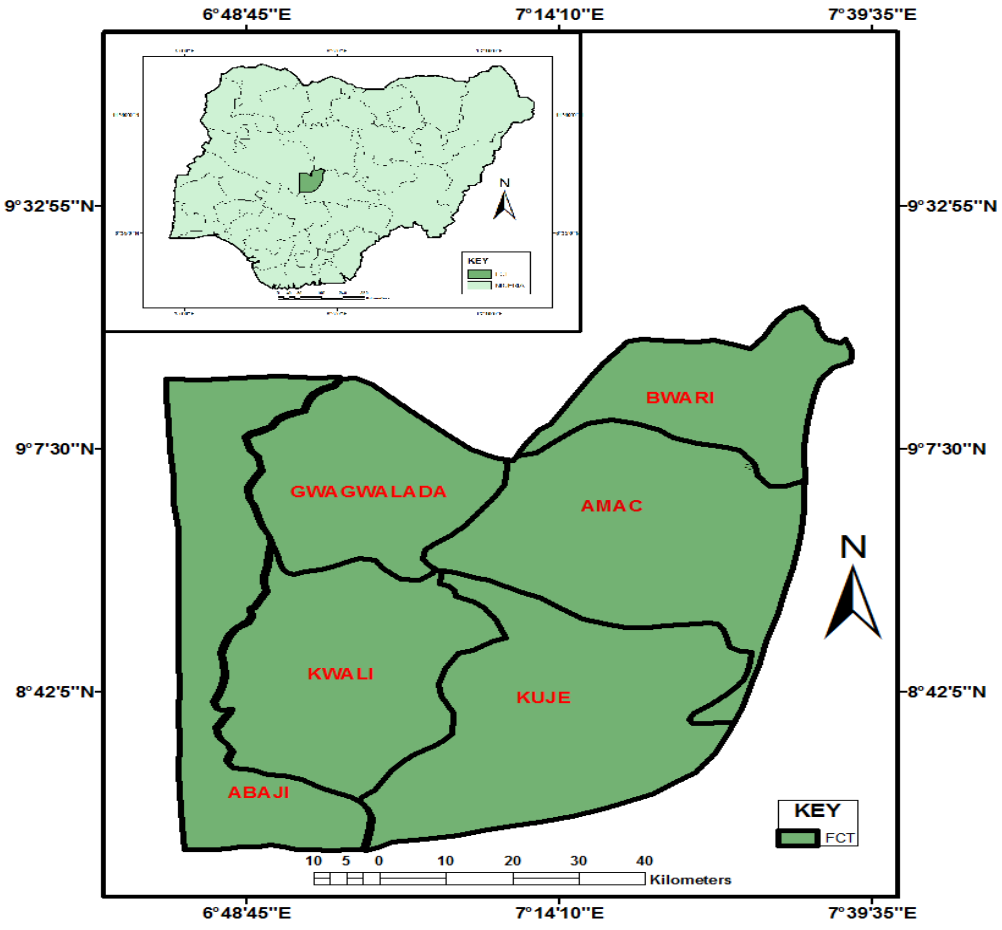


Figure1: FCT showing the area councils

Research question and objective.

What is the extent of the practice of vital registration by residents of the FCT and how is this influenced by the demographic, socio-cultural and demographic characteristics of the respondents. The objective of the study was to assess the influence of demographic, socio-cultural and economic characteristics of respondents on the practice of vital registration in the FCT.

Methodology and data analysis

The survey approach was adopted for this study. Survey respondents were selected through a multistage sampling process. At the first stage, all the Area Council for the FCT were sampled. At the second stage, 30% of the wards in the 6 area councils were sampled (19 wards). At the third stage, 30% of the settlements in each of the sampled wards were selected (80 settlements) and finally at the fourth stage 10% of the households in each sampled settlement were sampled. A total of 1,266 respondents were selected for the administration of questionnaires. The sample size was digitally determined (www.calculator.net/sample-size) with a confidence level of 98% and a margin of error of 3.25. A structured questionnaire was administered to the respondents digitally with Kobocollect. The questionnaire fielded questions on the demographic, socio cultural and economic characteristics of respondents as well as the "practice" questions.

The data was downloaded from the kobotoolbox platform and exported to STATA version 12.0 for further analysis. The data was analyzed using both descriptive and inferential statistics. The results obtained were summarized and presented in tables and discussed. Probit regression was used to test the relationship between demographic, socio cultural and economic characteristics of respondents and the practice of vital registration. The strength of probit regression is that it helps to resolve assumptions about the distribution of errors in an observation especially in the context of dichotomous or binary outcomes Binary outcome/ variables are dependent variables with two possibilities, like yes/no, positive test result/negative test result or single/not single. The probit model estimates the probability a value will fall into one of the two possible binary (i.e. unit) outcomes (Long, 1997).

Results and discussions

To explore the practice of vital registration by FCT residents, this study put together some vital registration "practice" questions as follows.

- Have you ever registered for a vital event? (Birth, death, etc)
- What vital event have you ever registered?
- What year did you register the vital event?
- Where did you register the vital event?
- Were you issued a certificate for the vital event you registered?

Anyone who has ever registered a vital event was considered to have practised vital registration. Only such a person will also be able to tell what vital event they registered and answer other questions relating to the year of registration and the documentation associated with the registration of the event.

a. General practice of vital registration among respondents

The information on the practice of vital registration in the FCT is presented in Table 1. Overall, 72.8% of respondents indicated they had registered a vital event. The Area Council variations indicated that respondents from AMAC with 84.5% had the highest proportion of persons who has registered a vital event. This is followed by Gwagwalada (84%), Abaji (72.7$), Kwali (52%) and Kuje (39%) area councils.

Table 1 Practice of Vital Registration in the Federal Capital Territory.

Ever registered a vital event?	AMAC		Abaji		Bwari		Gwagwalada		Kuje		Kwali		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Not Registered	67	15.5	35	27.3	88	42.3	50	16	70	60.9	34	47.9	344	27.2
Registered	364	84.5	93	72.7	120	57.7	263	84	45	39.1	37	52.1	922	72.8
Total	431	100	128	100	208	100	313	100	115	100	71	100	1,266	100

a. Practice of vital registration by demographic characteristics

The practice of vital registration by the demographic characteristics of respondents is shown in Table 1. The demographic characteristics considered include sex, marital status and age of respondents.

Practice of vital registration by sex of respondents.

The information on the practice of vital registration based on the sex of the respondents is presented in Table 2. Overall, 76.6% of the female respondents had registered a vital event while 71.1% of the male respondents had registered a vital event. A slight increase in the proportion of females over males regarding the registration of a vital event is understandable because females are more involved in the process of childbirth which is the most registered vital event (Aidenagbon, 2023). Females are directly involved in childbirth and have the first contact with health personnel who recommend them to register the birth of their children. The situation may be different depending on local and cultural practices influencing the registration of births of new-borns.

Table 2: The Practice of Vital Registration by Demographic Characteristics of Respondents

Demographic characteristics		Practice of registration by selected demographic characteristics					
		Not Registered		Registered		Total	
		No	%	No	%	No	%
Sex	Female	119	23.4	390	76.6	509	100.0
	Male	219	28.9	538	71.1	757	100.0
	Total	338	26.7	928	73.3	1266	100.0
Marital status	Divorced	0	0.0	5	100.0	5	100.0
	Married	225	23.0	752	77.0	977	100.0
	Separated	9	25.0	27	75.0	36	100.0
	Single	97	43.5	126	56.5	223	100.0
	Widowed	2	11.8	15	88.2	17	100.0
	Others	5	62.5	3	37.5	8	100.0
	Total	338	26.7	928	73.3	1266	100.0
Age	15-19	8	42.1	11	57.9	19	100.0
	20-24	18	37.5	30	62.5	48	100.0
	25-29	42	42.4	57	57.6	99	100.0
	30-34	53	33.1	107	66.9	160	100.0
	35-39	65	28.5	163	71.5	228	100.0
	40-44	58	25.8	167	74.2	225	100.0
	45-49	39	21.8	140	78.2	179	100.0
	50-54	26	19.1	110	80.9	136	100.0
	55-59	16	18.8	69	81.2	85	100.0
	60-64	8	13.8	50	86.2	58	100.0
	65-69	4	21.1	15	78.9	19	100.0
	70 and above	1	10.0	9	90.0	10	100.0
	Total	338	26.7	928	73.3	1266	100.0

Practice of vital registration by marital status of respondents.

The practice of vital registration was observed to be highest among divorced respondents (100%) (Table 2). Widowed respondents (88.2%) were next in line regarding the practice of vital registration. For married persons, 77.09% of respondents had registered a vital event, while 77.6% of separated respondents had also registered a vital event. Single respondents took the rear with 56.5% of respondents having registered a vital event. If considered from the point of view of birth registration, the fact that married women have high practice of vital registration is understandable as with each child born, there is a normal tendency to register the birth. The same applies to separated persons, but less likely for single persons with less expectation culturally for bearing children and registering births.

Overall, marital status can have a significant influence on the practice of vital registration, particularly in relation to recording and reporting events such as marriages, divorces, and deaths.

Practice of vital registration by age of respondents

There is an observed progressive increase in the practice of vital registration with age especially from the respondent age of 25 – 29 years up to the age group of 60 -64 years (Table 2). The implication from the above is that at a certain age, all that one needs to know about the concept may have been known and practice may continue to grow based on people's appreciation of the value of registration. The age structure of a population has a significant influence on the practice of vital registration, affecting the accuracy, completeness, and interpretation of vital registration data. In societies with a higher proportion of younger individuals, there might be greater emphasis on registering births. This is particularly important for countries with a high birth rate, as accurate birth registration is crucial for tracking population growth, planning healthcare services, and ensuring access to education and social services for children. Efforts to improve the practice of vital registration should consider the age-specific needs and challenges associated with accurate registration of births, deaths, and other vital events. This can involve training registration personnel, implementing digital registration systems, raising public awareness about the importance of accurate reporting, and ensuring that registration practices align with the age structure of the population.

b. The practice of vital registration by the socio-cultural characteristics of respondents

The socio-cultural characteristics of respondents considered in the study are ethnicity, religion and education. Information on the practice of vital registration by socio cultural characteristics of respondents in shown in Table 3.

Table 3 Practice of Vital Registration by Socio-Cultural Characteristics of Respondents

Socio-cultural characteristics		Practice of registration by selected socio-cultural characteristics					
		Not Registered		Registered		Total	
Ethnic group	Bassa	18	40.9	26	59.1	44	100.0
	Gbagyi	82	47.4	91	52.6	173	100.0
	Hausa	71	31.7	153	68.3	224	100.0
	Igbo	41	17.7	190	82.3	231	100.0
	Koro	8	40.0	12	60.0	20	100.0
	Yoruba	28	16.1	146	83.9	174	100.0
	Others Specify	90	22.5	310	77.5	400	100.0
	Total	338	26.7	928	73.3	1266	100.0
Level of education	No formal education	56	52.8	50	47.2	106	100.0
	Primary education	82	44.1	104	55.9	186	100.0
	Secondary education	131	26.5	363	73.5	494	100.0
	Tertiary education	62	13.8	388	86.2	450	100.0
	Others	7	23.3	23	76.7	30	100.0
	Total	338	26.7	928	73.3	1266	100.0
Religion	Christianity	182	23.8	584	76.2	766	100.0
	Islam	154	31.2	339	68.8	493	100.0
	Traditional religions	2	28.6	5	71.4	7	100.0
	Total	338	27.9	928	72.1	1266	100.0

Practice of vital registration by ethnic classification of respondents

The practice of registration of vital events was most prominent among the Yoruba ethnic group within the FCT (83.9%). This was followed by the Igbos (82.3%), Hausas (68.3%) and 60% for Koro descent had registered a vital event. For the Gbagyi ethnic group, 52.6% of respondents had registered a vital event. The 77.5% of respondents from the other groups comprising Igbiras, Binis, Tivs among others is also significant as it demonstrated that such minority tribal groups were well informed and were fully involved in the registration of vital events.

thnicity can impact how vital events are recorded, reported, and interpreted. Different ethnic groups often have unique cultural practices related to birth, marriage, and death ceremonies. These practices influence the timing, manner, and formality of registering vital events. For example, the rituals surrounding childbirth and naming may affect how and when births are officially recorded. Different ethnic groups may have distinct naming conventions and practices. Ethnic groups with migratory or nomadic lifestyles may face challenges in accessing vital registration services, especially if they move frequently between regions or countries. This may lead to underreporting or incomplete registration of vital events.

Practice of vital registration by respondent educational characteristics

Overall, 86.2% of respondents with tertiary education had registered a vital event while 73.5% of respondents with secondary education had registered a vital event. For respondents with education up to the primary school level, 55.9% had registered a vital event while 47.2% of respondents with no formal education had registered a vital event. From the above it is shown that the practice of vital registration increases with educational status. Higher

educational accomplishment helps to promote awareness, knowledge and practice of vital registration in the FCT. Consequently, efforts to promote vital registration should concentrate at the lower educational levels since respondents at the higher educational levels had most probably already received the required awareness and knowledge to drive the practice of vital registration. Educated individuals are more likely to comprehend the long-term implications of registering births, deaths, and marriages, including benefits related to inheritance, social services, and public policy (Atama et al, 2020).

Practice of vital registration by religious affiliation

Adherents of the Christian faith registered more vital events (76.2%) than adherents to the Islamic faith (68.8%). Explanations for this pattern are quite deep and relate to social and health practices, as well as perceptions and attitudes. These affect the propensity to promote behaviours that encourage the registration of vital events. Religious beliefs can vary among ethnic groups and influence the way vital events are registered. Some religious traditions require specific rituals or ceremonies to be performed before a birth, marriage, or death is considered officially recognized. This can impact the timing and documentation of these events.

c. Practice of Vital Registration by Economic Characteristics of Respondents

The economic characteristics considered were occupation and income levels. Table 4 shows the information on the practice of vital registration by economic classification of respondents.

Table 4: Practice of vital registration by economic characteristics of respondents

Economic characteristics		Practice of vital registration					
		Not Registered		Registered		Total	
Occupation	Artisan	31	29.80	73	70.20	104	100.00
	Farming	72	53.70	62	46.30	134	100.00
	Military/ paramilitary services	0	0.00	35	100.00	35	100.00
	Petty trading/business	162	27.10	435	72.90	597	100.00
	Public/ private sectors	24	10.30	209	89.70	233	100.00
	Others	49	30.10	114	69.90	163	100.00
	Total	338	26.70	928	73.30	1266	100.00
Monthly Income	No Income	38	36.20	67	63.80	105	100.00
	30,000 and below	189	33.80	370	66.20	559	100.00
	30,001-50,000	64	26.30	179	73.70	243	100.00
	50,001-100,000	33	15.70	177	84.30	210	100.00
	100,001-200,000	11	9.50	105	90.50	116	100.00
	200,001-300,000	3	13.60	19	86.40	22	100.00
	300,001 - 400,000	0	0.00	7	100.00	7	100.00
	400,001 - 500,000	0	0.00	3	100.00	3	100.00
	above 500,000	0	0.00	1	100.00	1	100.00
	Total	**338**	**26.70**	**928**	**73.30**	**1266**	**100.00**

Practice of vital registration with occupational status

Five key occupational categories within the FCT were identified. These include artisans, local /petty/small businesses including contractors, public and private sector employees, the military and others. Table 4 shows that vital events have been mostly registered by respondents in the class of traders and small businesses (100%). This was followed by those in the organised public and private sectors of the economy (72.9%). Overall, artisans were least likely to register their vital events (46.3%). The occupation of individuals can impact the accuracy and completeness of vital registration data. People with certain occupations, such as healthcare professionals, may have a better understanding of the importance of accurate record-keeping and may be more diligent in providing complete and accurate information. On the other hand, individuals in occupations with less awareness about vital registration might provide incomplete or inaccurate information. Occupation can be linked to social status and cultural practices, which in turn can influence attitudes toward vital registration.

Practice of vital registration and income of respondents

There was an observed progression of the practice of vital registration from the lower income levels to the upper income levels. The positive progression peaked at the income levels of N100,000 to N300,000 and then shot to 100% from income levels of N300,000 to N500,000 and above. Income plays a role in influencing the practice of vital registration, particularly in terms of individuals' access to resources, awareness, and willingness to comply with registration requirements. People with higher incomes often have better access to healthcare services, including medical professionals and facilities involved in births and deaths (Ye et al, 2012). This can lead to more accurate and timely reporting of vital events due to the involvement of healthcare professionals. Greater effort should be paid at mobilising lower income levels for rapid registration of vital events since those on the upper rungs of the income ladder are already self-propelled to register vital events.

b. Relationship between demographic and socio-economic characteristics of residents with the practice of vital registration in the FCT.

A probit regression was conducted to test the strength of relationship between the practice of vital registration (dependent variable) and some selected independent variables. With 1,266 observations, the likelihood ratio chi-square (LR chi2) was 461.87 at 5 degrees of freedom. The Pseudo R-squared (Pseudo R2) was 0.3144, meaning that the model explained approximately 31.44% of the variation in vital event registration (Table 5)

Table 5: Summary of probit regression of the relationship between demographic and socio economic variables and the practice of vital registration

Have you registered a vital event before	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
marital	0.3106701	0.0994863	3.12	0.002	0.1156805	0.5056597
income	0.1215396	0.1592472	0.76	0.445	-0.1905792	0.4336583
Have you ever heard of vital event registration	1.365689	0.1095702	12.46	0	1.150936	1.580443
Are you aware that births and deaths are to be registered	0.0037115	0.1078592	0.03	0.973	-0.2076887	0.2151117
Do you know the process to follow to reg a birth	0.7743215	0.1044949	7.41	0	0.5695152	0.9791278
_cons	-1.101643	0.1837283	-6	0	-1.461744	-0.7415426

Probit regression	Number of obs	=	1,266
	LR chi2(5)	=	461.87
	Prob > chi2	=	0
Log likelihood = -503.64011	Pseudo R2	=	0.3144

The coefficients show a positive relationship between the dependent variable and the selected independent variables suggesting that marital status, awareness of vital event registration, and knowledge of the registration process are significant predictors of the practice of vital registration.

Conclusion

Among the demographic, socio-cultural and economic characteristics of the respondents; marital status, age, educational and income levels have the more impact on awareness, knowledge and practice of vital registration. Awareness knowledge and practice of vital registration generally increased with age, level of education and income. Awareness and practice of vital registration was high among married respondents. Awareness is the key driver of the practice of vital registration, as it has a significant influence on the practice of vital registration.

While there was a high level of the practice of vital registration in the FCT (72.8%), it still fell short of the NPC desired target of 100% registration by 2015. Thus, the practice of vital registration in the FCT is still at a sub-optimal level. This calls for the strengthening of information dissemination, advocacies and behavior change initiatives to promote positive attitude towards the registration of vital events in the FCT and Nigeria.

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IMPLICATIONS OF HOUSING DEFICITS FOR POPULATION AND HOUSING CENSUS IN NIGERIA

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ABSTRACT
The study examines the implications of housing deficits for population and housing census in Nigeria. Relevant and related literature was reviewed. The survey design was adopted. Multistage sampling procedure was utilized to obtain the data. A 25-item questionnaire was administered to 360 household heads. Data were analyzed using ANOVA. The study revealed that housing deficits is common place in most cities in Nigeria. That is, available houses were not sufficient enough to cater for human population. Not only were the house rents high but compelled many persons to migrate to neighboring communities and be going to work from far distant places. Many persons live on the streets, under bridges, uncompleted houses and any other available shelter. Apparently, these categories of persons stand the risk of not being counted during population and housing censuses. The housing deficits may likely deny certain cities of her exact population status with concomitant socio-economic challenges as most persons are bound not to be counted during censuses. On the basis of these findings, it is recommended among others that for a comprehensive and credible population and housing census taking, the government and other agencies should make the provision of houses for all, achievable by given it top priority. This can be made possible through budgetary allocations that are realizable. The government should also be more committed to the taking of population and housing census as at when due. Besides, government should adequately fund NPC to be able to execute its census taking tasks optimally (word count: 248).

Key words: Census, Correlation, Houses, Housing, Housing deficits, Population

INTRODUCTIONThe National Population Commission (NPC) is ostensibly concern with taking population and housing census in Nigeria. According to Wanmali (2019) the federal government had been battling to arrest the rot and deterioration of census operations occasioned by long period of neglect and very poor resource allocation to enable it organize censuses as at when due. To this extent, NPC was to take censuses within every ten years according to

world standard. However, after the 2006 national census, the National Population Commission (NPC) had failed to execute this particular task for maximum impact. Rather the National Population Commission (NPC) had depended on population estimates and projections which lacked general acceptability and prone to controversies. Specifically, NPC cardinal objective is to provide accurate population and housing figures for socio-economic planning and development of the country (Ogunde, 2011).

The NPC has the responsibility to ensuring that the goal of knowing the population and housing figures and their characteristics are attained through necessary census processes. For an accurate, reliable and acceptable population and housing census to take place, certain things must be put in place, some of which includes: adequate funding of the exercise by the federal government, availability of technological resources, universality and simultaneity of enumeration.

As a matter of fact, NPC funding and census taking has been a disappointment to many scholars (Ajayi & Ekundayo, 2014). Indeed, the inability of government to ascertain the exact population and housing figures in Nigeria militate against the planning and development of the well-being of people and society. Despite the fact that the federal government has made frantic efforts in this direction, the trend still remains the same since after the 2006 national population census. Nigeria has a relatively high population of over 213 million people spread across 923,768 square kilometer of land (NPC, projected population, 2021). Some of these populations are homeless with no shelter or are living in thatch houses, low cost and poorly constructed houses while may live in highly rented paid houses. A study carried out by Ahmed, et al (2016) reported that more than 5 thousand people are homeless in Nigeria due to numerous challenges bordering on poverty, poor financial support, manmade or natural disasters among others. Also Wendy and Asheila (2011) reported that globally, 13 million people do not own houses of their own while 47 per cent live in thatch or very primitive houses due to the high cost of building materials.

It is a fact that most rural dwellers could not be traced or identified to be counted during population and housing census either because of where they live or could not be traced to any specific dwelling. Due to poor conditions, many persons live in remote places, indecent houses, on the streets, under the bridges, caves or under tree trunks (Azaiki, 2013). According to Yusuf (2010) the federal government formulated a National Housing Policy in 1991 with the aim of addressing the magnitude of housing shortages in Nigeria. By this policy, the government proposed to provide 8 million housing units before the year 2010. Venera, et al (2010) assert that in the year 2020, the government had built up to 6 million housing units with an average of 23 per cent of Nigerians living in them. Dayo (2014) also reported that the government had spent 8 trillion naira from 2010 to 2020 and hope to spend more 12 trillion naira to solve the existing housing scarcity problem. It is also estimated that 211 trillion naira is needed each year to solve the housing problems in Nigeria (Smrita & Twerta (2010). More so, Federal Mortgage institutions were established to assist both public servants and private individuals own their houses by granting loan facilities to them. It is then left with individual to utilize the various opportunities open to them to build their own houses.

When people live in houses that are visible, it becomes easy for population and housing census to be taken that will help in planning and transformation of lives. Zimmerman (2014)) opined that population and housing census enable government to plan and be critically active in creating change in the lives of citizenries. Population and housing census is equally linked to various benefits such as financial empowerments and opportunities, access to modern standard of living or patterns, crime reduction, national growth, security and technological development (Todaro & Smith, 2019). Population and housing census will help to ascertain the unemployment rate in the country and to map out strategies towards its reduction. It may as well stimulate economic growth through knowing the section of the population to hire or given particular attention and also enhances opportunities towards the attainment of business ventures (Azaiki, 2013). Freeman (2010) argued that population and housing census had

contributed to poverty reduction and human capital development of individuals by targeting at the felt needs of these categories of people.

Concerns over the capacity of low-income developing countries to effectively design and implement population and housing census in their respective countries, Hoddinott (2019) opined that such operation will be effective if the citizenry own and live in secured houses and that only 0.001 per cent of Nigerians own and live in good and standard houses. Larry and Joseph (2014) also observed that 65 per cent of good and standard houses found in Nigeria are located in urban centers. This is due to the fact that government policies on housing tend to be focused on urban centers and capital cities at the detriment of rural areas.

The effectiveness or quality of population and housing census in any society, developed or developing can be affected by housing deficits. The term "housing deficit" simply refers to a condition where available houses are far less than the population that desire to live in them. It also implies that the housing units in the country are in limited supply. The housing deficits relative to the high population have caused population and housing census more difficult to accomplish. Some of the factors that account for housing deficits include non-availability of housing infrastructures in terms of skilled workmen, housing finance, building materials and standard housing policy programs. Also, the high level of urbanization, contravention of building standards and poor building materials are causal factors. Similarly, Peretomode (2014) identified the factors responsible for ineffective population and housing census operations in Nigeria to include: weak government policies, lack of political will, poor implementation capacity, imperfections in census monitoring, failure to implement housing policies and programs and to secure sustainable financing for the population and housing census operations. Akinnaso (2012) submitted that inadequate housing infrastructures are strong predicting factors causing housing shortages. Uzonwanne (2010) pointed out that most communities experience shortage of houses for people to rent while some houses are built with poor and sub-standard materials leading to waste of lives and properties in the process of their collapse. In some places, the shortage of houses affects businesses in these places. This is basically caused by the high rate of unemployment, poverty and physical deterioration. It is however unfortunate that the government have not seen the importance of providing adequate housing infrastructures for the citizenries as a means of attaining population and housing census goals. It is against this background that this study examines the implications of housing deficits for population and housing census taking in Nigeria.

Statement of the problem

Since after the 2006 census, no population and housing census had been taken in Nigeria, making the government and policy experts to depend solely on population estimates or projections for her planning purposes. Not only has the exact figure of the population uncertain but also shrouded in controversies. Given the importance of population and housing census in promoting and enhancing socio-economic wellbeing of people as well as the socio-economic transformation of a country, it is worrisome to find the government develop belligerent attitude towards it. For example, the continuous growth in human population in Nigeria has exacerbated much pressure on the demand for housing with no commensurate efforts to tackle this challenge. In other words, a greater percentage of Nigerians do not have houses and probably not counted during census count. According to Sterha (2013) about 28 per cent of persons in a country are usually not counted due to their seeming invisibility. In some clime, the government had no idea of the number of houses and the number of persons living in them. The growing discontents about the high poverty level in the country are more likely linked to the inability of government to ascertain her exact population and housing figures necessary for socio-economic planning and development. This situation has no doubt created serious impediments in taking population and census required for the attainment of socio-economic development of Nigeria. However, this study poses a critical question that begs for answers: How does housing deficit impedes population and housing census taking in Nigeria?

Objective of the study
Determine the extent to which housing deficits affects population and housing census in Nigeria..

Research question
To what extent does housing deficits affect population and housing census?

Statement of hypothesis
Housing deficit does not significantly affect population and housing census in Nigeria.

LITERATURE REVIEW

Concept of population and housing census

The impact of NPC to execute its major task of taking population and housing census has not been felt in the country (Ogunde, 2011). According to Akinnaso (2012) the National Population Commission (NPC) is also established to take housing census in order to help government tackle the challenges of inadequate housing among the populace. Akinnaso (2012) further noted that in times past, the National Population Commission (NPC) do consider the need to count humans in a given territory with little or no attention paid to housing census within the country. This has led to much argument for the review of this trend. Furthermore, Akinnaso (2012) added that henceforth, the mission of NPC is to provide real and exact population and housing figures for socio-economic planning and transformation.

According to Ajayi and Ekundayo (2014) housing census is needed for transformation of the housing sector in the country. Abubukar (2011) equally stated that housing census will reveal the number of people who own houses and those who do not relative to the size of the population. It is this data that will help government plan on how to meet with the housing needs of her citizenries. Housing census is a basic physical and social need for government to provide the framework for supporting the citizenry to own their houses. Through housing census, the government can provide accommodation that are essential for enabling, sustaining, or enhancing societal living conditions. Indeed, population and housing census have significant implications for achieving sustainable developmental objectives for the citizenries of a country (Abubukar, 2011). Population and housing census underpins many aspects of economic and social activities that can facilitate the flow of research and innovation of housing ideas, models and structures (Travis, (2010). With population and housing census, a country will experience significant socio-economic impacts as well as generate a range of externalities in her production output. It may also promote efficient resource allocation through easier access for labour and materials to particular localities that needed it the most, thereby allowing alternative activities, employment opportunities and investment to emerge (Ajayi & Ekundayo, 2014).

Through the housing census taken by the Federal Housing Quality Assessment Team as at 2012, it was reported that out of the six political zones in Nigeria, the North West had one thousand six hundred and ninety one (1691) housings that were in good shape and perfect conditions. This was followed by North Central with eight hundred and twelve (812); North East had six hundred and seventy four (674), South West was assessed to have four hundred and twenty eight (428); South East with four hundred and fifteen (415); and South-South had only one hundred and twelve (112) (Akpan et al, 2011). With this report, the Federal Ministry of Housing made a policy statement to the effect that it is committed to providing more houses to the teeming populations at all levels. Since, then the burden of actualizing the policy statement has become increasingly difficult. This is evident in the decade of housings which often result in housing mishaps such as house collapsing and death of inmates.

Challenges of housing deficit and housing census

The housing sector is currently in crisis because the sector is under-funded with concomitant inexperienced contractors and inefficient utilization of available resources. Some of the constraints of proper funding of housing are under estimation of cost of housing projects,

inability of government to mobilize funding support from the private sector for population and housing financing (Adeleye, 2013). It was also observed by Wendy and Asheila (2011) that funding policy of government was replete with inconsistencies and implementation failures. The over invoicing of building equipment and materials, spending on proliferation of housing by support service agencies all border on poor funding patterns. Oni and Adeqale (2018) identified areas where funding patterns has not been able to take care of to include, the growing number of people who needed their own houses and expansion of housing estates, low house rents as part of the problems of poor funding. Peretomode (2014) pointed out that provision of houses to the citizenry is supposed to attract considerable portion of public expenditure because of its position as a social service with direct economic significance and a generally acclaimed positive spillover effects. Most of the developed and developing countries lay emphasis on the enhancement of the housing sector.

In Nigeria, population and housing census is very poorly funded, because it is yet to comply with what is obtainable in the developed world (Peretomode, 2014). Nigeria's government expenditure on housing has been declining due to short fall in government revenue. Contemporary discussions on funding of population and housing in Nigeria have continued to receive more attention. This is because housing is a fulcrum of development, enhancement of economic opportunities, income earner and eradication of poverty (Oni & Adeqale, 2018). Oni and Adeqale (2018) in analyzing government's budgetary allocation to the housing sector from 1999 – 2013, stated that government recurrent expenditure in the sector was significantly higher than her capital expenditure in all the years. This means that government did not invest sufficiently in the housing sector given the fact that capital expenditures represent real investment in the sector. Funding of the housing sector is determined by the quality of leadership of any nation. Poor funding and poor management of funds within the housing sector has led to the dysfunctional and unethical practices that has generated a multitude of limitations within the sector especially at urban cities (Oni & Adeqale, 2018).

Freeman (2010) argued that many firms in African countries lack the required skills in various areas of technologies to carry out perfect construction works. Construction of houses in Africa seems to lack skill demands primarily for behavioral and interpersonal skills such as the ability to use computers or other forms of technical tools (Cappeli & Neumark, 2019). Adac (2010) asserted that skills in technology raise productivity, but where this is absent in any firm, may result to catastrophic consequences. Adac (2010) further stated that construction firms in US now lay emphasis on "High skill" in technology as strategy that can make better firm performance and bring about the required innovations. Construction firms involved in the building of houses requires creative thinking, self-motivation as well as problem-solving, decision-making, business, financial, negotiating and interpersonal skills in addition to technical skills as essential for perfect job delivery (Adac, 2010). A recent study by Edward (2017) reported that most housing firms have developed their own customized training strategies to make workers acquire the skills for increasingly performance. In addition, Lynch and Black (2015) stated that some construction firms involved in building houses maintain a workforce that is skilled in ICT technologies with a combination of satellite or web-based manuals, sometimes in conjunction with more traditional methods to build houses.

Enoch and Smith (2015) observed that most individuals are more likely to utilize unskilled workmen in building their houses due to the high cost involved in using skilled and competent workmen. However, those that are able to provide and use skilled manpower do have significant and positive job delivery associated with high skill acquisition and development. Ichniowki et al (2017) found out that those who have the requisite skills in housing construction are often regarded as assets better than those who do not have. This is because there are important determinants of skills involved in the construction of houses. Housing firms have realized the gains in the use of skilled

workers and the little benefits associated with using unskilled ones (Kleiner & Boullon, 2018). In a study by Swivsa and Bacona (2011) which investigated the productivity effects of using unskilled workmen in the construction of government housing estates, using data from a sample of 36 homogeneous housing estates own by the Kenyan government, shows that out of the 36 estates, 12 had collapsed within 2 years of their construction due to the failure of using innovative skilled contractors. It was further reported that the contractors used substandard levels of construction equipments with more traditional or unskilled hands.

The fundamentals of skills acquisition in respect to technologies are the foundation on which modern houses are built. Thus, the use of skilled workmen and technology are indispensible to perfect housing delivery (Usangha, 2011). Lynch and Black (2015) found a positive and significant relationship between the proportion of unskilled workforce and a standard housing estate. The findings shows that housing firms that use skilled engineers in the construction of housing estates stand a better chance to deliver a good job than firms that do not hire skilled engineers. Newton (2016) noted that the construction of a perfect house require not only the use of strategic equipments but also skilled workmen who can achieve goals with cost reduction and production development. To him, skilled and motivated workforce produces modern and standard houses that can stand the test of time. Baldwin and Smith (2013) also stated that housing firms should lay greater emphasis on the use of skilled workforce with advanced technology in the construction of houses.

Mylord and Roberts (2016) maintained that the inability of house owners or building firms to update their technologies or materials used in building houses causes them a ton of problems later or down the lines. Mylord and Robert (2016) identified the main challenges in the use of poor building materials to include among others the collapse of houses and killing inmates. In his study to determine the various ways that poor or obsolete building materials can put house owners at risk, Tillon and Macho (2017) reported that so many housing firms and contractors make use of sub standard materials in building houses and ends up with crack walls, falling buildings and death of inmates; some ended up going out of business instead of improving their business. The use of obsolete material in building houses is one thing that makes house owners suffer untold hardships (Tillon & Macho, 2017). Pauline (2015) noted that the use of obsolete material in house construction haunt the owners of these houses, as they would end up incurring more cost than they bargained. While the desire to save some funds may be logical in the use of sub-standard materials, this line of thinking actually come back to haunt them down the line, when later they discovered that they have to spend much more in rebuilding the house.

According to Hopeflin (2012) when a house building firm uses a piece of sub-standard material, the firm would at a long run suffer from integrity and credibility test which may cost it to run out of business in due time. The fact that the firm uses poor building material means it is bound to be labeled and would stand to lose its customers. But, a housing firm that is being supported by the use of standard equipments can count on enough clients' patronage. In supporting this view, Jackoney (2019) also pointed out that when a house contractor uses poor building materials in building a house, he is more likely to be unsecured in business. But in a case where building materials used in building a house are obsolete or sub standard, the house would no longer be supported by insurance policy.

In every country like Nigeria, there exist regulatory bodies that monitor plans and building processes. Such plans may be rejected or asked to be amended and resubmitted depending on the rules of the building regulations. According to Shatokhin (2020) the regulatory body may reject plans, refuse to grant an application for relaxation of building regulations, add a condition to the granting of an application for relaxation or serve a contravention notice in respect of defective work. In most countries, approval for building must be applied for and approved before such a house is

built. Shatokhin (2020) further posited that building control contraventions or breaches fall into the following categories: Failure to deposit plans before commencing building works; failure by the builder to give the required notice at specified stages of the work and failure to comply with the requirements of the regulations in carrying out building work on site.

In the United Kingdom, if an individual built an unauthorized house without submitting any plans, or give a notice, or even apply for a Regularization Certificate, the house may be demolished. Usually, inspectors would visit the site to ascertain whether, or not, the work complies with building regulations (Stephano, 2021). This may involve the opening up of works and carrying out tests and/or sampling of materials. They will then notify the house owner if he requires any further work to bring the building to the required standard. Fakunle, et al (2020) opined that building codes have been established as vital instrument to minimize susceptibility to natural hazards that sometimes characterizes poor building structures; and that the codes guide architects and engineers on how best to design new buildings or renovate existing buildings in vulnerable areas. These codes if well implemented will ensure that not only a good building structure is built but the builders do the right thing. According to Fakunle, et al (2020) when building codes are not obeyed, there will be improper administration of a housing project, which may result to poor job delivery. As a matter of fact, the violations of building codes/regulations could cause a lot of harm with regard to public health, safety, general welfare, building quality and environmental protection (Fakunle, et al, 2020).

The International Code Council (ICC) (2020) sees building code as a model code that contains minimum requirements that can safeguard public health, safety and general welfare of the occupants of new and existing buildings and structures. The Australian Government Productivity Commission (2018) defined building codes as: "building regulations affected by building approval process, planning approval process, standard setting and accreditation of products, people and process, environmental regulations, occupational health and safety regulations". So many builders of houses including professionals are not aware of the importance of building codes such that houses are now built carelessly. With the advancement in construction technology, it is still appalling that the development of building codes and project implementations are characterized with uncertainties and major potential faults (Sheikh et al, 2020). Sheikh, et al (2020) further stated that violations of building regulations can be dangerous to human existence. They also added that such violations could be detected during the various phases of the building project, but that the detection of code violation at the early stages could be addressed and that might save cost. This is because the public health, safety and general welfare implications of these problems could be quite huge.

Theoretical framework

The Resource-based theory was used to analyze housing deficits as it correlates population and housing census in Nigeria. The resource based theory was developed by Porter (1985). A fundamental assumption of this theory is that organizations can be successful if they gain and maintain competitive advantage. Competitive advantage is gained by implementing a value-creating strategy that competitors cannot, easily copy and sustain and for which there are no ready substitutes. For competitive advantage to be gained, two conditions are needed. First, the resources available to competing firm must be variable among competitors, and second, these resources must be immobile (i.e. not easily obtained). The assumptions of resource based theory associated with organizations are: Physical (plant, technology and equipment, geographical location); human (employees' experience and knowledge) and Organizational (structure, systems for planning, monitoring, and controlling activities, social relations within the organization and between the organization and external constituencies).

The relevance of the Resource–based theory to

this study lies on the fact that it will serve as a medium for sustainable financing of population and housing census in Nigeria. This is because in Nigeria, NPC which has the mandate to take population and housing census is under-funded in terms of budgetary allocation. It goes to suggest that population and housing census needs are competing for government attention, and since funds are limited and cannot be used to take care of these needs, there exist cases of housing deficits which invariably further serve as hindrances to population and housing census taking. The theory therefore is calling on government and all relevant agencies to provide necessary resources for population and housing taking. Also, NPC must have to implement a value-creating strategy which other competing interest cannot easily use. That is, NPC must strive to gain competitive advantage over other government parastatals and agencies seeking government. Thus, NPC in need of government resources to take effective population and housing census should be able to map out its proposal to conform to the conditions set by the government.

METHODOLOGY

Descriptive survey design was used for the study. This study was carried out in the six geo-political zones of the country. The study population comprises household heads resident in the study area. The Leslie Kish (1987) sample estimation formula was used to arrive at the sample size of 360 and the sampling technique used in this study were a multi-stage, stratified and simple random sampling techniques to facilitate a robust and well-informed research process. In the first stage of the sampling process, the study area was divided into six strata according to the six geo-political zones of Nigeria. South-South formed the first stratum; South West was the second stratum; South East was the third stratum; North Central was the fourth stratum; North West was the fifth stratum and North east was the Sixth stratum. This approach ensures that the research captures perspectives from both the Northern and Southern parts of the country. Thus, 60 respondents were drawn from each selected zone. By allocating equal representation to each zone, the study was able to minimize potential bias related to zonal or regional differences.

The second stage involves the selection of two states from each of the zone selected for the study, using the simple random sampling technique. Therefore, for South-South zone, Akwa Ibom and Cross River States were selected; for South West zone, Oyo and Lagos States were selected; for South East, Anambra and Enugu States were selected; for North Central, Niger and Benue States were selected; for North West zone, Sokoto and Kebi States were selected and for North East, Adamawa and Taraba States were selected. That is, twelve (12) states were used for the study.

The third stage was the selection of one (1) local government area from each of the state that was selected. That is, in each selected state, only one (1) local government area was selected using the simple random sampling technique. This gives us twelve (12) local government areas that were used for the study.

The fourth stage was the selection of one (1) community from each selected local government area, using the simple random sampling technique. Altogether, twelve (12) communities were used for the study.

The respondents were selected using the simple random sampling method. They were selected from the communities used for the study. They were served with pieces of papers that were written on either of them the inscription: “Yes” or “No”. These pieces of papers after they were thoroughly folded into paper balls and shuffled, the household heads were asked to pick the paper balls without allowing them to return them to a basket that contain the unused ones. Those that picked “YES” were served with a copy of the questionnaire to fill. This procedure was done in all the selected communities. At the end of this activity, a total of 360 respondents were selected to participate in the study.

Data for the study was obtained from two sources: primary and secondary sources. The Primary source consisted of first hand information obtained from respondents in the process of field work. In this study, the questionnaire instrument was used to obtain the data. Data entry and

analysis were done using Microsoft excel (for cleaning) and the statistical package for Social Science (SPSS version 20). Results generated were expressed as percentages and presented in tables, charts and graphs. The research hypothesis was tested using One – Way Analysis of Variance (ANOVA). Sample-by-sample distribution of respondents by their strata and selection is shown on Table 1.

TABLE 1: Sample distribution of respondents by their strata and selection

Geo-political Zones	States	Local government	Communities	Respondents
South-South	Akwa Ibom	Eket	Afaha atai	22
	Cross River	Yakurr	Nko	38
South West	Oyo	Akinyele	Ikereku	32
	Lagos	Lagos island	Ejigbo	28
South East	Anambra	Oyi	Ogbunike	22
	Enugu	Igbo etiti	Ozalla	38
North West	Sokoto	Sokoto north	Waziri	31
	Kebi	Suru	Dakingari	29
North Central	Niger	Gurara	Gawu	36
	Benue	Makurdi	Makurdi	24
North East	Adamawa	Madagali	Gulak	18
	Taraba	Jalingo	Jalingo	42
Total				360

Source: Fieldwork, 2023.

Data analysis

Table 2: Responses on housing deficit and housing census in Nigeria (n=360)

S/n	ITEMS	SA	A	SD	D	UD
1	Scarcity of houses is high in Nigeria	155(43.1%)	101(28.1%)	62(17.2%)	41(11.4%)	1(0.3%)
2	Many people in Nigeria are homeless	182(50.6%)	86(23.9%)	45(12.5%)	42(11.7%)	5(1.4%)
3	I live in a rented house	138(38.3%)	87(24.2%)	55(15.3%)	30(8.3%)	6(1.7%)
4	I live in my own house	61(16.9%)	155(43.1%)	75(20.8%)	63(17.5%)	6(1.7%)
5	I live on the streets	72(20%)	71(19.7%)	101(28.1%)	98(27.2%)	18(5%)
6	My house has never been counted in any census	173(48.1%)	56(15.6%)	38(10.6%)	41(11.4%)	6(1.7%)
7	I don't have a house that should be counted	161(44.7%)	84(23.3%)	48(13.3%)	51(14.2%)	16(4.4%)
8	Scarcity of houses poses a barrier to population and housing census	175(48.6%)	96(26.7%)	60(16.7%)	17(4.7%)	12(3.3%)
9	Some houses are usually not counted during censuses	197(54.7%)	88(24.4%)	55(15.3%)	12(3.3%)	8(2.2%)
10	All houses are counted during census	34(9.4%)	72(20%)	187(51.9%)	63(17.5%)	4(1.1%)

Source: Fieldwork, 2023

Table 2 shows responses on housing deficits and population and housing census in Nigeria. Data on whether scarcity of houses is high in Nigeria shows that, 155(43.1%) respondents strongly agreed; 101(28.1%) agreed; 62(17.2%) strongly disagreed, 41(11.4%) disagreed while 1(0.3%) were undecided. As regard whether many people in Nigeria are homeless, analysis of data indicated that 182(50.6%) respondents strongly agreed; 86(23.9%) agreed; 45(12.5%) strongly disagreed, 42(11.7%) disagreed while 5(1.4%) were undecided. On whether respondents live in a rented house in Nigeria, 138(38.3%) respondents strongly agreed; 87(24.2%) agreed; 55(15.3%) strongly disagreed; 30(8.3%) disagreed, while 6(1.7%) were undecided. Responses on whether respondents live in their own houses, 61(16.9%) respondents strongly agreed; 155(43.1%) agreed; 75(20.8%) strongly disagreed; 63(17.5%) disagreed while 6(1.7%) were undecided. Analysis of data on whether respondents live on the streets, 72(20%) respondents strongly agreed; 71(19.7%) agreed; 101(28.1%) strongly disagreed 98(27.2%) disagreed while 18(5%) were undecided.

Data on whether their house have never been counted in any census shows that, 173(48.1%) respondents strongly agreed; 56(15.6%) agreed; 38(10.6%) strongly disagreed; 41(11.4%) disagreed while 6(1.7%) were undecided. As regard whether respondents don't have a house that should be counted, analysis of data indicated that 161(44.7%) respondents strongly agreed; 84(23.3%) agreed; 48(13.3%) strongly disagreed; 51(14.2%) disagreed while 16(4.4%) were undecided. On whether respondents the location of a house poses a barrier to population and housing census, 175(48.6%) respondents strongly agreed; 96(26.7%) agreed; 60(16.7%) strongly disagreed; 17(4.7%) disagreed while 12(3.3%) were undecided. Responses on whether some houses are usually not counted during censuses, 197(54.7%) respondents strongly agreed; 88(24.4%) agreed; 55(15.3%) strongly disagreed; 12(3.3%) disagreed while 8(2.2%) were undecided. Analysis of data on whether all houses are counted during census, 34(9.4%) respondents strongly agreed; 72(20%) agreed; 187(51.9%) strongly disagreed; 63(17.5%) disagreed while 4(1.1%) were undecided.

Test of hypothesis

H_0: Housing deficit does not significantly affect population and housing census in Nigeria.

$H_{1:}$ Housing deficit significantly affect population and housing census in Nigeria.

The independent variable is housing deficit which is continuous while the dependent variable is population and housing census in Nigeria which is also continuous. To test the hypothesis of significant effect of housing deficit on population and housing census in Nigeria using the One – Way Analysis of Variance (ANOVA), the statistics of housing deficit was determined (Mean=5.0866; SD = 3.0577), and used to classify housing deficit into levels (Mean ± ISD), using:

Low: X_i = <Mean - 1SD;

Moderate: X_i = Mean ± 1SD, and

High: X_i = >Mean + 1SD

The effect of housing deficit (low, moderate and high) on population and housing census in Nigeria was then tested using the One – Way ANOVA and the results are presented in Table 2.

Table 3: Summary data on One – Way ANOVA of significant effect of housing deficit on population and housing census in Nigeria

Levels	N	Mean	SD
Low	46	2.3696	2.2466
Moderate	75	2.8000	2.8580
High	239	5.1187	3.5288
Total	360	5.0866	3.0577

Source of variance	SS	Df	MS	F	Sig
Between groups	246.882	2	123.441	5.189	.828
Within groups	8492.831	357	23.789		
Total	8,739.713	359			

P>.05; critical $F_{2,357}$ = 3.02

Table 3 indicates that since the calculated F- value of 5.189 is greater than the critical F-value of 3.02 at .05 level of significance and 2,357 degrees of freedom for the two tailed test, it follows therefore that the null hypothesis is rejected while the alternate hypothesis is retained. Hence, housing deficit has significant effect on population and housing in Nigeria.

DISCUSSION

The findings of this study reveals that housing deficit has significantly affected population and housing census in Nigeria. This finding is in support of Uzonwanne (2010) who stated that housing deficits in Nigeria has been one of the major problems in the country and has affected the socio-economic development of the country in diverse ways. This study also corroborates Wendy and Asheila (2011) who stated that the housing sector has never been given adequate attention by the government and that is why there is scarcity of houses in almost all parts of Nigeria. This study corroborates Ogbo and Beterm (2011) who argued that NPC lacked needed resources to enable it know the exact number of houses and populations living in them. It also support Oni and Adeqale (2018) who noted that population and housing census in Nigeria needed to be addressed in proper perspectives to enable the government solve the housing challenges in the country. The current study also support Ahmed et al (2016) who opined that the housing deficits in the country tend to have defied any solution since a greater percentage of Nigerians do not own their houses.

In Nigerian cities, the rate of housing deficit is very high (about 75%). It was observed that government policies on housing have not always been implemented due to lack of financial resources. The projected population figure of Nigeria in 2023 indicated 223,804,632 people at midyear while the housing census indicated 42 million housing units. Out of this number, 31.6 million i.e. (75%) were substandard (Oloyede, 2022). This justifies the claim that the number of persons in Nigeria far outweighs the number of houses in the country. In other words, the available houses were not sufficient enough to cater for the population of persons in Nigeria. This has been the reason why housing industries and entrepreneurs were building housing estates for persons who cannot afford their own houses to rent them at very high rents. Similarly, the business of house renting blossomed in which the common man was exploited through rent payments.

Many persons were compelled by the scarcity of houses to live in the neighboring communities and be going to work in the cities every day. For instance, in Calabar, Cross River State, a greater number of civil servants working there, live in the neighboring communities of Akamkpa, Odukpani, Bakassi and Akpabuyo. Due to scarcity of house, many persons were found living on the streets, under bridges, uncompleted houses and in any available shelter open to them. No wonder then that we have so many street children in various locations in the cities.

Ostensibly, not only did all these category of persons not counted during population and housing censuses but has fundamentally impeded the operations of NPC to arrive at the exact population and housing figures needed for socio-economic planning and development. During the 2023 population and housing census trial in Nigeria, many houses were not captured in the delineated areas. This was primarily due to their remote locations. The roads to some of these locations were inaccessible and were therefore left uncounted.

Another major challenge that may likely hinder population and housing census has been the type of houses built which do not last long. In most places in Nigeria, could be found poor or sub standard houses which had brought physical, economic and psychological woes to occupants of these houses. Some of these houses were built with materials that were obsolete or did not meet with the recommended standard of modern building technology. Houses of these nature sometimes collapses or destroyed by either physical or human forces and do render the occupants homeless, thereby affecting the taking of censuses of these houses and their occupants.

CONCLUSION

The study concluded that housing deficits significantly affects population and housing census in Nigeria. The scarcity of houses is

common place in the study area resulting too many people being homeless, migrating to neighboring communities, living under bridges or uncompleted buildings among other locations. As a result of this challenge, these categories of persons could not be counted in the census. Furthermore, the housing deficit actually made it impossible to arrive at the exact number of houses and their occupants at a given point in time.

RECOMMENDATIONS

1. For a comprehensive and credible population and housing census taking, the government and other agencies or bodies should make the provision of houses for all achievable by given it top priority. This can be made possible through budgetary allocations that are realizable.

2. The government should be more committed to the taking of population and housing census for sustainable socio-economic growth.

3. The government should adequately fund NPC to be able to execute its census taking tasks optimally.

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UTILIZATION OF TECHNOLOGICAL RESOURCES AND CENSUS TAKING IN NIGERIA: A STUDY OF THE NATIONAL POPULATION COMMISSION

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ABSTRACT
The study examines the utilization of technological resources and census taking in Nigeria: a study of National Population Commission. Both theoretical and empirical literatures were reviewed for the study. The survey design was adopted for the study and a sample of 383 staff of National Population Commission was used for the study. Two instruments: (i) a self-developed questionnaire and (ii) Focus Group Discussion (FGD) were used in this study. The findings revealed that the utilization of technological resources for census taking in Nigeria had been low and porous. The only technological devices ever used were computers, internet services and smart phones and that a greater portion of NPC operations were analog based. Consequently, census taking in Nigeria had over time experienced continuous shifting of census dates and delays in announcing census calendar as well as incompetence, lack of innovativeness, creativity and flexibility. It also affected government planning and policy decisions as well as data gathering for credible and accurate census figures. Thus, it is recommended among others that the government should formulate laws that will back the National Population Commission to conduct all censuses with digital technological devices such as Biometrics or personal chip card (smart card), ATM (automated teller). Also, NPC staff should be reoriented and fully trained on the use of technological resources. This can be achieved through periodic workshops, seminars and conferences. There is also the need for modern and more advanced electronic technologies to be provided for the conduct of censuses in Nigeria. (Word Count: 247)

Key words: Census Taking, Electronic gadgets, National Population Commission, Technological resources.

INTRODUCTION
The significance of effective census taking in general is multidimensional. Census taking is used to determine the exact population of a country from which appropriate decisions about the wellbeing of a population are taken. Basically, effective census taking enables the government to plan and also know how to cope and address the perennial problems in the country. According to Ishang and Waku (2018) with effective census taking, the government will have the ability to make rational and informed decisions about the needs of a people. With effective census taking, provisions are easily made available that keeps the youth occupied in meaningful ventures. Effective and impartial census taking promote patriotism, fairness, understanding and national unity, inculcate on the nationals the need to build

a free and democratic, just and egalitarian society, build a united, strong and self-reliant nation, a great and dynamic economy among other benefits

It is however unfortunate developing countries are unable to adapt their knowledge and resources to the demands of conducting credible and generally acceptable censuses. It is more worrisome that leadership of these countries continues to use analogue methods to manage censuses in this era of technology where technological innovations are applied in virtually all aspects of human endeavors. Consequently, many African countries find it burdensome to conduct census with modern technologies. For some decades, most African countries, notably Nigeria have not conducted any census for various reasons bordering on technical and administrative inadequacies, corrupt practices and lack of optimum responses from the government. In most cases, discrepancies exist between how well both human and material resources are managed towards conducting a successful census. As a result of gaps that exist, one finds that census taking in Africa negates established performance standard, and this invariably affect the planning and decision making processes of the state. The resultant effect has also been the high level of criminality and social vices in the society due to the failure of government to meet the needs of the populace in terms of housing, employment opportunities and infrastructural development (Aitken, 2014). This sensitive and embarrassing situation is often attributed to the failure of government to ascertain her population dynamics.

In modern societies such as in Europe, America and Asia, the most effective means of conducting censuses is by utilization of technological resources. With technological resources, it becomes easy for data to be collected, processed, stored, retrieved and used for census operations. Technological resources facilitate housing and census processes. According to Bracksone (2014) technological resources provide reliable data for housing and census programme implementation and monitoring. Some of the technological resources often utilized for housing and population census includes internet based data, Biometrics or personal chip card (smart card), ATM (automated teller), Smart phones, tape recorders, computers, microfilm readers among others. As Davesh (2010) points out, some of these technological resources enhance research development and effective decision making processes, plan and assess census operations. Technological resources such as, internet, laptop, smart mobile phones, broadband, satellite and Wifi hotspots could be used for searching relevant materials for census taking. It may also be used to create census versatility, better use of time and resources.

More importantly, the complexity of the census system caused by the range of records and reports generated, processed, stored, retrieves and used for various purposes makes the utilization of technological resources inevitable. It is however unfortunate that some states have not seen the importance of managing technological resources for the conduct of housing and population census. No wonder then they are not ready to invest in technological resources. It is against this background that this study examines how utilization of technological resources impacts on housing and population census taking in Nigeria.

STATEMENT OF THE PROBLEM

The poor or non census taking in Nigeria over the past three decades has made policy designers, population experts, planners and government worried. This is because from the last census conducted in 2006 up till now, the federal government has not been able to conduct any census as expected. Subsequent administrations had promised and failed in this regard. Worse still is the non-alignment of the National Population Commission, a body established to oversee census affair in Nigeria to work in tandem with the UN standard to conduct elections in every 10 years. Even the projected population figure of 2 million in 2023 and the ones projected for the states are all shrouded in controversies (Adac, 2011).The projected figures were in most cycles dismissed as lacking authenticity, reliability and validity.

More so, the government tends to be lost on how to manage censuses or even know its importance to the socio-economic development of the country. The passivity of government towards census taking accounts for most of the unequal and subsided developments in the country. It has also resulted to the neglect of

critical sectors of the economy. Consequent upon this, we now find a greater number of youths roaming the streets unemployed and indulge in criminal behaviors and restiveness. To a greater extent, this ugly trend has been blamed on various factors including poor utilization of census planning and implementation, lack of will power on the side of government to conduct a credible population census and ineffective decision making processes among others.

As a matter of fact, various efforts have been made by government, non-governmental organizations and some spirited individuals in the society towards ensuring that Nigerians know the exact population figure in each segment of the country for the purpose of planning and for socio-economic development. Various policies and programs were earmarked, ranging from training and development of NPC staff using workshops and seminars, establishment of NPC offices with Information Communication and Technology (ICT) centers in all the thirty six states of the federation and Abuja. In recent times, population experts were recruited for the commission. All these, have been consistently pursued by the government through the National Population Commission (NPC) in her bid to maximally attain a credible population. In spite of all these efforts, it was observed that the trend where census taking cannot be done and the projections for each year being rejected by a cross section of experts, which they argued the method of projecting figures is falling below standard is continuous and persistent and tends to have no solution in view.

Essentially, technological resources not only enhance effective census taking but also ensure exact population figures are arrived at in accordance with the UN standard. This implies the government through the NPC may find it difficult to conduct any credible census and arrive at exact projections if the provision and utilization of technological resources is not given top priority. The clamor for use of technology resources in conducting the proposed census taking in Nigeria has prompted this study. Specifically, this study proposes to answer the following questions: will availability of technology resources facilitate effective census taking?; What type of technological resources are relevant to conduct census in Nigeria? And how does the utilization of technological resources enhance effective census taking?

Objective of the study

1. To ascertain the types of technological resources available for census taking in Nigeria
2. To determine factors inhibiting the use of technological resources for census taking in Nigeria
3. To find out the prospects of NPC conducting effective census with technological resources in Nigeria
4. To determine whether use of technological resources (TR) influences census taking in Nigeria

LITERATURE REVIEW

Number of African countries have experimented the use of technological resources in the conduct of censuses with maximum successes. Good examples are South Africa, Egypt and Ghana (Adeyemi, 2018). The utilization of technological resources was considered inevitable solution to the challenges faced by African countries to conduct a zero problematic census taking, being that it was successfully used in other countries of the world (Waniya, 2010). The general notion is that the use of technological resources is possible means of achieving a generally acceptable housing and census figures for the country. This notion is so pervasive that one would think that without technological resources, effective census taking cannot hold (Ben & Ikpang, 2010). According to Vandiver (2011) for the last ten decades, African countries have been clamoring to conduct a census but only a few countries such as South Africa for example made it by embracing technological resources fully. For instance in 2011, South Africa implemented a census policy in which her census taking was completely done with modern technological resources. According to Essuman (2018) in South Africa, the use of digital resources in census taking has significant impact on the socio-economic planning of the country. For almost two decades, Ghana utilized technological devices for her census taking and projections. Egypt is another country in Africa that fully uses technological resources for census utilization. Dahar (2011) affirmed that technological resources have been successfully

put to use for censuse taking in developed countries.

Uzornma (2012) stated that census utilization in most African countries has been poor and unacceptable to policy experts and therefore the reasons why the use of technological resources for census taking is imperative. Freeman (2010) has identified non-availability and inaccessibility of technological resources as a major bane to smooth census taking in Africa. According to Arubayi (2011) census taking in African countries had been problematic due to technical, administrative and logistic challenges, hence the clamor by population experts to use technological resources for census taking.

To be able to have quality censuses in Africa, Shera and Okon (2016) noted that technological resources must be made available for use. According to Guba (2018) the non utilization of technological resources for census taking has been a major challenge in developing countries. Edet, Mgbekem and Edet (2013) assert that in Egypt, the government deployed adequate technological resources for census taking since 1882 when census was first carried out. They added that various components of technologies were used which contributed to the excellent performance of CAPMAS, a central agency established to conduct census in Egypt. Edet et al (2013) further assert that during the last 135 years, Egypt has managed to carry out 14 official population censuses and were successfully done and that in 2017, the use of technological resources for the population census boosted the peoples' confidence as complaints were minimal.

Debnath, Kapoor and Ravi (2017) posit that the availability and accessibility of technological devices for census taking in Kenya was poor, as they were scarcely available; and the government tend to be insensitive to its importance. This causes the populace to lose confidence in the population figures announced by the government. This situation also caused frictions, conflict and decreased enthusiasm among a section of persons in the country. In a study carried out by Dekker (2014) to determine the perceptions of a cross section of Nigerians about the use of electronic devices for population census, it was reported that 87 persons perceived the use of electronic devices to be the most complex but necessary innovations to be introduced in census utilization.

In India, the introduction of electronic devices for population census succeeded in 2011. The next census was suppose to have taken place in 2021, but was postponed because of the Covid-19 pandemic. In the US, all aspects of population censuses, including projections are done technologically (Orosco, Campos & Camp,2020). It should be noted that in USA, the use of technological resources for census taking had since its first use in 1700 undergone series of innovations and improvements (Haloran, 2019). According to Ichniowki, Shaw and Prenoski (2011) the computer and internet technologies were used since the 20th century to facilitate rapid transformations in population census and research. For now, more sophisticated technological resources are being used in the developed world for census taking processes (Lynch & Black, 2015). Nelson (2010) affirmed that the use of digital technology in managing population censuses is more dependable and capable of boosting the viability of planning and governance in America. Debnath, Kapoor and Ravi (2017) reported that census taking in Pakistan was done with technological devices which not only enhances effective communication networks required for the conduct but also promoted shared understanding and course of action among stakeholders, which in turn facilitated up to 89.5 per cent acceptance of the census result by the citizenry.

Asuthil (2015) stated that the use of electronic devices in 2017 for census taking in Botswana produced the most acceptable results which further led to the high level of socio-economic planning and development in the country. Similarly, Berinsky (2012) reported that Ghana used the electronic devices for the first time in 20mmmmm to conduct her mmmm census. It was the first census taking in the country that had little or no protest or court cases for over a period of 25 years. Akudo (2018) affirmed that the failure of Nigeria to have a census for over mmmmyears is because of the unpreparedness of government to invest in the provision of technological resources for use in any census operations.

Similarly, Jibrin (2012) opined that census taking exercise will be a futility unless the

government will be ready to provide modern technologies to the National Population Commission (NPC) for use. Kapoor and Mudit (2017) assert that it is not enough for government to provide technological resources for census taking but also necessary to train and retrain the staff that will manage them effectively. They added that majority of NPC staff lack the knowledge and skills of managing these technological resources. According to Makin, Chritlin, Hirth and Taylerson (2016) the relative feature of census taking in Kenya, is that there were shortage of technological resources which led to some areas counted with the use of electronic devices while some were counted manually.

Theoretical framework

Technology Acceptance Model (TAM) by Davis (1986) is used as background to this study. It is an information model that explains users' acceptance of information systems or technologies. In other words, it models why and how users accept and use a technology. The model identifies two basic factors that determine whether a technology such as the computer will be accepted by its potential users or not. These are perceived usefulness and perceived ease of use. It however recognizes five constructs that determines whether a person will accept the use of a technology or not. These constructs are: perceived ease of use, perceived usefulness, attitude towards use, intention to use and actual behavior.

The model predicts that intentions lead to behavior, but also recognizes the fact that intentions do not always guarantee behavior. Its emphasis is that behavioral intention is a factor that leads people to use technology. The actual system use is the end-point where people use the technology. Davis identifies factors that affect the technology acceptance model to include assumes performance expectancy, effort expectancy, social influence and facilitation conditions. Davis also considers individual perspectives and social and environmental factors to influence the acceptance and use of technology. For instance, when users perceive that a type of technology is useful and also easy to use, they will be willing to use it. Consequently, the model assumes that "the acceptance of technology is predicted by the users' behavioral intention, which is in turn determined by the perception of technology usefulness in performing the task and perceived ease of its use". The technology acceptance model also assumes that technology has three important stages, namely: invention, innovation and diffusion. Each stage has inherent resources that attract its acceptance and use.

This theory has some relevance on the current study. It implies that for National Population Commission (NPC) to be able to attain its set goal of conducting censuses that will be credible and generally accepted, there must be technology use acceptance which can be enhanced by the federal government' behavioral intensions. In other words, the federal government, NPC and the generality of Nigeria must as a matter of necessity perceive and understand the usefulness of technological resources such as computers, Internet devices, Projector, Mobile phone use and Microfilm readers in census taking. They must also develop positive attitude towards its use as well as intention to use them. The census taking functions will depend on the actual behavior of government vis-à-vis NPC staff to accept and use these technological resources for census taking. In other words, the abilities of government through the NPC to accept and use these technological resources for census taking will lead to better outcome of census taking. Besides, having the confidence in the use of technology can lead to increased acceptance of census figures.

METHODS

The study setting was the National Population Commission, Abuja headquarters. The study adopted the survey design. This method was used to obtain information from permanent staff of NPC mainly through questionnaire and a Focus Group Discussion (FGD) in order to provide a relatively complete understanding of what is happening at a given period and time (Ndiyo, 2019). The study population is National Population Commission (NPC), using full time staff as informants. The Stratified and purposive samplings were used for this study. The stratified sampling was carried out in the fifteen (15) major departments/units that constitute NPC, namely: Cartography, Census, Finance & Accounts,

Human Resources & Administration, Information and Communication Technology (ICT), Audit, Population Management & Development, Planning & Research, Population Studies, Public Affairs, Procurement, Special Duties, Vital Registration, Legal Services and General Services, each of which formed a stratum of the study. To select respondents for the study, the purposive sampling was adopted. Thus, the sample size for the study was 383. A questionnaire titled: "Utilization of Technological Resources and Effective Census Taking Questionnaire (UTRECTQ) was used to collect data for the study. The NPC staffs used in the study were visited in their respective offices and were served with copies of the questionnaire by the researcher and some research assistants who were recruited for this purpose. They were instructed to give objective response to the questions.

Responses to items on UTRECTQ were structured and patterned with a 4-point likert scale. Each copy of the questionnaire was coded and scored and then entered into a coding sheet also called a person-by-item matrix table. Thereafter, they were arranged in percentages and tables. Data analysis was done and expressed as percentages and presented in tables. A breakdown of the sample distribution is shown in Table 1

TABLE 1: Sample distribution of respondents by Senatorial districts and health facilities

S/n	NPC departments	Population of staff	Number of respondents
1	Audit	214	21
2	Census	473	47
3	Cartography	222	22
4	Finance & Accounts	234	23
5	General Services	331	33
6	Human Resources & Administration	385	38
7	ICT	262	26
8	Legal Services	250	25
9	Planning & Research	253	25
10	Population Management & Development	210	21
11	Population Studies	243	24
12	Procurement, Special Duties	281	28
13	Public Affairs	264	26
14	Vital Registration	243	24
	Total	3,865	383

Source: Fieldwork, 2023.

Item pool from Focus Group Discussion (FGD)

A FGD session was held in the conference room of NPC, Abuja. The session was composed of 14 staff, each purposefully selected from each department of the NPC. The session lasted for one hour only. Also, FGD participants were selected without bias in order to build confidence in the study. The discussants were allowed to appoint a moderator who guided the session while research assistant took notes and records of the discussions. All respondents had equal opportunities to contribute to the discussions. The discussants followed FGD guide for the deliberations. The guide has 10 predetermined open-ended questions and the deliberations were recorded with an audio-tape recorder. Thereafter, the discussions were transcribed verbatim by a research expert. The thematic analyses were done in relation to research objectives and level of patterned responses, using ATLAS. ti 8 software for windows. The following criteria were used to elicit opinion of the respondents:

1. Perceptions of staff about utilization of technological resources for census taking
2. Role of government in technological resources and census taking.

3. Perceived response or reaction of the Nigeria citizen towards technology use for census taking.
4. Level of interaction between government and NPC towards the use of technological resources for census taking.
5. Type of technological resources used for census taking.
6. Factors that obstruct the utilization of technological resources for census taking.
7. Measures towards the use of technological resources for census taking.

Item pool from Literature review

The literature reviews were drawn from various publications/articles, population and census reports from Nigeria and other countries of the world with focus on the use of technological resources. The literature review also considered online peer-reviewed articles and reports and some drawn from PDF.

Measured-tested items

The instrument measured the substantive issues and variables of the study, which includes demographic features of respondents, types, availability and accessibility of technological resources, role of government and NPC, duties and responsibilities, factors inhibiting the use of technological resources, factors inducing utilization of technological resources, perceived implications, readiness of government and NPC to use technological resources for census taking.

Field testing

The questionnaire was field tested in the selected fourteen departments of NPC, Abuja as shown in Table 1. The field test was carried out between March and August, 2023. The copies of the questionnaire were administered to 283 staff (respondents). The field testing took into consideration getting informed consent and informed decision of respondents, pseudonyms and anonymity. Copies of questionnaire were administered by the researchers assisted by five research assistants, who were trained on expected standards.

DATA ANALYSIS

Data entry and cleaning were done department by department and after which they were brought together as a data set and further cleaned. The quantitative aspect of data analysis was done, using SPSS version 21.0 for windows while the qualitative aspect of data analysis was carried out with ATLAS. ti 8 software for windows.

RESULTS

The result in Table 2 shows the items with their mean scores and standard deviations on the technological resources available for census taking in Nigeria. The result shows that out of the 7 items measured, 4 had mean scores above 2.5 which is the scale critical mean, while 3 items had mean scores below 2.5. That is, the only items available for census taking in Nigeria are computers, internet based data and smart phones. The rest which includes Intelligent Character Recognition (ICR), biometrics, personal chip card and Automated Teller (ATM) are not available for census taking in Nigeria.

Table 2: Responses to types of technological resources available for census taking in Nigeria (n = 383)

Items	Agree	Disagree	Don't know	Mean	Std
ICR	25	348	10	2.4	2.16
Computers*	304	68	11	2.5	2.57
Internet based data*	256	112	15	3.7	3.59
Biometrics	93	284	6	2.3	2.42
Personal chip card	69	310	4	2.4	2.18
ATM	31	335	17	2.3	2.35
Smart phones*	241	129	13	3.2	2.61

Source: Fieldwork 2023

Mean> 2.5 represent technological resources available for census taking in Nigeria, while Mean < 2.5 (*) represent technological resources not available for census taking in Nigeria

The result in Table 3 indicates the mean scores and standard deviations of items on the factors inhibiting the use of technological resources for census taking in Nigeria. The result shows that out of the 8 items measured, 6 had mean scores above 2.5 while 2 items had mean scores below 2.5. This implies that bureaucratic bottlenecks, lack of government will power, inadequate funding, lack of government support, insecurity in the country and technological resources are expensive were considered as the main factors inhibiting utilization of technological resources for census taking in Nigeria, whereas unskilled staff and poor work environment were not considered as such.

Table 3: Responses to factors inhibiting the use of technological resources for census taking in Nigeria (n = 383)

Items	Agree	Disagree	Don't know	Mean	Std
Bureaucratic bottlenecks	284	92	7	2.8	3.11
Lack of government will power	255	123	5	2.7	3.27
Unskilled staff *	32	301	50	2.3	1.91
Inadequate funding	308	38	37	2.5	3.37
Lack of government support	304	64	15	2.9	3.17
Poor work environment *	39	313	31	1.8	1.35
Insecurity in the country	287	87	9	3.2	3.20
Technological resources are expensive	305	41	37	2.5	2.82

Source: Fieldwork 2023

Mean> 2.5 represent factors that inhibits use of technological resources for census taking in Nigeria while Mean < 2.5 (*) represent factors not considered to inhibit use of technological resources for census taking in Nigeria.

The result in Table 4 shows the items with their mean scores and standard deviations on the prospects of NPC conducting effective census with technological devices in Nigeria. The result shows that all the 8 items measured had mean scores below 2.5. This implies that NPC has little or no skilled technology experts, government backing is porous, international support has not been available, technological resources are scarce and inaccessible for use. It further indicate that the Nigeria's political environment did not support technology use in view of the fact that NPC is not well funded and that the federal government had never bordered to provide required technological resources for effective census taking.

Table 4: Responses to the prospects of NPC conducting effective census with technological devices in Nigeria (n = 383)

Items	Agree	Disagree	Don't know	Mean	Std
NPC has skilled technology experts*	146	224	13	1.8	2.05
Government backing is assured*	104	266	13	2.3	2.39
International support is available*	64	305	14	2.4	2.29
Technological resources abound in Nigeria*	118	254	11	2.3	2.17
Technological resources are accessible*	158	213	12	2.2	2.13
Political environment support technology use*	158	211	14	2.3	2.33
NPC is well funded*	54	317	12	1.8	2.18
Government provide technological resources*	38	333	12	2.3	2.25

Source: Fieldwork 2023

Mean> 2.5 represent the items showing prospects of NPC conducting effective census with technological devices in Nigeria while M < 2.5 (*) represent item not considered as prospects.

Table 5 shows responses to use of technological resources (TR) for census taking in Nigeria. On whether some TR cannot handle complex census matters, 198 (51.7%) respondents strongly agreed; 101 (26.4%) agreed; 48 (12.5%) disagreed while 36 (9.4%) strongly disagreed. On whether TR for census taking will be the best innovations in Nigeria, data analysis indicate that 95 (24.8%) respondents strongly agreed; 163 (42.6%) agreed; 58 (15.1%) disagreed while 67 (17.5%) strongly disagreed. Responses on whether TR will help to redress census taking challenges, shows that 184 (48%) respondents strongly agreed; 152 (39.7%) agreed; 29 (7.6%) disagreed while 18 (4.7%) strongly disagreed. As to whether TR can still be manipulated, analysis of data shows that 175 (45.7%) respondents strongly agreed; 147 (38.4%) agreed; 52 (13.6%) disagreed while 9 (2.3%) strongly disagreed. Responses on whether TR will reduce errors associated with census taking in the past, data analysis shows that 214 (55.9%) strongly agreed; 148 (38.6%) agreed; 16 (4.2%) respondents disagreed while 5 (1.3%) strongly disagreed. On whether TR will make census figures acceptable by all people, 136 (35.5%) strongly agreed; 187 (48.8%) agreed; 38 (9.9%) respondents disagreed while 22 (5.7%) strongly agreed.

TABLE 5: Responses to use of technological resources (TR) for census taking in Nigeria (n=383)

S/n	Items	SA	A	D	SD
1	Some TR cannot handle complex census matters	198 (51.7%)	101 (26.4%)	48 (12.5%)	36 (9.4%)
2	TR for census taking will be the best innovations in Nigeria,	95 (24.8%)	163 (42.6%)	58 (15.1%)	67 (17.5%)
3	TR will help to redress census taking challenges	184 (48%)	152 (39.7%)	29 (7.6%)	18 (4.7%)
4	TR can still be manipulated	175 (45.7%)	147 (38.4%)	52 (13.6%)	9 (2.3%)
5	TR will reduce errors associated with census taking in the past	214 (55.9%)	148 (38.6%)	16 (4.2%)	5 (1.3%)
6	TR will make census figures acceptable b people	136 (35.5%)	187 (48.8%)	38 (9.9%)	22 (5.7%)

Source: Fieldwork, 2023

DISCUSSION

Types of technological resources available for census taking in Nigeria

The first finding revealed the types of technological resources used for census taking in Nigeria to include computers, internet based data and smart phones. This finding agrees with Uzornma (2012) who noted that in Nigeria, the computers, internet and smart phones were the technological devices used to facilitate documentation, record keeping and information retrieval during censuses. The finding further supported Edward (2011) who emphasized that the internet was utilized to accelerate research, record keeping, retrieval of information and processing of data. The finding also supports Elimanghe (2012) who stated that NPC uses computers and internet services for information processing and planning in various census taking operations. However, the current finding did not support Ekabua and Edim (2014) who maintained that INC lacked modern technological resources such as Biometrics or personal chip card (smart card), ATM (automated teller) to cope with the complex and dynamic nature of census taking in order to arrive at reliable census figures. The current finding further disagreed with Skinner (2018) who observed that every nation in the

developed world uses technology resources such as Hybrid digital tool or census pad, geographic information system (GIS), intelligent character recognition (ICR), automatic coding, outsourcing and decentralization, GIS- remote sensing and GPS, data processing and storage, census-processing software, data storage, use of the internet, internet for data collection, internet for data dissemination, statistical disclosure control, high capacity physical media, structured archives and the statistical data warehouse, Personal digital assistant device, scanner, kodak to promote efficient population censuses.

Most of the staffs in NPC headquarter in Abuja were knowledgeable and skilled in computer, internet use and smart cards. The technological usage of computers and smart phones could not be used to implement complex and complicated census matters. Indeed, the only technological resources found in NPC office in Abuja were computers and smart phones which were most times channeled towards population projection services. For example, the use of computers and internet services somehow resulted in error reduction and allows more time and flexibility in handling population census matters like population projections.

A greater percentage (71%) of NPC staff had never heard or used technologically resources such as Biometrics, ATM (automated teller) for census taking. During the FGD session, discussants agreed that the unavailability of most modern technological resources had hampered the smooth conduct of censuses in Nigeria. It was also the view of FG discussants that the non-provision of modern technological devices for census taking had also inhibited socio-economic planning in Nigeria. Participants in the FGD also agreed that the failure of the federal government to provide modern technological resources for census taking was a big challenge in the area of facilitating census taking operations such as information gathering, delineation of census areas, record storage and retrieval, evaluation of data and census figures, documentation processes.

Factors inhibiting the use of technological resources for census taking in Nigeria

The second finding revealed that factors inhibiting the use of technological resources for census taking in Nigeria include bureaucratic bottlenecks, lack of government will power, inadequate funding, lack of government support, insecurity in the country and the expensive nature of technological resources. This finding support Newton (2016) who reported that in the developing countries, governments were lukewarm in spending for technologies for censuses just because it was considered as a social obligation with little or no profit made from it. It also supported Lawler (2018) who stated that census taking in Ethiopia was hindered by the poor utilization of technologies in recruiting, selecting and posting of census officials as well as sufficiently training them for the job. It also supported Fariga (2012) who reported that poor use of internet services hindered the conduct of censuses in many African countries. The current study also agrees with Ofosu-Ampong et al (2023) who reported that there was high level of corrupt practices, political intrusions and maneuverings during censuses in most African countries just because technologies were not applied in census taking. It equally agrees with Venera, Luke and Odiong (2010) who reported that the non-utilization of technological resources had brought about the poor planning and ill preparation of census taking in Nigeria.

Government bureaucratic bottlenecks had led to the primary reason why the federal government could not make provision for modern technologies for census taking. The last census that was taken since 2006 was more analog than digital. Even, the population projections were done with analog tools. The controversies surrounding census taking that was meant to have taken in 2023 was marred by the unavailability of modern technologies borne out of government bureaucratic bottlenecks. It also evident that lack of government will power has made it impossible for census taking to be carried out with modern technologies. Besides, the poor or inadequate funding of NPC as well as lack of government support has made the use of modern technologies in census taking in Nigeria a difficult task to be accomplished. The current security challenges especially I the northern part of the country had contributed to the inability of government to provide technological resources for census taking. It was clear that the government priority was in the protection of lives and property and

therefore channel almost all her resources in that direction. Also, the inflationary period occasioned by the hike in prices of good and services and the high exchange rate had made technological resources to be highly expensive, making it not easy for the federal government to invest in technological resources for census taking in Nigeria,

Use of technological resources (TR) for census taking in Nigeria

The third finding revealed that there is poor use of technological resources for census taking in Nigeria. This study agrees with Shera and Okon (2016) who reported that modern technologies such as the BVN, Hybrid digital tool or census pad, geographic information system (GIS), intelligent character recognition (ICR), automatic coding, outsourcing and decentralization, GIS- remote sensing and GPS, data processing and storage, census-processing software, data storage are not popularly used in less developed areas. The findings of this study agrees also with McQuail (2015) who reported that the use of most of these technologies were not only complex to use but also expensive to buy, and this has made it to be limited to developed countries for use.

This finding is in line with Bariblu (2012) who revealed that majority of African countries had not used technological resources to conduct censuses because it is unavailable or scarce to them. The current study also conforms to the study of Bushman and Huesmann (2016) who indicated that the inability of government to make provisions for technological resources for census taking was due to her insensitivity to the importance of census taking in a country. It is also similar to the findings of Akpan, Udeze and Asogwa (2014) who reported that insufficient technological resources to go round the delineated areas throughout the country and the government inability to make provision for them led to the non-utilization of technological device for census taking. Finding of this study supported Adegbokun (2013) who reported that many developing countries have misgivings about the use of technologies for census taking. This current finding is also at variance to the study of Kolter and Calvert (2013) who reported that only few African countries make use of modern technologies for census taking. In Nigeria, technological resources had not been popularly used for census taking due to the fact that the federal government is yet to understand how it works for effective census taking. The relatively low census taking in Nigeria was as a result of the poor supply or inadequate provision of technological resources.

Prospects of NPC conducting effective census with technological devices in Nigeria

The third finding revealed that NPC has little or no skilled technology experts for effective census taking. It also shows that the federal government backing of NPC to conduct credible census is porous. The federal government had been insensitive to gain international support just because of poor implementation strategies. For this reason technological resources are scarce and inaccessible for census taking. It further indicate that the Nigeria's political environment did not support technology use in view of the fact that NPC is not well funded and that the federal government had never bordered to provide required technological resources for effective census taking.

CONCLUSION

There is no doubt that utilization of technology resources for census taking in Nigeria had been low. The only technological devices used by NPC staff were computers, internet services and smart phones. With the low utilization of technology resources by the NPC, census taking was mostly analog based and lacking competence, innovativeness, creativity and flexibility which are necessary attributes for effective census taking in Nigeria. The low use of modern technological resources was due to unavailability, inaccessibility and especially because it was an innovation that the federal government was unaware of its importance to census taking. The findings of this study have implication for the enhancement of census taking in Nigeria. With the provision of technological resources by NPC, the passion for census taking will be heightened and robust census operations and processes will be generated to attain the goals of NPC. The use of technological resources for census taking will make government planning and policy decisions visible, accurate and sustainable. It will equally

help the federal government to provide adequate technological resources in order to promote efficient census administration in Nigeria. It will also help NPC to provide training programmes for her staff so as to enable them manage technological resources effectively whenever there are made available. Technological resources will help in providing quality and standard censuses and accurate data for population projections. Indeed, with the use of election technology robust data will be generated that will be used for census based research.

RECOMMENDATIONS

\1. The federal government should ensure that modern technological resources are sufficiently made available and accessible for census taking in Nigeria. Besides, it should be made mandatory for NPC staff use them for census administrative and decision making process. In other words, the use of technological resources (TR) such as internet based data, Biometrics or personal chip card (smart card), automated teller (ATM), Smart phones should be provided to NPC for census taking in Nigeria.

2. The government should formulate laws that will back the National Population Commission to conduct all censuses with electronic devices. It is also pertinent that the use of internet based data, Biometrics or personal chip card (smart card), ATM (automated teller), Smart phones be legitimized and used in the country in order to enhance proper and effective census taking.

3. Also, NPC staff should be reoriented and fully trained on the use of technological resources so that NPC would do away with the analog method of census taking processes. This can be achieved through periodic workshops, seminars and conferences.

4. There is the need for modern and more advanced electronic technologies to be provided for the conduct of censuses in Nigeria.

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POPULATION CENSUS: A PANACEA FOR SUSTAINABLE DEVELOPMENT, CRIME CONTROL AND PREVENTION

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ABSTRACT

Nigeria has one of the fastest-growing populations in the world and is currently the most populous country in Africa. In recent years, Nigeria has been experiencing negative trends such as inflation, high cost of living, poor socio-economic development, and insecurity. For over a decade and a half, Nigeria has not conducted a population and housing census. Therefore, the 373 respondents who had attained tertiary education in different works of life were sampled in Calabar Metropolis about population census as a panacea for sustainable development, crime control, and prevention. Data were collected through the administration of questionnaires and indebt interview and presented using frequencies, descriptive statistics (mean & standard deviation), and charts. Results of the study revealed that residents of Calabar Metropolis have different opinions about the population census as a panacea for sustainable development, crime control, and prevention. While 64.9% of study participants believed that data generated through population census can be used as an instrument to attain sustainable development, 35.1% did not. Similarly, while 59.8% of the respondents held the belief that population census can be used for crime control and prevention, 40.2% did not. The investigation also revealed that some residents of Calabar Metropolis believe that population census results are often problematic due to political interference, falsification of results, and corruption. In conclusion, although the population census in Nigeria is often associated with problems and challenges, data generated from a credible and reliable census can be used to propel sustainable development, as well as help in crime control and prevention in Nigeria. Social Work counseling and education as a tool for sensitization of youths cannot be overemphasized. With a solid Social Work counseling framework, geared towards counseling youth for sustainable development, crime control and prevention would be achieved.

Keywords: Population census, sustainable development, crime control, crime prevention

INTRODUCTION

One of the critical factors in a nation's efforts toward achieving sustainable development, crime control, and prevention is adequate knowledge of the Population size and demographic data. This can only be achieved through the conduct of a national population census. The people who constitute the population of a country are both the agents and beneficiaries of the sustainable development process and crime prevention. Hence, information regarding the national population of a country in terms of size, distribution, and socio-economic characteristics is required to plan for sustainable development security purposes. This, therefore, makes the conduct of population census an essential governance activity.

Nigeria has one of the fastest-growing populations in the world and is currently the most populous country in Africa. Nigeria is ranked the sixth most populous country in the world and the most populous country on the African continent, with a projected population of 223,804,632 according to the 2023 population projection. Due to the rapidly growing population and a large proportion of the youthful population, the country

is projected to become the third most populous country in the World by the year 2050 after India and China. This has ranked Nigeria very highly on the global demographic map. Despite Nigeria's high-ranking position on the global demographic map, the country does not know the current population of its citizens, as it only depends on population forecasts, which may not be accurate. This is because population censuses in the country had been conducted irregularly and at longer intervals than the recommended 10-year interval by the United Nations.

A successful, reliable, credible, and acceptable census has the potential to foster meaningful development, especially in bolstering the social security program that targets more vulnerable Nigerians (Nwachukwu, 2022). Despite this high potential, Nigeria's *inability to conduct a population census since 2006 (about 23 years) has created an information vacuum. This is because data generated from the last census conducted in 2006 has been rendered out of date for planning purposes. It has therefore become imperative for Nigeria to conduct another national census to produce a new set of socio-demographic and socio-economic data that will provide the basis for national planning and sustainable development (*National Population Commission (2023).

For Nigeria to attain sustainable development, the nation requires a new set of demographic data to drive the implementation of the recently launched revised National Policy on Population for Sustainable Development and other government policies. Population census data is also required to tackle the security challenges facing the country, as it will give the country an overview of its population, for effective planning. Trends in population growth with its associated underdevelopment and high rates of crime like kidnapping can be reversed if all hands are on the desk. If this trend is reversed, individuals, governments, international organizations, non-governmental organizations, corporate bodies, and professional groups must work together (National Bureau of Statistics 2021). One very important professional group that can play a vital role in preventing migration and modern slavery as well as help to reverse negative trends in population growth is social workers. Social Workers assist individuals and groups to enable them to manage difficult situations and develop positive behavioral outcomes. They are trained to prevent unruly behavior among individuals and to help them appreciate the nexus between poverty, oppression, and trauma (The United States National Association of Social Workers, 2017). Hence, Social Workers can mobilize community participation in crime control and prevention through social work education and counseling (College of Social Work, Florida State University, 2020; Maidawa, 2023).

Social Work is a helping profession with counseling as an integral component of the practice. Counseling service is a tool for sustainable youths' education in any given society, with the potential to help them identify and understand their given potential. This paper will therefore examine population census as a panacea or tool for sustainable development, control and prevention of crime such as kidnapping with a critical examination of the role of Social Work.

Objectives of the Study

The objectives of the study are to:

1. To examine the population census as a panacea for sustainable development in Nigeria.

2. To examine the population census as a panacea for the control and prevention of crime like kidnapping in Nigeria.

3. Examine the challenges of conducting a population census in Nigeria.

2.0 OVERVIEW OF POPULATION CENSUS, SUSTAINABLE DEVELOPMENT, CRIME CONTROLAND PREVENTION

The United Nations defined population census as the total process of collecting, compiling, and publishing demographic, economic, and social data at a specific time to all persons in a country or delimited part of a country. As part of a census count, most countries also include a census of housing. It is the process of collecting, compiling, and publishing information on buildings, living quarters, and building-related

facilities such as sewage systems, bathrooms, and electricity, to name a few. Population Censuses are generally conducted every ten (10) years and have as the primary objective the total enumeration of the population of a country to provide essential information on their spatial distribution, age, sex structure, and other key social and economic characteristics (International Labour Organization, 2022).

The United Nations listed four essential features of a census:

1. Each individual is enumerated separately; the characteristics of each person within the household are recorded separately.

2. The census covers a precisely defined territory and includes every person present or residing within its scope. The housing census should include every type of building and living quarters.

3. Each person and each type of building and living quarters is enumerated for a well-defined point in time.

4. The census is taken at regularly defined intervals, usually every 10 years.

A population census is the backbone of a national statistical system because it provides information on a population's size, location, and characteristics. Population census provides comprehensive data on a nation and its people. Census provides valuable data that are critical for policy planning and decision-making across many levels of government, business, academia, and civil society. It also provides data for multiple sectors including population, health, housing, education, nutrition, economics, and agriculture. In addition, the census provides invaluable information and records that reinforce a country's human, housing, and administrative records (United States Census Bureau, 2013).

The Population and Housing Census is often a valuable source of information needed for economic planning, management, and research. This according to Economic Commission for Latin America and the Caribbean (ECLAC) (2014) is because the process helps a country to systematically collect information on socio-demographic, economic, environmental, and other issues of national importance". Population census data is very valuable because it can be used to guide the planning and development processes in a country. The data gives information about a country and regions that need help and funding from the governments the most, and which ones that need less funding.

According to the National Population Commission of Nigeria (NPC) (2023), "A population and Housing Census (PHC) is of great relevance to the economic, political, and socio-cultural planning of a country. Reliable and detailed data on the size, structure, distribution and socio-economic and demographic characteristics of a country's population is required for policy intervention and monitoring of development goals" (NPC, 2023). Bakawu (2021) presented a paper on the use of a fuzzy time series methodology for forecasting demographic trends that could serve as a scientific approach towards feasible and sustainable socio-economic development policies. The case study utilized by the author was an experimental analysis of population variation of Yobe State, Nigeria spanning over periods of 1996 – 2020. The result revealed that appropriate population forecasting can be used to predict population variations and drive socio-economic development policies in the areas of education and health care.

Information collected through population census can be used to prepare basic statistics and the labor market situation of a given population such as their occupation or employment and activity status (e.g. employed, unemployed, educational status, student, artisans, and housewives, etc). Census can also shed light on the characteristics of a population group (e.g. foreigners, persons with disabilities, ethnic minorities, etc) (ILO, 2022).

Previous attempts at conducting credible population and housing censuses in Nigeria have always been met with challenges. These challenges ranged from staffing and logistical problems to undue political interference and manipulation. Consequently, controversies and disputes have always followed the conduct of census in Nigeria. Under normal circumstances, population census should be conducted every ten (10) years, in line with the United Nations recommendations, but it is very difficult to achieve that in an economy like Nigeria's. The timing requires political will and proclamation by

the president.

Census in Nigeria has always been affected by political interference. This is because there are benefits associated with inflation of population figures. According to Akinyemi (2020), "As people became more aware of the importance of population size for political representation in a federal system, the census became more problematic. There is also competition among states and communities to inflate their population to attract more government resources." The 1921 was plagued by staffing and logistical problems. The 1931 census which was the second nationwide census was not comprehensive in its coverage because only six towns including Lagos and 201 villages across the country were enumerated. The 1931 census was affected by the world economic depression and the numerous tax riots in Calabar and Owerri (National Population Commission, 2018).

The result of the 1962 census in Nigeria was applauded by Southern politicians but outrightly rejected by Northern politicians. The census was canceled by then Prime Minister Sir Abubakar Tafawa Balewa. In 1963 another census was conducted. The results were rejected by Governors of Eastern and Midwestern Nigeria who went to the Supreme Court to contest the results. Despite the controversies, the result of the 1963 census was upheld. The 2006 national population census, which is the last in Nigeria, was conducted by President Olusegun Obasanjo. The exercise was plagued by political interference from design through the implementation stages. The census yielded a population estimate of 140 million people. The results were, however, criticized and subject to litigation (NPC, 2023).

Social work is a profession aimed at achieving social inclusion by assisting individuals and groups to overcome impediments that arise from different aspects of life. Social workers are empowered to uphold the rights of youth and support them in their participation in community development (CD) programs (The National Association of Social Workers, 2014). This is because Social Workers have been trained to believe in youths and serve as role models to them (Brennan, 2014). Social workers are by training equipped with the required skills, abilities, and techniques to advise, counsel, and educate people on the need for social inclusion and to be involved in the socio-economic development of society (Soussou & Yogtiba, 2008).

Social Workers provide assistance that helps to link clients to service providers that can address their financial, family, social, and personal needs. The United States National Association of Social Workers (2017) asserted that social workers are trained to prevent unruly behavior among individuals and to help them appreciate the nexus between poverty, oppression, and trauma. Hence, the core values and mission of social work is to promote social justice for individuals who are oppressed and vulnerable (National Association of Social Workers, 2015).

Social work counseling services are offered to an individual or group of persons who deserves professional assistance to enable him/them to overcome such problems. Such a problem which could keep the individual or group of individuals from actively participating in developmental activities like population census can be solved through social work counseling and education (Roy, 2014). Counseling is a specialized service carried out by professionals or trained personnel in personality development and in the act of handling exceptional individuals or groups. **Counseling** service aims at making the client understand himself better by providing solutions to the client's immediate problem (s) by maintaining personal stability in educational, vocational, and personal/social aspects (**Adebowale, 2012)**. Hence, the problem of youths' lack of involvement in the population census can easily be solved if only the individual is ready to be helped and participate fully in solving the problem at hand (**Adebowale, 2012)**. Counseling and education of clients are strategies that play a very important role in social work practice. Often social workers have a mixture of roles with the same person or persons so the counseling element needs to be negotiated openly at an early stage (Hill, Ford & Meadows, 2008).

3.0 POPULATION CENSUS CONTROL AND PREVENTION OF KIDNAPPING

Kidnapping has unfortunately been a significant issue in Nigeria, particularly in certain regions such as the Niger Delta and the northeastern part of the country. The prevalence of kidnapping in Nigeria has been fueled by various

factors including economic hardship, political instability, and the presence of armed groups. Victims of kidnapping often include both low and high-class individuals in society, and ransom payments are a common motive for the perpetrators. Federal Bureau of Investigation FBI (2022).

However, population census data can indirectly contribute to controlling kidnapping by providing policymakers with accurate demographic information. With a better understanding of population distribution, density, and characteristics, authorities can allocate resources more effectively for law enforcement, infrastructure development, and social programs aimed at addressing underlying factors contributing to crime, such as poverty and unemployment. Additionally, census data can aid in identifying areas with higher vulnerability to kidnapping, allowing for targeted interventions and prevention strategies. However, controlling kidnapping requires a multifaceted approach involving law enforcement, community engagement, economic development, and social welfare initiatives NPC (2022).

Population census data can play a crucial role in preventing kidnapping by providing policymakers and law enforcement agencies with valuable insights into demographic trends, population distribution, and socioeconomic factors. Here's how population census can contribute to preventing kidnapping:

1. **Targeted Law Enforcement**: Census data helps identify areas with high population density, socio-economic disparities, and other demographic characteristics that may be correlated with kidnapping hotspots. Law enforcement agencies can utilize this information to strategically deploy resources, increase patrols, and conduct targeted investigations in areas where kidnapping rates are likely to be higher.

2. **Community Engagement and Awareness:** Census data can be used to identify vulnerable communities or populations at higher risk of being targeted for kidnapping, such as low-income neighborhoods or areas with limited access to education and employment opportunities. Community outreach programs can be designed to raise awareness about the dangers of kidnapping, provide safety tips, and encourage residents to report suspicious activities to law enforcement.

3. **Resource Allocation and Planning:** By understanding population dynamics and demographic trends, policymakers can allocate resources more effectively for crime prevention initiatives, including funding for law enforcement training, victim support services, and the development of infrastructure in high-risk areas. Additionally, census data can inform urban planning efforts aimed at improving community safety and reducing the likelihood of kidnappings. National Bureau of Statistics (2021)

4. **Identification and Monitoring of High-Risk Individuals:** Census data provides valuable information about individuals and households, including demographic characteristics, socioeconomic status, and family structure. Law enforcement agencies can use this information to identify individuals at higher risk of being involved in kidnappings, such as known criminals or individuals with a history of violent behavior. Monitoring and intervention programs can be implemented to prevent these individuals from engaging in criminal activities. World Bank (2020)

4.0 METHODOLOGY

Research Design: The research design adopted for this study is a descriptive cross-sectional survey design.

Study Area: The study was conducted in Calabar Metropolis. Calabar Metropolis is the capital of Cross Rivers State. The area is located in the Southern Senatorial District of Cross Rivers State, South-South, Nigeria.

Population and sample of the Study: The population of the study consisted of adults'

resident in Calabar Metropolis, Cross Rivers State, Nigeria. The population of Calabar Metropolis according to the last National Population Projection (2023) was 657,000.

Sample: The sample of the study consisted of 373 residents of Calabar Metropolis who had attained tertiary education in different works of life.

Instrument of Data Collection

The instrument of data collection for this study was a validated structured questionnaire and an indebt interview. The questionnaire was divided into two sections. Section 'A' sought information on respondent's socio-demographic data, while section 'B' sought information that would lead to achieving the study's specific objectives.

Method of Data Collection

Data for this study were collected through face-to-face administration of a questionnaire and an indebt interview was conducted with two respondents, one each from National Population Commission, and National Bureau of Statistics CRS.

Method of Data Analysis

Data obtained through the questionnaire and interview were analyzed using frequencies, percentages, and descriptive statistics (means and standard deviations).

Ethical Consideration

Informed consent was obtained from all participants by explaining the purpose of the study and requesting that they willingly participate in the study. Participants were informed that their participation would not affect or implicate them in any way as utmost confidentiality would be maintained. They were also informed that they were free to choose not to participate in the study.

4.0 RESULTS

4.1 Socio-Demographic Data

Table 1: Socio-Demographic Data of the Respondents (n = 3

Variables	Frequency	Percentage (%
Sex		
Male	209	55.8
Female	164	44.2
Age in years		
21-30.	73	19.7
31-40	88	23.7
41-50	71	18.6
51-60	74	19.9
61 & above	67	18.1
Educational Qualification		
NCE/OND	41	11.1
B.Sc./HND	188	50.7
M.Sc.	124	32.6
Ph.D.	21	5.7
Occupation		
Civil servant	114	30.2
Politician	39	10.5
Business	127	34.2
Self-employed	93	25.1
Professional cadre		
Lawyers	27	7.3
Health workers	103	27.8
Social Workers	47	12.1
Sociologists	30	8.1
Teachers/Lecturers	135	36.4
Engineers	20	
Clergymen	11	3.0
Religion		
Christians	299	80.1
Islam	28	7.5
African Religion	15	4.0
Others	31	8.4

The results of Socio-demographic data in Table I indicated that most of the respondents, 209 (55.8%) were males, with 164(44.2) females. Also, most of the respondents, 88 (23.7%) were aged 31-40 years. These were followed by 71 (19.9%) respondents who were between the ages of 51-60 years. On respondent's educational qualifications, most of the respondents, 188 (50.7%) had a first degree (B.Sc.) and its equivalent (HND); 124 (32.6%) had a Master's Degree (M.Sc.); 41(19.1%) respondents had National Certificate in Education/Ordinary National Diploma (NCE/OND), while 21 (5.7%) respondents had doctorate (Ph.D.). Regarding respondent's occupations, most of them, 127 (34.2%) were businessmen/businesswomen; 112(30.2%) respondents were civil servants; 93(25.1%) were self-employed; while 39 (1.5%) respondents were into politics. In addition, most of the respondents, 135(36.4%) were lecturers/teachers, 103 27.8%) respondents were health workers, 45 (12.1%) respondents were Sociologists, 20 (5.4%) respondents were Engineers, 11 (3.0%) respondents Clergymen. Lastly, the majority of the respondents, 297(80.1%) were Christians, 28 (7.5%) respondents were Moslems, 15 (4.0%) respondents were members of African Traditional Religion, while 31 (8.4%) respondents were members of other religions (ARMORC/ECKANKER).

Objective one: To examine the population census as a panacea for sustainable development in Nigeria.

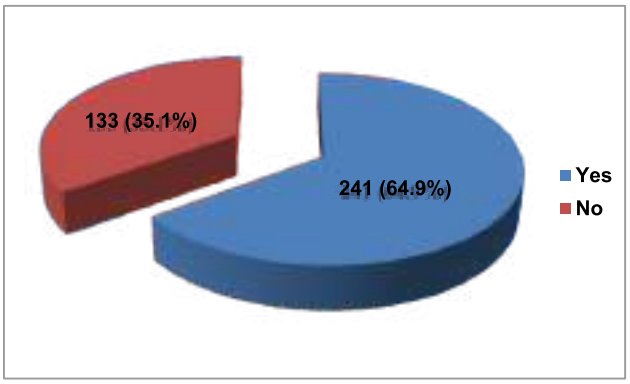


Figure 1: Pie Chart showing opinions of residents of Calabar Metropolis about population census as a panacea for sustainable development in Nigeria

Results in Figure 1 revealed that 241 (64.9% %) respondents opined that data generated through population census can be used as an instrument to attain sustainable development, but 133 (35.1%) respondents have a different opinion about utilizing population census data for sustainable development.

Objective two: To examine the population census as a panacea for control and prevention of kidnapping in Nigeria.

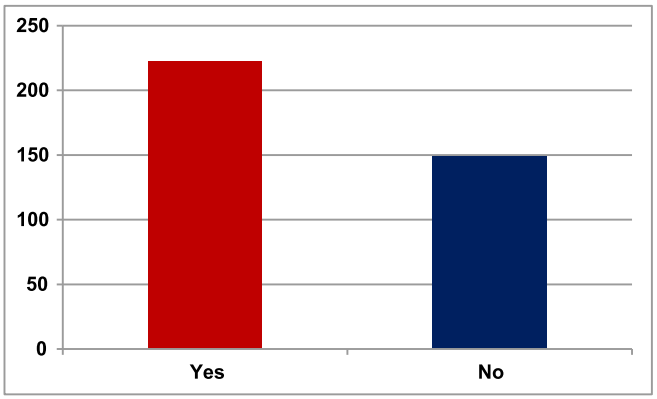


Figure 1: Pie Chart showing opinions of residents of Calabar Metropolis about population census as a panacea for sustainable development in Nigeria

Results in Figure 2 revealed that 224 (59.8%) respondents believed that data generated from the population census could be used for the control and prevention of kidnapping, but 149 (40.2%) did not.

Objective three: To examine the opinions of individuals about the challenges of conducting a population census in Nigeria.

Table 2: Opinions of individuals about the challenges of conducting a population census in Nigeria

Statements	Responses			
	Yes		No	
	Freq	%	Freq	%
Population census data in Nigeria are often inflated.	203	54.2	170	45.8
Different regions often manipulate population census results to attract more government resources.	280	74.9	93	25.1
Population census results in Nigeria are often criticized and subject to litigation.	213	56.9	160	43.1
Population census results in Nigeria are often affected by political interference.	247	66.0	1126	34.0
Population census exercise in Nigeria always encounters staffing problems.	84	22.1	289	77.9
Population census exercise in Nigeria always encounters logistical problems.	264	70.6	109	29.4

Results in Table 2 revealed that 203 (54.2%) respondents asserted that data generated from the population census in Nigeria are often inflated, but 170 (45.8%) respondents did not. Also, 280 (74.9%) respondents stated that population census results are often manipulated by different regions that make up Nigeria to attract more government resources, but 93 (25.1%) respondents did not. In addition, 213 (56.9%) respondents agreed that population census results in Nigeria are often criticized and subject to litigation, but 160 (43.1%) respondents disagreed. Furthermore, 247 (66.0%) respondents answered in the affirmative that population census results in Nigeria are often affected by political interference, but 126 (34.0%) respondents did not. More so, 84 (22.1%) respondents agreed that the population census exercise in Nigeria is always faced with staffing problems, but 289 (77.9%) respondents disagreed. Lastly, the majority of the respondents 264 (70.6%) reported that population census exercise in Nigeria always encounters logistical problems, but 109 (29.4%) respondents did not.

5.0 DISCUSSION

The findings of this study revealed that residents of Calabar Metropolis who had attained tertiary education in different works of life have different opinions about the population census as a panacea for sustainable development, crime control, and prevention. The study revealed that the majority (64.9%) of respondents believed that data generated through population census can be used as an instrument to attain sustainable development. Population census is the backbone of a national statistical system because it provides information on the size, location, and characteristics of a population. It provides valuable and comprehensive data on a nation and its people, which is critical for policy planning and decision-making across many levels of government, business, academia, and civil society. The United States Census Bureau (2013) recognized this importance which is why it pointed out that the population census provides data for multiple sectors including population, health, housing, education, nutrition, economics, and agriculture. In addition, the census provides invaluable information and records that reinforce a country's human, housing, and administrative

records.

Similarly, the study revealed that most (59.8%) of the respondents believe that
data generated through population census can be used for control and prevention of kidnapping. Information and data management is very vital when it comes to crime control and prevention. Such information can be used for surveillance purposes and identity management. According to the United Nations Office on Drugs and Crime (2018), modern surveillance is used, especially by the authorities, through security agencies for intelligence gathering, prevention of crime, the protection of a process, person, group or object, or the investigation of crime (UNODOC, 2018).

Data generated from a population census can be used by private security companies to provide security using modern surveillance, and defense of personnel and properties, including humanitarian and industrial assets. Such data include the names and identity of individuals, their gender, marital and educational statuses, their occupations, and both their permanent and residential addresses which can be used to track them in case of any involvement in criminal activities (Abubakar, 2017).

The study further showed that some residents of Calabar Metropolis believe that population census results are often problematic due to political interference, falsification of results and corruption, staffing issues, and logistical problems. This is similar to the report presented by Akinyemi (2020), who maintained that the population census in Nigeria is always plagued by political interference from design through the implementation stages. He noted that results obtained from such exercises are often criticized and subject to litigation. This also conforms with a report by the National Population Commission (2018), which indicated that the previous population census exercise was affected by the world economic depression and riots, citing riots that took place in Calabar and Owerri following a population census.

6.0 THE WAY FORWARD

The task of ensuring sustainable development, crime control, and prevention is the responsibility of every individual and government the world over. Therefore, every effort aimed at conducting a credible and reliable national population census must be supported. To conduct a credible and reliable national population census, all hands must be on deck. The governments must educate and orientate the general public through the national orientation agency and the mass media so that maximum cooperation can be achieved. Young adults (youths), women, and children who are ignorant of the benefits of population census due to misinformation must be sensitized on the importance and benefits of participating in a population census exercise. Social workers have a key role to play since their profession is a helping profession. They can be very instrumental in counseling and educating the general public to help them participate in the population census exercise. This can lead to sustainable development and crime control and prevention

7.0 CONCLUSION

In conclusion, although the population census in Nigeria is often associated with problems and challenges, data generated from a credible and reliable census can be used to propel sustainable development and help in crime control and prevention in Nigeria. The importance of Social Work counseling and education as a tool for sensitization of youths cannot be overemphasized. With a solid Social Work counseling framework, geared towards counseling youth for sustainable development, crime control and prevention would be achieved.

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IMPACT OF SOCIO-DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS ON FERTILITY RATE IN KEBBI STATE, NIGERIA

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Abstract
This research appraises the impact of socio-demographic and economic characteristics on fertility rate in Kebbi State, Nigeria. As a demographic process**,** fertility is one of the determinants of population growth across the world. The research adopts a cross-sectional approach using a structured questionnaire to elicit information from 314 survey participants consisting of females and males ages 15-35 years who were systematically sampled at 11 communities representing the entire state. Data obtained was analysed using excel and SPSS version 28.0 for the descriptive data to meet the study objectives. The findings indicate that out of the 314 respondents, 186 (59.2%) affirmed that women are giving birth to 6 children (high); in addition, this study also discovered the current number of children of the respondents. Those with no children constitutes the highest proportion 122 (38.9%), followed by those with 1-3 children 102 (32.5%). In terms of actual family size, the result shows that 70 (22.3%) of the respondents had 4 children and above. Interestingly but not surprisingly, 102 (32.5%) of the people claimed that it is up to God. Furthermore, the study also reveals the fertility desires of the respondents, where 120 (38.2%) intends to have more children. The study further uncovered respondent's main reason for having and wanting children, where 88 (28%) of the respondents were of the view for economic support in the future. Thus, the study concludes that Kebbi State government should improve on sexual and reproductive health services by adopting strategies that will encourage childbearing women to use contraception, particularly, in the remote areas. This could abate the high fertility rate and improve the State's public health and socioeconomic challenges inflicted by high fertility behaviour in the State.

Keywords; Socio-demographic, economic characteristics, fertility, Kebbi state

Introduction

In response to new population and development agenda such as the Agenda 2063 for African Development (2013), the 2014 Further Actions on the 1994 Cairo Agenda, the Agenda 2030 for Sustainable Development Goals (2015-2030), the Paris Agreement on Climate Change (2015), the New York Declaration on Large Movement of Refugees and Migrants (2016), Habitat III New Urban Agenda (2016), African Union (AU)/Nigeria Road Map on Demographic Dividend, the Nigeria Economic Recovery and Growth Plan (2017-2020), and the National Digital Economy Policy and Strategy (2020-2030), as well as the need to accelerate consciousness on Population Management,

which is an essential element for achieving Sustainable Development, the Federal Government of Nigeria commenced the review of the 2004 National Population Policy in 2015, after the elapse of the former in same year and the new Policy become effective on 25th November, 2021. The Revised Policy is novel and commendable because it is not only about demographic numbers; but also emphasizes for the rights of individuals and couples in shaping the quality of their lives and wellbeing (NPC, 2021).

Globally, fertility is one of the determinants of population growth. Resolutions about family size and contraceptive use determine fertility trends; there were factors that influence these decisions. These factors are social, cultural traditions, economic, and environmental in nature. The population of sub-Saharan Africa is projected to double in size by 2050, to 2.1 billion people with Nigeria being the major contributor. The region's fertility rate 5.3 births per woman is a key factor in this growth, but progress in reducing current birth rates in many countries in the region has slowed or stalled. Nigeria as a case study, currently has a fertility rate of 5.3 births per woman in spite the newly inaugurated national population policy in 2021. The level of childbearing has been historically high in Nigeria due mainly to early childbearing, low modern contraceptive prevalence rate (currently 12%) and low female education, particularly in the extreme Northern States. The Total Fertility Rate (TFR) is 5.3 births per woman; it varies between rural and urban areas and across geo-political zones. Thus, while the TFR is 5.9 births per woman in the rural areas, it is 4.5 births per woman in the urban areas (NDHS, 2018). Many countries in the world today have high rates of population growth. It is also known that many have negative or near-negative rates of growth, and many more have fertility rates below replacement levels. In 2019, for instance, more than seventy countries had total fertility rates below 2.1 (PRB, 2019). Countries exhibiting demographic conditions of too-high or too-low growth sometimes develop policies whose goals are to try to restore the demographic balance. Whether the issue is severe or minor, demographic behaviour is of interest to all governments.

The threat posed by population growth is evident from two dimensions. First, at the micro level of individuals and families, where high rates of population growth are associated with high dependency ratios and low investment in the human capital of children and young adults. Second, at the macro level where high rates of population growth hinder investment in both human and physical capital formation, and exert pressure on the environment and often fragile resource base. It is recognized that fertility regulation and improvement of mortality rates through better health, education and employment opportunities will stimulate household saving and investment. This synergetic relationship is one of the main arguments for a population policy as an integral component of any poverty reduction strategy (African Development Bank (AfDB), 2003).

Fertility desires, incorporates much factors from macro to micro perspectives, from demographic, economics, sociology and biology, to understanding of individual or family fertility desires. In this study, background literature mainly focuses on the current fertility levels; number of surviving children, actual family size, desire for more children, main reason for wanting children, and influence of some selected socioeconomic variables on the foregoing.

Methods and Data

Data Source and Study Design

The study adopted a cross sectional approach using a structured questionnaire to elicit information from survey participants consisting of females and males in the study area who were purposively sampled at the three zones of the state which were, Kebbi North, Kebbi Central and Kebbi South. A total of 314 reproductive young people were systematically sampled for the study from 11 communities across three LGAs namely: Birnin-Kebbi, Suru and Fakai representing the entire state. This was done in other to have the major ethnic groups (Hausa, Fulani, and Dakarkari) of the state participate in the study. Questionnaire were allocated proportionately according to the population of the selected LGAs. The questionnaire asked about current fertility rate, number of surviving children, actual family size, desire for more children and main reason for having them. The

questionnaire was administered to adolescents and young people (15–35) to determine their current and future intend fertility rate.

Statistical Analysis

Statistical analysis was performed using excel and SPSS version 28.0 for the descriptive data to meet the study objectives. Frequency distributions and the Chi-square test of relationship was carried out on some socio-economic characteristics to know whether there is a significance relationship between the variables at 0.05 level of significance.

Results and Discussion

Socio-demographic Characteristics of Study Participants

A total of 314 young people aged 15 years and older were included in the study as shown in Table 1. The majority of the participants were adults aged 20 years and above (23.2%). This is followed by 16.8% of the age 25-29, and the least is 30-34 (15.8%), among others. The high percentage (23.2% and 16.8%) of respondents which are of young and Middle Ages is as a result of the nature of Nigeria's population structure which is mostly youthful.

Furthermore, this indicates an expectation of increasing population growth as this age range are the most reproductive ages. In addition, the implications of youthful and middle age population also are that there will be too many dependants, which will not augur well for the economy. This result is in accordance with the work of Beguy (2009); (Beson *et al.* 2018); Gichengi, (2019) and Gulumbe *et al.,* (2018) whereby the young to middle ages are the predominant in their studies and also NDHS, 2018 report which revealed that majority of women and men are under age 30 [54% and 46% respectively] (NPC and ICF, 2019). It also reveals that males constitute highest (71.3%), this can be inferred that males participated more than their female counterparts in this study which is a normal happening because females always feel shy in public activities especially in a typical Hausa/Fulani setting. Culture and religious setting of the people played an important role in influencing the sex differentials of the respondents. Datong (2020); Garba, (2020) and Alabi *et al,* (2019) studies gave a similar view; and Ma (2010), her study on the occupation, marriage, and fertility choices of women: a life –cycle model. However, it disagrees with NDHS 2018 report where women had the highest proportion (54%) and (46%) men (NPC and ICF, 2019). Islam is the predominant religion among the respondents with 86% against Christianity which is 13.7%. This is not unexpected because it is a well-known fact that Kebbi State is a core northern state predominantly Muslims being a part of the old Sokoto State prior to becoming a State in 1993. This finding is in line with NDHS 2018, report where 46% of men and women are Christian, while 54% are Muslims and less than 1% are traditionalists. Adebowale, (2019) study on ethnic disparities in fertility and its determinants in Nigeria, majority of their respondents were predominantly Muslims. No doubt, religion plays an important role in the fertility behaviour of the people especially in the core Northern States of Nigeria. As such there are many reservations on population issues.

About 60% were married while 32.5% were single. The rate of divorce (3%), widowhood (2.5%) and separated (1.5%) appears to be low which indicates a fair stability of marriage institution in the study area. This finding is similar with that of Egenti et al. (2016); Amente (2017); Cleland et al., (2011) and Alfred (2017) in their studies they discovered that majority of their respondents are married and single respectively. Also similar to NDHS, (2018) report where women and men currently married or living together with a partner constitute 70% and 57%, respectively and women and men who have never been married 25% and 42%, respectively. Marriage is the state of being united as spouses in a consensual and contractual relationship recognized by law, in many parts of the world, marriage continues to be allowed only between men and women- it is the goal of all women and men. The incidence of this important institution has a lot of bearing with procreation, it is an important agent of population change (Mamman, 1992).

Table further shows that 45% were Hausa people, 23.5% are Fulani, the least were Igbos with 2.2%, and 10.2% were other minorities dwelling in the State. The reason for more Hausa and Fulani respondents in this study might be because they are the majority in Kebbi

Central/North Senatorial Districts while Dakarkari and Fakawa are majority in the Kebbi Southern zone. This result is in harmony with Adebowale (2019), work on "Ethnic disparity in fertility and its determinants in Nigeria". Where out of 23,140 women respondents 12,409 (53.6%) were Hausa/Fulani, 5557 (24%) Igbo and 5174 (22.4%) were Yoruba. Furthermore, NDHS (2018), also reported that the main ethnic groups in Nigeria are Hausa (30% of women and 31% of men), Igbo (15% of both women and men), and Yoruba (15% of women and 16% of men). Ethnicity is identified as an important predictor of population regulation strategies. Ethnic diversity has the tendency to enhance societal values, customs and the attainment of population diversity which, facilitates the formulation of intercultural policies and programme development. Examining the relationship between ethnicity and population has a direct influence on population policies and programmes. The goal of the National Population Policy for Sustainable Development (NPSD) in Nigeria is to achieve a reduction in population growth and TFR; and increase modern contraceptive use. Ethnicity is important in fertility reduction strategies in Nigeria (Adebowale, 2019).

Type of marital union of respondents where 68.5% were monogamous, and 31.5% are into polygamous. Marriage helps cultural groups to have a measure of control over population growth by providing prescribed rules about when it is appropriate to have children. From the foregoing marriage occupies a central place in population policies and programmes. The finding is similar to the study of Ma (2010) and in agreement with the study of Alabi et al, (2019) in Northern Nigeria where they found monogamous family type outnumbered polygamous, 59.8% and 40.2% respectively. Marriage is a socially approved union that unite two or more individuals together as spouses. Implicit in this union is that there will be sexual relations which many times result to procreation, and increase household size. It is also the act, ceremony or process by which the legal relationship of spouses is constituted. The legality of the union may be established by civil, religious or other means as recognized by the laws of each country (United Nations, 2014 cited in NBS-MICS5, 2016/2017).

Table 2 Distribution of Economic characteristics of study participants (N = 314)

Categories	Frequency (N)	Percentage (%)
Age (in years)		
15-19	38	9.5
20-24	93	23.2
25-29	67	16.8
30-34	63	15.8
35+	53	13.2
Sex		
Male	224	71.3
Female	90	28.7
Religion		
Islam	270	86.0
Christianity	43	13.7
Traditional	01	0.3
Marital Status		
Single	102	32.5
Married	184	58.6
Divorce	12	3.8
Widow	10	3.2
Separated	06	1.9
Ethnicity groups		
Hausa	141	44.9
Fulani	74	23.5
Dakarkari	41	13.1
Yoruba	19	6.1
Igbo	07	2.2
Others	32	10.2
Marital Union		
Polygamy	58	31.5
Monogamy	126	68.5
Number of Wives		
2	28	48.3
3	19	32.7
4	11	19.0

Source: Field Survey, 2023

Within the polygamous context, almost half (48.3%) of men in polygamous union have two wives only, 32.7% were married to three wives and 19% have up to four wives. The inference is that respondents with only two wives make up the highest percentage (48.3%) than those with three and four wives. The NDHS, (2008) report indicates that 33% of women are in polygamous unions, 26% of women reported having one co-wife and 7% have two or more co-wives. Polygamy, having more than one wife at the same time, has implications for the frequency of sexual intercourse, and thus, will have effect on fertility.

Table 2 shows that 41.1% of the respondents have attained tertiary education; only 8.3% has attained Islamic education. The high percentage of respondents with tertiary education attainment can be attributed to the presence of five tertiary institutions (Federal University, Birnin-Kebbi; Federal University of Agriculture, Zuru; Kebbi State University of Science and Technology, Aliero; Waziri Umaru Federal Polytechnic, Birnin-Kebbi; Kebbi State Polytechnic, Dakingari and Adamu Augie College of Education, Argungu) in the State which thus, give easy access to the respondents to acquire knowledge.

This result is in agreement with the findings of Abubakar, (2012) which found 57.6% of respondents to have attained tertiary education in Zaria, Kaduna State. However, in disagreement with NDHS, (2018) report which show that men are better educated than women. Thirty-five percent of women and 22% of men age 15-49 have no formal education, while 11% of women and 17% of men have more than a secondary education. Education is an important factor influencing a person's behaviour and opportunities. Education is a key determinant of the lifestyle and societal status an individual enjoys. It does not only provide opportunities for personal advancement, awareness of social opportunities and higher non-familial aspirations but also new outlook, freedom from tradition, willingness to analyse institutions, values and patterns of behaviour and growth of rationalism. Educational attainment is perhaps the most important characteristic of respondents because many phenomena such as reproductive behaviour, use of contraception, child's health, and proper hygienic habits are related to the education of respondents. It also has strong effect on people's health behaviours and attitudes (NDHS, 2008 in Abubakar, 2012).

In terms of the employment status of the respondents, more than half (51.3%) were gainfully employed and 48.7% were not. Most of the respondents were employed either in the formal or informal sector. Being involved in an economic activity is a necessity as a household head, which impacts on reproductive life, contraceptive use and other health behaviours. This finding conforms to the study of Becker, (1993); Shockaert, (2005) and Beguy, (2009) that indicates majority of the respondents in their studies were gainfully employed.

The distribution of respondents according to occupation, reveals that Civil/public service accounts for 34.7% of the studied population, this is followed by farming with 24.8%, the least being the unskilled labourers with just 1%. Civil/public service having the highest percentage of the distribution is not surprising, because the sampled communities with the highest participants were within the administrative capital (Birnin-Kebbi), hence, the possibility of having majority of the respondents to be engage in the formal sector. In addition, farming (24.8%) which is second to the highest, this is also not amazing, because the State is an agriculturally viable State where different crops like rice, wheat, millet, guinea corn, among others are grown. In 2016, the agricultural transformation programme of Central Bank of Nigeria (CBN) known as Anchor Borrowers Programme (ABP) was launched by Federal Government of Nigeria (FGN) in Kebbi State to aid in the production of rice and wheat. Occupation has a direct bearing on fertility. An individual with rewarding occupation is likely to be married and affect population structure in several ways. This result is in line with the finding of Abubakar, (2012) which reported 44.9% of respondents to be civil/public servants.

The monthly income of the respondents for this study shows that, 39.2% earns 5000-10,000 (US$8.7-17.3 at exchange rate of N578

per $1, while 21.4% reported an income range of 101,000+ ($173), 7.3% has a monthly income of 51000-100,000 ($88.2-173) which is the least income. This result reveals that the bulk of the respondents earn quite a meagre salary. This shows that most of the people are in the lower strung of the public or civil service ladder. In fact, more than half (52%) of the study participants earns income below the N30,000 minimum wage. This implies that poverty may be high and ability to support some population influencing actions e.g. family planning services, child and maternal healthcare seeking, among others are unlikely. This result is in harmony with the findings of Kaplan et al, (2008) which indicates that low or declining income heightened mortality risk. Also according to Johnson (2022), social and economic factors, such as income, education, employment, community safety, and social supports can significantly affect how well and how long we live. These factors affect ability to make healthy choices, afford medical care and housing, manage stress, and more.

Current Fertility Rate and Number of Surviving Children

Fertility levels remain relatively high in Nigeria. The rate is slightly over five children (5.2) births per woman. This is one of the highest fertility rates in the world (Adewole et al., 2021). Table 3 shows responses on current birth rate in the study area. Where more than half (59.2%) of the respondents affirmed that women are giving birth to 6 children (high), 20.4% were of the view that women are giving birth to 4 children (moderate), 14.3% were undecided among others. This result is an indication that the National Population Policy (NPP) objective of fertility regulation is not achievable in the study area.

Table 3 Distribution of Respondents by Current Fertility Rate and Number of Surviving Children

Total Fertility Rate	Frequency (N)	Percentage (%)
2	19	6.1
4	64	20.4
6	186	59.2
Don't Know	45	14.3
Number of Living Children		
None	122	38.9
1-3	102	32.5
4-6	53	16.9
7-9	22	7.0
10-12	06	1.9
13+	09	2.8

Source: Field Survey, 2023

NDHS, 2018 indicates that the total fertility rate in Nigeria has declined slightly over the past 5 years, from 5.5 children in 2013 to 5.3 children in 2018. The wanted fertility rate has decreased to 4.8 since 2013, widening the gap between wanted and actual fertility (from 0.3 to 0.5). In addition, the report discovered 6.1 and 6.5 as total wanted fertility and total fertility rate for Kebbi. Table 3 further reveals the number of living children of respondents. Those with no children constitute the highest proportion (38.9%), followed by those with 1-3 children (32.5%), and the least were those who have 10-12 children (1.9%). This can be deduced that 38.9% of those who had no children are still single or yet to start child bearing, (this was also revealed earlier in Table 1: marital status of respondents; where those respondents that were single came behind married

respondents with 32.5% and 58.6% respectively) while 32.5% of those with children 1-3 are still within the confinement of the population policy objective or perhaps economic realities.

Actual Family Size

Table 4 shows that 22.3% of the respondents have 4 children and above. About 10% were with no children, these can be respondents who aren't marry or yet to start children bearing. Interestingly but not surprisingly 32.5% people claimed it is up to God. From the result, it is a clear indication that TFR is not abate in the study area to 4 children per couple as stipulated in the NPP document. Looking at the majority of respondents who claimed that only God decides their number of children, these respondents may likely have fertility preference more than 4 children and just hiding behind spiritual fatality to not declare their preference. Also the fact that 2.2% prefer fertility between 13 children plus is a signal to future population dynamics and momentum in the study area. This corresponds to Abubakar's (2012), result in Zaria, where 40.1% of the respondents prefer to have 7 children and above. It also conforms to Akeju's *et al,* (2021) finding in Nigeria where many respondents reported their desire for more than 4 children, with ideal family desire of more than four children higher in rural areas than in urban areas. Furthermore, Odusina *et al.,* (2020) in Nigeria, revealed in their study that the mean ideal number of children for men and women were 7.1% and 6.1%, respectively. Also, 49.3% of the couples reported husbands desired more children, 43.9% claimed wives desired more children, while 6.8% indicated equal number of desired children among husbands and wives.

Table 4 Distribution of Respondents by Actual and Preferred Family Size

Actual Family size	Frequency (N)	Percentage (%)
None	31	9.9
1-3	59	18.8
4-6	70	22.3
7-9	23	7.3
10-12	22	7.0
13+	07	2.2
Up to God	102	32.5
Desire for more children		
Yes	120	38.2
No	50	16.0
No response	55	17.5
Up to God	89	28.3

Source: Field Survey, 2023

Desire for more Children

In addition to the issues of number of intended children, respondents were further asked about their fertility intentions. Question such as' 'do you want to have more children"? was posed to respondents. Table 4 further reveals those who declared the affirmative positively were 38.2%, while those who did not or responded otherwise were 17.5% and 16% respectively. From the result, it is a clear indication that majority of the respondents in the study area still desired for many children which thus, is an impediment to the actualization of lessen the current fertility trend. Dyer, (2007) in his work on the value of children in African countries-insights from studies on in infertility, posited that children secure conjugal ties, offer social security, assist with labour, confer social status, secure rights of property and inheritance, provide continuity through reincarnation and maintaining the family lineage, and satisfy emotional needs. Parenthood therefore, appears to have more and, arguably,

deeper roots in African communities when compared to industrialized countries.

Main reason for having/wanting Children of Respondents

Table 5 reveals that financial support in the future has the highest (28%), followed by continuation of family name with 22.3%, while source of joy/comfort having 20.4% among others. This mean that the bulk of respondents were having children as a financial backup when they become senior citizens (aged). Preference for large families continues to be a major factor determining levels of fertility in sub-Saharan Africa. This result is in harmony with most of the studies on fertility preference in Africa. For instance, Bakilana and Hasan (2016), in their study on sub-Saharan Africa, showed that role of children in society as future providers for the family is still an important determinant of family reproduction decisions. Surprisingly, in their findings also they discovered that even urban and educated respondents were very proud to have a large number of children-it was a measure of prestige, respect and honour that they held in society given that children ensured family name continuation.

Table 5 Distribution of Respondents' by main reason for having children

Variables	Frequency (N)	Percentage (%)
Continuation of family name	70	22.3
Financial support in future	88	28.0
Source of joy/comfort	64	20.4
To prove ones' masculinity/femininity	03	1.0
To provide labour	39	12.4
To inherit my wealth	40	12.7
Others	10	3.2

Source: Field Survey, 2023

They added further that children are also a form of safety net as aging parents struggle to support themselves in the absence of retirement savings and pension funds. In a nutshell, culture, religious beliefs, gender relations and low child survival rates-all play a critical role in every personal decision about reproduction and hence overall fertility levels 100 and trends. Various factors determine the number of children families have or want to have including: desire for large families-own desires, family desires, social norms (including old age security); prevent child mortality-replacement and hoarding/insurance; knowledge on the reasons to use family planning, available options, side effects and mitigation measures, available services and location, and costs; access to quality family planning services (Bakilana and Hasan, 2016).

Socio-economic Variables and Total Fertility Rate

Educational Attainment and TFR

Researches has demonstrated that improvement in education of the people, especially, female empowerment is one of the effective mechanisms of lowering fertility. Table 6 shows respondents' level of education and view on current fertility level. Over 30% and 19.1% who had educational attainment up to tertiary and secondary respectively, were of the opinion that fertility in the study area is high. The statistical analysis of X^2=55.715 df=24 P=.000 reveals a significant relationship between level of education and TFR (Table 6). This is a pointer that educational attainment has a great positive influence on TFR, therefore, this result reaffirmed the insertion that educational attainment has a direct positive influence on fertility behaviour of the people.

Table 6 Educational Attainment and TFR

		Total Fertility Rate			
Educational Attainment		**Low**	**Moderate**	**High**	**Row Total**
Islam		0(0.0)	0(0.0)	19(6.1)	19(6.1)
Primary		0(0.0)	1(0.3)	29(9.2)	30(9.5)
Secondary		11(3.5)	18(5.7)	60(19.1)	89(28.3)
Tertiary		18(5.7)	57(18.2)	101(32.2)	176(56.1)
Column Total		29(9.2)	76(24.2)	209(66.6)	314(100.0)
Calculated	X^2=55.715	df=24	P value=0.000	Remark=Significant	

Source: Field Survey, 2023

Employment Status and TFR

Another socioeconomic variable worthy to be examine w ith TFR is employment status of respondents. More than 3 0% of the unemployed respondents , stated that fertility is high in the study area. The statistical analysis of X^2=15.358 df=4 P=.004 s hows a significant relationship between employment status and TFR. This signifies employment status has a positive impact on TFR (Tab le 7).

Table 7 Employment Sta tus and TFR

		Total Fertility Rate			
Employment Status		**Low**	**Moderate**	**High**	**Row Total**
Employed		20(6.3)	53(16.9)	85(27.1)	158(50.3)
Unemployed		09(2.8)	31(9.9)	116(37.0)	156(49.7)
Column Total		29(9.2)	84(26.8)	201(64.0)	314(100.0)
Calculated	X^2=15.358	df=4	P value=0.004	Remark=Significant	

Source: Field Survey, 2023

Monthly Income of respondents and TFR

More than 25% and 15.3 % respectively, of those who earns 5-10,000 and 21-50,000 naira monthly allege d that fertility in the study area is high. Those who receive d 51-100,000 were the lowest (4.8%) on opinion of high fertility.

Table 8 Monthly Income of respondents and TFR

		Total Fertility Rate			
Monthly Income (in Naira)		**Low**	**Moderate**	**High**	**Row Total**
5-10,000		12(3.8)	17(5.4)	79(25.2)	108(34.4)
11-20,000		09(2.8)	21(6.7)	28(8.9)	58(18.5)
21-50,000		05(1.6)	29(9.2)	48(15.3)	82(26.1)
51-100,000		00(0.0)	17(5.4)	15(4.8)	32(10.2)
101,000+		03(1.0)	08(2.5)	23(7.3)	34(10.8)
Column Total		29(9.2)	92(29.3)	193(61.5)	314(100.0)
Calculated	X^2=41.908	df=24	P value=0.013	Remark=Significant	

Source: Field Survey, 2023

The finding shows that despite concerted efforts, the birth rate in the study area is not abating. However, the Chi -Square (X2 41.908, df=24, p=013) indic ates a significant relationship between monthly income and TFR (T able 8), that is, inc ome has a positive influence on TFR.

Conclusion

The study has established that birth rate in the study area is still high likewise fertility preference of the young people does not signify the realization of a manageable fertility. As long as the main reason for having children which is for financial support in future is still highly held, the policy objective is not likely to be achieved. The study in addition concluded that there is a significant relationship between some socio-economic variables such as educational attainment, employment status, income, and of total fertility rate. There is thus a need to ensure that there is access to and uptake of family planning services for all populations across ages, genders, religions, and localities, including those who are vulnerable. Kebbi State Ministry of Health should improve on sexual and reproductive health services by adopting more strategies that will encourage childbearing women to use contraception particularly, in the remote areas. This could abate the high fertility rate and improve the state's public health and socioeconomic challenges inflicted by high fertility behaviour in the state. It will also aid in meeting the SDG target of enhancing maternal and child health. Hence, more strategies and initiatives should be developed to encourage childbearing women to use contraception. Finally, they should emphasize the fact that early pregnancy is a threat to the health and the life of both the young mother and her infant, and the programme of action should be designed and implemented in a manner appropriate to its culture and conditions.

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COUNTING IN THE DIGITAL AGE: LEVERAGING TECHNOLOGICAL INNOVATIONS FOR ACCURATE AND EFFICIENT CENSUS DATA COLLECTION AND ANALYSIS IN NIGERIA.

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ABSTRACT
Census data collection and analysis is an essential component of population-level decision-making and public policy development in Nigeria. In the past, traditional methods of data collection and analysis have failed to accurately account for or reflect the country's population. In recent years, the rise of digital technology has revolutionized how countries collect and analyze census data. There is a pressing need in Nigeria for an efficient and accurate census data collection and analysis system that can leverage existing technological innovations to improve the performance of the Nigerian census. We will consider the existing Nigerian census data collection and analysis processes, examine the potential benefits of digital technologies for these processes, and recommend strategies for leveraging these technologies. It is hoped that the paper will provide stakeholders with a comprehensive understanding of the current census data collection process in Nigeria, as well as the potential of leveraging technological innovations to improve and modernize data collection and analysis. With the right investment in digital technologies, Nigeria can benefit from a more accurate and reliable census count, leading to more informed policy decisions that can improve the lives of its citizens.

Keywords: Census, Digital age, Technology, Nigeria, Accurate data, Population

INTRODUCTION

Census data holds the key to Nigeria's progress, illuminating the path for informed decision-making and robust public policy development. Bloch, Monroy, Fox, and Ojo (2015) noted that as far as demographic sources go, census data has long been regarded as the "gold standard." It is generally believed that censuses, which are conducted every ten years, offer a reasonably detailed statistical portrayal of the socioeconomic and demographic features of a population. It acts as a compass for equitable resource allocation, helping to or help bridge the gaps in infrastructure, healthcare, education, and social services across the nation's diverse landscape. According to the National Bureau of Statistics (2016), Nigeria's National Strategy emphasizes the importance of statistical data in directing decision-making, data collecting, processing, analysis, and dissemination for the Development of Statistics. This data empowers the government to strategically deploy resources where they are most needed, ensuring no community is left behind. Moreover, the census forms the cornerstone of political representation, safeguarding the principles of democracy by accurately apportioning seats in the National Assembly and defining electoral boundaries. In an era of rapid urbanization and evolving demographics, census data guides Nigeria's transformation, fostering economic growth, social development, and a brighter future for all its citizens. In addition, UNFPA (2016) assessments emphasize how crucial census data is for guiding housing and population policies and promoting sustainable development.

Undertaking an accurate population and housing census is an essential duty for any

government, involving the enumeration of individuals within households and the collection of data on various demographic, economic, and social attributes of the population (Egerson et al, 2023). Nonetheless, in diverse societies like Nigeria, where population size holds significant sway in determining the political and economic standing of various groups, census figures have often sparked controversy (Akinyoade, Appiah & Asa, 2017; Egerson et al, 2023). Previous census attempts in Nigeria, particularly the 2006 census, encountered numerous setbacks and constraints primarily driven by socioeconomic and political hurdles (Mohammed et al., 2019). Accusations of data manipulation and the dissemination of unreliable population statistics further eroded trust in census outcomes, making it challenging to utilize this data effectively for sustainable development (Mohammed et al., 2019; Egerson et al, 2023).

Despite intentions to carry out a population and housing census in Nigeria in 2023, significant challenges persist. Enumerating homeless individuals and addressing the complexities of their settlement patterns remain unresolved issues, representing just one of the many obstacles that need to be surmounted to ensure the accuracy and credibility of future census endeavors (Egerson et al, 2023). In essence, the shortcomings and limitations of past census efforts in Nigeria have raised doubts about the dependability of census data and its potential to facilitate meaningful and sustainable development within the nation.

Generally, to gather data for the Population and Housing Census (PHC), developing countries depended on paper-based approaches, conventional methodologies, and in-person training (Ofosu-Ampong et al, 2023). Traditional methods of collecting census data included door-to-door surveys and manual data input, which was labor-intensive and time-consuming (Younus & Quodir, 2023). Traditional methods of data collection and analysis for census taking have limitations in accurately accounting for Nigeria's population. Traditional methods, which often relied on paper questionnaires, were plagued with various limitations. These included errors in data entry, prolonged data processing times, and challenges in reaching remote or underserved populations. Consequently, the results from such censuses were often marred by inaccuracies and delays in their dissemination (United Nations Statistics Division, 2019).

These conventional approaches, often relying on door-to-door surveys and paper-based questionnaires, are hampered by challenges such as geographical inaccessibility, inadequate infrastructure, and logistical difficulties, especially in Nigeria's vast and diverse terrain. Although conventional techniques for gathering census data have proven to be an invaluable resource for population estimation in Nigeria and other nations, they are not without their drawbacks. These drawbacks, which include problems with data coverage, timeliness, accuracy, cost, and technological limitations highlight the need for creative solutions that can deal with these difficulties and supply more precise and current demographic data to enable efficient resource allocation and policy planning in Nigeria. More significantly, relying too much on human input puts strain on the timely distribution of census data (UNSD, 2021).

These limitations can result in undercounting or misrepresentation of certain population segments, leading to skewed resource allocation, political imbalances, and an incomplete picture of the nation's demographic landscape. According to the UN Economic and Social Council (2022) In line with the Principles and Recommendations for Population and Housing Censuses Revision 3 of the Statistics Division, all African nations are encouraged to conduct at least one digital population and housing census between 2015 and 2024 and to promptly disseminate the results of the census. This is the goal of the 2020 round of population and housing censuses in Africa.

Previous censuses conducted in Nigeria have been marred by anomalies and the falsification of results, according to works in the literature (Ayila, Babatunde & Yohanna, 2018; Eze, 2018). The following facts and evidence according to Eze (2018) portray the manipulations of the post-independent census in Nigeria: large deviation from the globally recognized standard of a credible census; high

margin of error and unlikely growth rates; structural deformity; abnormal patterns of population distribution and re-distribution; abnormal gaps between census results and estimates. Authors have offered several strategies for conducting a trustworthy census process (Eniayejuni & Agoyi, 2011). All things considered, digital technology has played a critical part in modernizing the procedures involved in collecting and analyzing census data. This has resulted in a greater amount of accurate, efficient, and comprehensive data that forms the basis for well-informed policy formation and decision-making. As noted by the UNFPA (2019) most nations that utilized paper questionnaires for the 2010 census are now preparing to use computers, the internet, or hand-held digital gadgets in their 2020 censuses. The authors posit that if the systems of data collection and analysis are transparent, then the controversies surrounding the rejection of census figures will be avoided.

This paper aims to consider the existing Nigerian census data collection and analysis processes, examine the potential benefits of digital technologies for these processes, and recommend strategies for leveraging these technologies for the generation of reliable census data.

2. OVERVIEW OF THE EXISTING NIGERIAN CENSUS DATA COLLECTION AND ANALYSIS PROCESSES

Nigeria used Optical mark reader (OMR)/ Optical character recognition (OCR) questionnaires for the 2006 Census to decrease errors and data processing time as well as to make fraud more difficult to commit and, if it did occur, easier to detect (Obono & Omoluabi, 2014). Other measures were also put in place in the 2006 census according to Aderogba and Komolafe (2012), Akinyoade et al (2017) citing Obasanjo (2006) the automated fingerprint identification system (AFIS) was implemented to identify instances of multiple counting by detecting instances where the same fingerprints were used to falsify questionnaires. Other tools used to gather information include the geographic information system (GIS), geographical positioning system (GPS), and satellite imagery to delineate geo-referenced enumeration area maps, optical mark recognition (OMR), optical character recognition (OCR), and intelligent character recognition (ICR) machine-readable forms.

3. BENEFITS OF LEVERAGING DIGITAL TECHNOLOGIES IN CENSUS DATA COLLECTION AND ANALYSIS

The pace at which modern solutions are currently scalable to meet census needs is heavily influenced by the rapid advancement of technology (Dygaszewicz, 2020). Significant increases in the overall operation's quality and/or cost-effectiveness can be achieved with even modest adjustments to the procedures followed/methodologies or the efficiency of the machinery (Dekker, 2000). When technology is used in census operations, it is typically done for the following reasons according to the United Nations (2017):

- Efficiency and reduction of cost: Technology offers the chance to lower the number of workers needed for various census tasks. For instance, character recognition and scanning can increase data accuracy while reducing manual data entry; satellite imagery can decrease the need for manual mapping; and Internet self-response can decrease fieldwork. Additionally, technology can lower non-labor costs including travel, freight, and printing. Technology sometimes makes corporate procedures simpler, which lowers risk or expense. To Durr (2021) technology is considered to have cost-saving benefits in addition to improvements in quality and timeliness. When compared to the previous paper-based census, using mobile computing devices for data collecting procedures is anticipated to save Mexico up to US$40 million. Zastavetska, Zastavetskyi, Dudarchuk, and Illiash (2021) also noted that the use of technology will result in the preservation of public monies allotted for

the census process (particularly important for the economically troubled nation of Ukraine. This is also relevant in the Nigeria context given the country's financial crisis. It is therefore imperative that these cost-saving measures evidence from other countries should be adopted.

- Data quality and consistency: Technology, especially process automation, can improve data consistency and decrease data errors in census data. For instance, data entry errors can be minimized by scanning and character recognition, and automated validation rules or edits guarantee that data is checked and modified consistently rather than depending on scattered, manual field processes. Digital technologies also make it possible to validate data in real time, identifying possible inconsistencies and allowing for prompt repair to improve data accuracy even further (Younus & Qodir, 2023). One of the most notable changes brought about by digital technology is the adoption of mobile data capture using devices like tablet PCs and smartphones. This transition has fundamentally altered the way census data is collected. Enumerators armed with digital devices can efficiently and accurately record information, significantly reducing the scope for human errors associated with manual data entry. Furthermore, mobile data capture accelerates the entire census process, from data collection to processing and the dissemination of results (Younus & Qodir, 2023). It ensures that the data collected is not only more accurate but also accessible to policymakers and researchers in a timelier manner (United States Census Bureau, 2016). As noted by Durr (2021) these days, the national census team can track data-gathering progress in every enumeration region of the nation hourly.
- Timeliness: Enumeration for censuses, data processing, data analysis, and result preparation for publication can all be completed faster with the use of technology. Technology for data scanning, recognition, processing, and publishing should be taken into consideration for its potential to advance publication dates since the faster census data are released, the more useful the data are to census users. More significantly, relying too much on human input puts strain on the timely distribution of census data (UNSD, 2021). As pointed out by Zastavetska et al (2021), during censuses, statistics collection and processing can be streamlined and expedited with the use of modern technologies like the Internet. Furthermore, as demonstrated by the experiences of nations that have already tested SMART technology for conducting censuses, this technique can considerably reduce the amount of money needed for the exercise, allowing it to be completed swiftly and effectively. They also observed that in Ukraine because of the adoption of the newest interviewing technologies, the number of temporary instructional employees recruited to conduct the census in 2001, more than 250,000 should be decreased to 100,000 in 2020.
- Event management: It has always been difficult to coordinate and oversee the enumeration of the census across the entire country or region, and manual procedures and distributed accountability have been necessary. Technology can be used to improve supervision, visibility, and the ability to track performance metrics and react to enumeration events. Digital technology has ushered in a significant transformation in the realm of data collection and analysis, particularly when it comes to conducting population and housing censuses. Traditional methods, which often relied on paper questionnaires, were plagued with various limitations. These included errors in data entry, prolonged data processing times, and challenges in reaching remote or underserved populations. Consequently, the results from such censuses were often marred by inaccuracies and delays in their dissemination (United Nations Statistics

Division, 2019).

- Data retention and utility: Since performing a census enumeration is expensive, efforts should be made to maximize the value derived from the census data. Technology facilitates the safe management, security, and preservation of census data while also creating chances for statistical data integration and reuse, for time series analysis and other analytical requirements.
- Assurance and anti-corruption: Technology adoption can lower the risk of fraud or corruption by offering more standardized, controlled, and auditable action records, such as those about financial expenditures. As noted by Mrkic (2020) tablet computers for instance offer tremendous advantages over paper questionnaire-based data gathering when it comes to monitoring and overseeing census operations. They make the process of administering and carrying out data collection considerably more efficient. These devices by default allow for the enumerators to be tracked, producing data about the length of the interview, the time required to respond to each question, and a plethora of other para data (also known as side data) that guarantee close supervision, improved quality, and overall efficacy of the exercises.
- Ease of data analysis: Digital technology also makes data analysis easier after the census data is gathered. More quickly than manual methods, advanced data analytics software can process and analyze large datasets, finding patterns, trends, and changes in demographic composition. This makes it possible for governments to act quickly and make decisions based on facts. According to Kanyuka, Ndawala, Chirwa, Makwemba, Phiri, Singano, and Kapaswiche (2020), one notable achievement of the 2018 Malawi Population and Housing Census (PHC) is its success. The seamless operation and successful completion of the implementation have been recognized for the 2018 PHC. For instance, the census findings have been far more effective in terms of timeliness overall. After the data was collected, the preliminary report was made available four months later, and the main report followed suit four months later. The cost of utilizing the CAPI technology was justified by the efficiency and high caliber of the census findings.

4. EXISTING TECHNOLOGICAL INNOVATIONS AND THEIR APPLICABILITY

1). Electronic questionnaire

One notable technological advancement is the electronic questionnaire, which can either supplement or completely replace traditional paper questionnaires. These digital forms can be utilized in face-to-face interviews or for self-enumeration. Electronic questionnaires bring substantial advantages, including enhanced data quality and operational efficiency. Campos (2010) pointed out this benefit as he averred that the 2010 Brazilian Census benefited greatly from the new questionnaire structure, which made the procedure less taxing for interviewers and respondents alike and made fieldwork in data gathering easier. The majority of nations base their decision to employ tablet computers on their experiences using CAPI in statistical surveys conducted before the census (Mrkic, 2020). They allow for the implementation of validation rules, cross-referencing with other records, automated question sequencing, expanded options in drop-down lists, detailed data capture, computer-assisted coding, and even instructional materials such as guidelines and explanatory videos for interviewers or households. Moreover, electronic questionnaires expedite census results by facilitating real-time data transfer to a central database, either through instant connectivity or by using physical media for local transfer. This online transmission must, of course, prioritize data security and encryption to maintain confidentiality. Additionally, electronic forms reduce the need for printed materials, minimize distribution and return logistics, cut down on data scanning and capture costs, and reduce errors. They can also gather operational information,

such as completion times, timestamps, and the device used, for monitoring and analysis purposes (United Nations Statistics Division, 2021). The use of electronic questionnaires in data collection is not new to Nigeria, as researchers have used the KoboKollect. Several countries have adopted the use of technologies in census data collection. Canada was the first nation to adopt SMART technologies and the pioneer in census innovation and hosted the first electronic census in 2006 (Zastavetska et al, 2012). They stated further that the United States of America also used Smart technology in conducting a census for the first time in 2010, Lithuania in 2011, Bulgaria in 2011, Estonia in 2012, Brazil in 2020, and Australia in 2011. Computer-assisted personal interview technology (CAPI) was adopted in Malawi (Kanyuka, et al, 2021); and Poland (Dygaszewic, 2020).

2). Geographic Information System

Another vital aspect of the digital revolution in census-taking is the utilization of geographic information systems (GIS). The usage of geographic information system (GIS) technology to create maps for enumeration and data display in housing and population counts is growing (Dekker, 2000). GIS technology allows for precise mapping and geospatial analysis. This capability is particularly beneficial for understanding population distribution, settlement patterns, and infrastructure needs. By pinpointing where households are located and their demographic characteristics, governments can make informed decisions about resource allocation, urban planning, and service delivery. GIS also enables the identification of previously hard-to-reach or underserved areas, ensuring that no segment of the population is left uncounted or neglected (United Nations Statistics Division, 2019).

Techniques for household mapping and enumeration areas (EAs) have advanced from laborious paper lists to integrated approaches utilizing GIS, GPS, and digital maps (UNFPA, 2019). A Geographic Information System (GIS) is a comprehensive system comprising computer hardware, software, and associated procedures designed to support the capture, management, manipulation, analysis, modeling, and display of spatially referenced data. It serves as a versatile tool for handling geographic information efficiently. GIS enables users to store, manipulate, analyze, and visualize geographical data, offering benefits such as the ability to link various data sets through common geographic locations, measure distances and areas, and perform complex spatial analyses. Moreover, it allows for the communication of geographic information in formats that are easily understandable by users (United Nations Statistics Division, 2019, 2021). Ayila, Babatunde, and Yohanna (2018) averred that even when the region under investigation is as big as a nation like Nigeria, the generation of pertinent census-related verifiable data sets and maps is improved with the use of GIS tools. These technologies facilitate the visualization of geographical patterns in demographic, health, housing, economic, and other data, as well as the demarcation of important census units such as enumeration areas, cities, districts, or regions.

GIS serves several critical functions in the context of census-taking. First and foremost, it excels in Spatial Data Management. This means it can effectively store and manage diverse forms of geographic data, ranging from maps and satellite imagery to demographic information. This ability ensures that census data can be precisely associated with specific geographic locations, facilitating in-depth analysis and informed decision-making. Eze (2009) noted some hindrances of the non-use of technology in the Nigerian census as he pointed out that NPC occasionally lacks the spatial credibility to connect the census data with actual conditions, which makes it impossible for them to support their findings (Figures) before a Nigerian court of competent jurisdiction. As Ayila, Babatunde, and Yohanna (2018) pointed out through the use of Global Positioning Systems (GPS), Geographic Information Systems (GIS), and pertinent remotely sensed information, significant technological advancements have improved census operations in recent decades. These days, GIS is essential to the gathering, sharing, and analysis of census data on the population. Accurate Geocoding is another vital aspect.

Geocoding involves assigning geographic coordinates to particular locations, a fundamental task for the census. GIS technology ensures that every enumeration area, household, or respondent is accurately positioned on a map, which is essential for creating precise population distribution maps. Furthermore, GIS supports Data Integration by harmonizing information from various sources. For census purposes, this entails blending demographic data with other geographic details, such as land use, infrastructure, or environmental factors. This comprehensive integration offers a holistic understanding of the population's context. The power of Mapping is another hallmark of GIS. It can generate highly detailed and interactive maps, streamlining the work of enumerators. This shift from traditional paper maps to digital maps on mobile devices has significantly improved fieldwork efficiency. GIS also excels in Route Optimization by helping enumerators navigate their assigned areas more efficiently. It considers factors like travel time, distance, and logistical variables, ultimately reducing the time and cost associated with data collection. Real-time Monitoring is a valuable aspect of GIS, allowing census authorities to track enumerator activities in real time. This capability ensures adherence to schedules and enables timely support when issues arise. Moreover, GIS contributes to Quality Assurance by maintaining precise geographic boundaries, conducting spatial queries, and facilitating advanced spatial analyses. These functions guarantee the reliability and accuracy of census data. GIS enhances Data Dissemination by visualizing census data on maps. This visual representation simplifies the interpretation of results for policymakers, researchers, and the general public (United Nations Statistics Division, 2019, 2021).

The use of GIS technology in Poland helped in compiling and presenting census findings based on multi-dimensional spatial analyses was made possible by the use of GIS technology, which also assisted with census preparation and continuous process monitoring (Dygaszewicz, 2020); it has also been used in Tanzania (Matemba & Mwandosya, 2023) and in Belgium, Cyprus, Greece, Ireland, Italy, Denmark, Portugal, Romania, Slovakia amongst other EU and EFTA countries (Kleomenis et al, 2019).

3). Hand-held devices

Recent advancements in information and communication technologies are fundamentally transforming data collection methods, including census data collection, by introducing faster and higher-quality approaches compared to traditional paper-based methods (United Nations Statistics Division, 2019). Handheld electronic devices such as tablets, PCs (personal computers), smartphones, and PDAs (personal digital assistants) have emerged as powerful tools that enhance data quality and reduce collection time (United Nations Statistics Division, 2019). The use of paper forms and maps, as well as the expenses related to labor, space, printing, shipping, and data capturing while gathering data on paper forms, can all be significantly decreased with the use of handheld devices (Skinner, 2018).

These technologies are especially promising in environments with limited infrastructure and connectivity. They are rapidly becoming the standard for field-based data collection. The transition from paper and pencil (PAPI) to Computer-Assisted Personal Interviewing (CAPI) involves administering electronic questionnaires via handheld devices in face-to-face interviews, offering increased efficiency, effectiveness, and data quality (World Bank, n.d.). Unlike the traditional paper-based process, CAPI enables immediate digitization of data at the point of collection, facilitating faster and automated data aggregation (United Nations Statistics Division, 2019). Most nations that utilized paper questionnaires for the 2010 census are currently preparing to include Internet, laptops, or hand-held digital gadgets in their 2020 censuses (UNFPA, 2019).

The adoption of handheld electronic devices for census and survey data collection, particularly through the use of Computer-Assisted Personal Interviewing (CAPI), brings forth a multitude of advantages. According to Bese, Canpolat, and Gok (2020), data analytics might start concurrently with enumeration because of the CAPI application. As a result, the primary findings for the 2011 PHC in Turkey were

released 1.5 years following the conclusion of the enumeration process. On the other hand, the results of the 2000 population census were released 2.5 years following enumeration when the conventional method was exclusively used. Foremost among these is the significant improvement in data quality, driven by factors like real-time validation checks and automated routing. Handheld devices enable enumerators to promptly address errors and inconsistencies during interviews, resulting in more accurate and reliable data. This advantage was visible in Turkey as Bese Canpolat and Gok (2020) reported that during the interview, crosschecks between responses were made possible through netbook usage (CAPI), which also improved data quality and reduced missing data. When using a netbook to collect data, time was spent more efficiently than with alternative approaches (such as ICR or manual data entry). Furthermore, CAPI enhances the overall interview experience, benefiting both enumerators and respondents. The software guides the interview process, making it easier to administer questionnaires and ensuring better data quality (United Nations Statistics Division, 2019).

Electronic data capture also introduces valuable features such as integrated Global Positioning System (GPS) and digital mapping capabilities, computerized case management, and instructional materials for enumerators. These features empower field managers to monitor enumeration activities in real time, offering logistical metadata and enhancing overall field management. Moreover, the ease of handling handheld devices, particularly in challenging or remote environments, makes them a practical choice. They are more convenient to transport than bulky quantities of paper questionnaires and can be used in low-light situations, facilitating evening data collection. Additionally, the use of these devices can accommodate questionnaires in multiple languages, which may not be practical with paper-based forms. Furthermore, respondents often have a more positive and cooperative attitude towards the census when modern technology is employed in the data collection process. There is a perception of greater confidentiality with electronic processes compared to paper-based forms since electronic versions are not readily visible to others. Overall, the utilization of handheld electronic devices, especially through CAPI, presents a comprehensive solution that not only improves data quality and operational efficiency but also enhances the overall census and survey experience for all stakeholders involved (United Nations Statistics Division, 2019). According to Gondal (2021), Several industrialized nations employ this strategy. In their most recent censuses, Egypt, Iran, and Turkey primarily employed this method (with Egypt using the PAPI methodology in some areas). This is how Bangladesh and India want to carry out their upcoming censuses (Gondal, 2021). Computer-assisted personal Interviewing (CAPI) tablets for electronic data collection and Geographic Positioning Systems (GPS) for collecting structural coordinates will be used in the digital census in Ghana in 2021 (Ajifowoke, 2021).

5. STRATEGIES FOR LEVERAGING DIGITAL TECHNOLOGIES IN CENSUS DATA COLLECTION AND ANALYSIS

1). **Geographic Information Systems (GIS) and Digital Mapping:** Establish a thorough GIS system to provide precise digital maps of Nigeria's varied topography. This will provide population density-based resource distribution, border demarcation, and location-based data collection.

2). **Mobile Data Collection:** Provide tablets or smartphones to enumerators with applications designed specifically for the census. By using electronic data collection, these devices can minimize errors that arise from human data entering. Furthermore, GPS functionality can guarantee accurate location tagging.

3). **Biometric Registration:** Include biometric technologies in the census procedure, such as facial recognition and fingerprint technology. In addition to lowering the number of duplicate registrations, this improves the accuracy and security of data.

4). **Data storage and cloud computing:** For effective and safe data management, analysis, and storage, make use of cloud-based solutions. As a

result, stakeholders and authorized workers can easily access information through real-time data synchronization.

5). **Digital Outreach and Public Engagement:** Use websites, mobile apps, and social media to interact with the public, disseminate information about the census, and promote participation. Online resources can also answer questions.

6). **Validation of Data and Quality Assurance:** Use data validation methods to quickly identify mistakes and abnormalities. As a result, fewer post-enumeration surveys are required and the collected data is guaranteed to fulfill high criteria.

7). **Capacity Building and Training:** Enumerators and census personnel should receive training so they can use digital tools and technology efficiently. Staff competence in data collecting and administration procedures is guaranteed by ongoing training.

8). **Sturdy Campaigns for Public Awareness:** Start extensive public awareness initiatives to inform people about the value of the census and how technology will make it easier to complete. Establishing trust and being transparent is crucial.

9). **Analysis of Post-Census Data:** Process the gathered data quickly by utilizing artificial intelligence and data analytics. This will make it possible for decision-makers to make well-informed choices based on trends and real-time data.

10). **Continuous Monitoring and Evaluation:** Provide a mechanism for ongoing observation and assessment of the digital census procedure. Make the required adjustments by routinely evaluating the techniques' efficacy, the quality of the data, and the overall development.

6. LIKELY CHALLENGES OF ADOPTING DIGITAL TECHNOLOGY IN THE CONDUCT OF CENSUS IN NIGERIA

No doubt adopting anything new will throw up possible challenges and the census will not be an exception. Utilizing the electronic questionnaire could throw up challenges like data security concerns, digital literacy requirements, and initial setup costs. The following challenges may result from the use of GIS: complexity in setup and data integration, cost of GIS software, and training and infrastructure requirements. The initial cost of devices and software, maintenance and support requirements, and connectivity issues in remote areas may result from the use of handheld devices. Kanyuka et al (2020) also outline the challenges faced in Malawi in the adoption of digital technology including the acquisition of heavy-duty plotters, scanners, GIS software, and other IT infrastructure, as well as satellite images and mapping equipment, which presented comparable financial hurdles. To overcome these challenges the following measures which have been adopted by other countries should be adopted in Nigeria. Implement robust encryption and security measures, provide training and support for digital literacy and allocate budget for initial setup costs, seek partnerships for cost-sharing, provide training programs for GIS usage, collaborate with tech experts for implementation, establish maintenance contracts with vendors, use offline data collection modes in remote areas and provide backup solutions for connectivity issues.

7. CONCLUSION

Despite the challenges in utilizing digital technologies, the Nigerian census can be made more accurate, transparent, and efficient by embracing digital technologies and implementing these techniques. These developments will improve population estimates' accuracy while also giving policymakers more ability to effectively respond to the nation's changing socioeconomic requirements. Furthermore, Nigeria would be positioned as a leader in data-driven government and contemporary census methods thanks to the effective integration of digital tools.

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SOCIO-CULTURAL BARRIERS TO EFFECTIVE CENSUS TAKING IN NIGERIA

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ABSTRACT
Effective census taking refers to the complete enumeration of a population of a country, territory or delineated area which should be conducted at least every 10 years. When correctly done, census provides data for good governance, policy formulation, developmental planning among other benefits. Unfortunately, most developing countries have been battling with the problem of conducting effective and accurate census exercise. ***In Nigeria, social and cultural pitfalls such as over politicization of census for undue political gain, cultural taboos etc. are handicaps that have challenged effective census taking. Consequently, planning for socio-economic development of the nation has been seriously jeopardized and made almost impossible by the inadequacy and obsolesce of available demographic data. Sadly, the inability to plan and implement social policies that are people-friendly and tailored to address specific needs of its citizenry is too enormous a challenge for Nigeria to ignore. Hence, it is very pertinent, that the nation overcomes these pitfalls to have an effective census taking that will aid the planning and development of the nation. Thus, this paper will examine the various socio-cultural barriers to an effective census taking in Nigeria and proffer solutions to surmount the challenges of conducting an effective national census to aid planning and implementation for socio economic development.***

Keywords: Census taking, Demographic data, Socioeconomic development, Policy planning.

INTRODUCTION
Nations had come to realize that population and housing census are fundamental tools for planning and development in any country, as it provides accurate data on the population, its demographic characteristics, and its geographical distribution. These data are critical for making informed decisions on issues such as resource allocation, budgeting, and infrastructure development etc. However, in Nigeria, conducting an effective census has been a challenging task, and getting it right is crucial for the country's development (Haruspice, 2023).

Nigeria, with an estimated population of over 200 million people, is the most populous country in Africa and 7 most populous country in the world, Nigeria's population is projected to reach 400 million by 2050, making it the third most populous country in the world (Federal Ministry of Finance and Budget and Planning, 2023). With such a large and rapidly growing population, effective census taking is vital to understanding the country's demographics trend and how best to plan for its future.

However, one of the major impediments to improving services and planning for development in any nations is the lack of accurate demographic (effective census) data, and until there is a clear understanding of the diversity of the population within a nation is known, political, social and economic (national and International) development efforts will continue to ignore many of the most pressing needs and concerns of the population.

Effective census taking presents an opportunity for national planning and socio economic development as (accurate numbers are necessary – both to be able to demand the political attention that is warranted and also to be able to meet the actual needs of those who live in a particular geographical location), most especially, since resources are finite, hence, the need for accurate numbers to be able to plan to meet the needs of residents in particular local government area, state or region. However, this opportunity remains challenged and

underutilized in many nations including Nigeria, due to the socio-cultural barriers that affects census taking in Nigeria.

Sadly, census taking (collection of census data) is often approached as though it were free of social and cultural barriers and challenges, in fact, it is important to acknowledge that even responses to some census questions has the potentiality of being influenced by ones social and cultural belief (Groce, 2015). Census taking in Nigeria has faced major challenges, including, concerns about intrusiveness, privacy/ confidentiality, reduced cooperation, difficulties in accessing secure apartments and enumerating unsafe areas, lack of knowledge, social stigma, low awareness, general distrust, more complex living arrangements, and timeliness concerns etc.

Effective census is a major concern considering that census data is the primary source of statistic in many nations (United Nation, 2020). Beyond just the numbers, effective census taking provides reliable data that aids in national planning, resource allocation, good governance, policy formulation and in many nations, population is a basis to the production and distribution of wealth. Census data is an essential tool for developmental planning, therefore, for the planning and implementation of any socioeconomic development effort to be successful, it requires an effective, reliable and detailed population census data showing the size, composition and distribution of the population, without which a nation is bound to have developmental issue as it is for example Nigeria with is high poverty rate, mortality rate, malnutrition rate etc. (UNICEF, 2021) and many other under developmental indices, all indicating the importance of effective census taking.

Population census like other vital registration were developed to specifically capture the aggregate and distribution of individuals and groups in a particular geographical territory (Okafor, 2015) and by implication, aid in planning for socioeconomic development of the nation. However, census taking and the application of census data to actualize these essence, have been faced with serious challenges and this has led to low socio economic development of the nation. In Nigeria's case, the challenges to effective population census taking and other vital registration arise from the colonial era (Okafor, 2015) and up till 21st century these challenges has kept the country in confusion about how to harmonize census taking and utilize population information in meeting with the socio economic and political needs of her citizens.

This paper therefore accesses the social and cultural challenges to effective census taking in Nigeria, highlight past census in Nigeria, recommend and proffer solutions to surmounting the sociocultural barriers that challenges effective census taking in the nation.

OVERVIEW OF PAST NATIONAL CENSUSES IN NIGERIA

It is commonly known that the act of population census taking goes back many centuries (Dekker, 2001). Through the annals of history, Nigeria has had several censuses conducted from pre to post independence era, but as Gupte 1994; Mohammed, Othman & Osman, (2019) notes, "the question of population and politics is especially thorny in Nigeria" controversies, cancellations, unhealthy politics and rivalry, political instability and military intervention had in the past, all resulted from the conducts of some these censuses.

The 1953 census was acclaimed the first modern and national census in Nigeria (National Population Commision, 2023). It was conducted to determine the population size and composition of each region and to facilitate regional development plans. Simultaneous counting of everyone was put on hold and the census period was staggered to take place at various times between 1950 and 1953, in order to allow the Department of statistics to handle the great volume of data generated (Ikedinma, 2020).

The census of Lagos was the first to be conducted between 1950 and 1951 and was used as a trial, to test the suitability of the new method to be used. The census of Northern Nigeria was taken between May and July 1952. Census of persons' resident in the West and the Mid-West were conducted in December 1952 and January 1953, while the census was conducted in the East in May, June and August 1953 (Ikedinma, 2020). The total population figure in 1953 census was 30.42 million (Arukwe, 2017).

The next countrywide census was in 1963 and census and it is the first census since

independence (NPC, 2023), it aimed to provide accurate and up-to-date information about the population, economic activities, and social structure of Nigeria. It was conducted by the Federal Government in 1963, the census covered the whole country and was taken simultaneously. A great deal of publicity was given to the census in order to educate the public about the importance of census in national development and the federal government accepted the results without further reference to the regional governments (Ikedinma, 2020). The total population figures in 1963 census was 55.66 million (Arukwe, 2017).

The third national census was conducted to obtain data on the population size, composition, distribution, and other socio-economic characteristics. The census also focused on gathering information on educational attainment and employment status. The 1973 census was conducted by the then National Census Board, which was specifically set up for the purpose (Ikedinma, 2020). A great deal of preparation work was carried out in order to reduce or avoid altogether the short comings of previous censuses and to ensure that the census figures could be acceptable to the federal and state governments. Unfortunately, there were reports that the figures were inflated in some states. The total population figure in 1973 census was 79.76 million (Arukwe, 2017).

After the 1973 census, hopes were raised for improved and more efficient conduct of census in Nigeria. It was not until 1991 that another census was conducted and its result was accepted as credible. Better and more accurately and professionally undertaken (Punch newspaper, 2023), its final population figure of 88.5 million (National Population Commission, 2023). The 1991 census aimed to provide data for development planning, resource allocation, and policy formulation. It covered topics such as education, religion, housing, and employment. Improvements in transport and accessibility of most areas, in technological capability, and in the level of education throughout the country, as well as the general acceptance of national coherence and legitimacy, favored the success of the 1991 census. The 1991 census has been acclaimed by the Federal Government, the National Population Commission (NPC) and some groups of people to be most accurate census figure in the nation's history (Ikedinma, 2020).

The last census in the country was held in 2006, its 18 years after the last census was held. The 2006 census significantly improved on the gains of 1991, deploying more technology tools, including Geographical Positioning System, and Satellite Imagery, machine-readable forms, Automated Fingerprint Identification System, and Geo-referenced Enumeration Area Maps (Punch newspaper, 2023). It aimed to provide an updated population count and socio-economic data. It also aimed to collect information on household access to basic amenities like electricity, water supply, and healthcare facilities.

Like the ones before it; it met with criticisms from different quarters, leaving the questions about when the country would get its census right. The total population figures in 2006 census was 140 million (NPC, 2023). Its verdict of 140 million was, however, still disputed by some States- they complained of over-counting in some areas and under-counting of their own population.

18 years after last national census in 2006 the nation is yet to conduct another census and the consequence is that National development planning and projection had been based on estimates which has affected proper and accurate national planning and during this time the nation has rose to become the world headquarter of poverty along with many other retrogressive developmental indices (Agidi, 2023).

Despite the problems and failures of past censuses, the government is still committed to having an effective census taking because of immeasurable gains of census. Census statistics are the basic data required for planning administrative and research strategies. The greatest asset of any nation is her population in that it is the population that works to develop the wealth of the nation. No government, be it Federal or State that can claim to adequately cater for its population unless, it has a clear idea not only of the size but also of the characteristics of the population; hence, the commitment to having a reliable census.

It is obvious that the results of Nigerian censuses had been controversial. The effect of this is the failure of most of the well thought out development plans in Nigeria especially after

independence. The past censuses in Nigeria have been conducted to gather essential data and information about the population, social and economic characteristics, and demographic trends in the country. These censuses are crucial for policy making, planning, and decision-making processes in various sectors.

CONCEPTUAL CLARIFICATION

Census: A census is the procedure of systematically acquiring and recording information about the members of a given population. Population census is the process of collecting, compiling, evaluating, analyzing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time to all persons in a country.

Census in other words is a purely a statistical exercise. A census is a count, an enumeration and the publication, after careful checks of results of that exercise. This term is used mostly in connection with national population and housing censuses; other common censuses include traditional culture, business supplies, agricultural, and traffic censuses (United Nations 2008; Ikendinma, 2020).

Effective census taking: is the process of collecting accurate and comprehensive information about a population through census. It involves conducting census in a systematic efficient manner to ensure that all households are counted and their characteristic are recorded accurately.

Population: is a group or collection of items. However, to a demographer, a population is a group or collection of people. Preston, Heuveline, and Guillot (2001) have distinguished between a specific population or group of actual people alive at a given period of time and the population that persists over time even though its actual members may change.

Population Census: the idea of population census is that, everybody is counted, but the fact remains that everybody cannot be counted; that is, a complete and accurate population census in any part of the world is impossible. However, in spite of this inherent difficulty, population census is necessary. It is a vital component of the resource base and the development potential of any country.

THE SOCIO-CULTURAL CHALLENGES OF EFFECTIVE POPULATION CENSUS TAKING IN NIGERIA

There are several social and cultural barriers that hinders the accurate completion of the census. Some of these barriers include:

Over politicization of census for undue political gains

One major challenge to effective census in Nigeria is the politicization of the census. In Nigeria, the census has often been used as a tool for political gain, with politicians manipulating the data to their advantage, this has resulted in inaccurate data and a lack of trust in the census process (Haruspice, 2023). Census has been an instrument used by politicians in Nigeria to achieve personal ends (Okafor, 2015). The politicization of population censuses being done by political class for undue political benefits has been a serious challenge to effective census taking and this has resulted in undercounts/ over counts of residents in a particular areas and the unnecessary falsification of census data. The credibility of previous censuses in Nigeria have always been questioned, a number of disagreement have arisen over the conduct of population censuses which had threaten Nigeria's unity.

The political class are well aware that too many things are tied to population census to be treated with levity. For example, revenue allocation, legislative representation, location of industries and the provision of other social amenities have so far been based on population which resulted in census officials and indigenes inflating figures in favor of their place of origin.

The politicization of the census on religious and ethnic grounds resulted in unreliable religio-ethnic demographic data in Nigeria, as population statistics were often manipulated for political, economic, and religious ends, not least because such figures constitute one of the basis for the sharing of national revenue and other resources. That partly explains why religious indices were excluded from the recent national census (Adogame 2010; McKinnon, 2021). The over politicization of census figures has seriously

challenged the effectivity of census data in Nigeria and has in the other hand affected the developmental planning of the nation.

Ignorance/ lack of awareness

Some of the Nigerian population are ignorant of the nature of a census, its basic elements, its execution and its position as the cornerstone for social and economic planning for overall development of a country. The result of such general ignorance is that citizens who are to be counted during census exercise have been suspicious of enumerators, and in some cases have been uncooperative or openly hostile. Some individuals may simply be unaware of the importance of the census or how to complete the questionnaire, Vines & US Census Bureau, (2020). This can be especially true for marginalized communities that have historically been excluded or underrepresented in official statistics.

In a study conducted by Vines *& et al.,* (2020) it was reported that some citizens misperceive the purpose of census to include the determination the rate of unemployment, to determine property taxes, locate people living in the country without documentation help the police and security operatives keep track of people who breaks the law.

However, the wrong assumptions about the use of census are partly if not mainly responsible for some spurious information given to enumerators or attempts by some to be counted several times thereby rendering the census taking ineffective. Ignorance about the use of census data and its importance, explains why some respondent falsify information they give during census taking and this a barrier to effective census in Nigeria.

Some people also act hostile as they consider getting counted a taboo. Illiterate people sometimes believe that the state conducts census in order to increase taxes. Therefore, they tend to give incorrect information; this explains the inaccurate statistical data. It is quite difficult to find out the actual population of Nigeria if the citizens do not support the process (Haruspice, 2023).

Lack or insufficient qualified census personnel

Another major obstacle to effective census is the lack of specialists with the necessary level of qualification and knowledge for conducting the census. Only experienced experts dealing with population issues and demographers can carry out this difficult task properly. If census is entrusted to inexperienced employees, the obtained result will be of low-quality and with inaccurate figures there by affecting the credibility of the census data (Haruspices, 2023).

Language barriers

In multicultural and multilingual society like Nigeria (Aghamelu & Obinabo 2018), the euphemism of unity in diversity does not hold sway most especially during census taking. There may be diverse language group within a society that may not speak or understand language use by the enumerator, consequently eroding the effectivity of the census process. Furthermore, this can lead to misinformation or underrepresentation in certain linguistic communities. Some census enumerators do not speak the local language of the people they are interviewing and some census respondents cannot speak any other language other than their local language and in such instance communication becomes a problem.

Lack of trust

The census questionnaire has always been intrusive as it is, and it is probably the level of intrusion that scares some respondents as some respondents are concerned why government will ask some of the questions they ask during census. According to Vine, *et al.,* (2020), some census participants are afraid that the government may look at the census data and discover a certain community has, a certain amount of race or something and so avoid taking any infrastructure or development to the community or define that area thereby neglecting - not funding certain schools or project in the community because the community has been tagged a certain name.

For some people, there is an underlying distrust in the government and it one of the barriers to effective census taking, (South, 2020). In some communities, there may be a lack of trust in the government, census officials' /census authorities. In some cases, historically marginalizes communities may be reluctant to provide accurate information to census enumerators for fear of the negative

consequences or concerns about privacy and data security. For example, undocumented immigrant may be wary of providing their personal data for fear of deportation back to home countries (Vine, *et al.,* 2020). Such individuals choose not to participate or provide accurate information. Furthermore, some of the mistrust in population census among some citizens stems from the injustices or systemic issues existing in the society as at the time of census taking.

Fear of disclosure/ privacy

Concern for privacy is one of the most important challenges to effective census taking- privacy is a reason why people would not (accurately) fill out the census questionnaire, individuals may fear that participating in the census could lead to their personal information being used against them or shared with law enforcement agencies. In a study by Vine, *et al.,* (2020), more than one-quarter of respondents (28%) were worried (extremely concerned or very concerned) about confidentiality, that the Census Bureau would not keep their answers confidential, about one-quarter of respondents (24%) were concerned that the Census Bureau shares data, (extremely concerned or very concerned that the census bureau would share their answers with government agencies).

According to one of the respondents in Vine *et al.,* (2020).

"Every single of information that the government gets goes to every single intelligence agency, that is how it works…individual level data. Like, the city government gets information and then the FBI and then the CIA and then ICE and military…"

This fear of disclosure and privacy concerned can be heightened in communities with high levels of undocumented immigrants, or individuals with a history of legal issues and such, those individuals are likely to boycott census, the concern for privacy is a serious barriers affecting effective census.

Cultural taboos and stigma

In certain cultural or religious communities, there may be taboos or stigmas attached to discussing personal or demographic information such as age with strangers, especially since age among other details is one of the information collected during census (Akpan, 2023). The individual may therefore be reluctant to participate in the census or become hesitant to providing adequate and reliable information about is age and household details all of which could give credibility to the census data, consequently leading to under count and rendering the census ineffective. This can lead to underreporting or misrepresentation of certain population groups or household compositions thereby rendering the census ineffective.

Homelessness and transient populations

According to Census Bureau 2015; South, (2020) some individuals can be hard to count during census for different reasons such as: some are hard to contact while some are homeless. Since census usually have time bound, time maybe running out to count such individuals under the compressed schedule for the census (South, 2020), some people are hard to locate and hard to persuade, for example street children. They might not answer the census for "fear of how the information might be used or misused" (Vine, *et al.,* 2020).

Reaching homeless individuals and others who do not have a fixed address can be challenging during census taking, these individuals may be unaware of the census or census takers may face logistical difficulties in locating these individuals and completing the census exercise. The census enumerator may face logistic barriers in locating some of these homeless and transient individuals, it may also be difficult for census takers to enumerate every household especially if there is security challenge and concern in those region.

STRATEGIES FOR SURMOUNTING SOCIOCULTURAL BARRIERS TO EFFECTIVE CENSUS TAKING IN NIGERIA

It is important for census authorities to address these barriers to help ensure the accurate representation of all individuals and communities in the census data, thereby making census taking effective and the data used for national planning and development. In view of the current situation of population issue in the nation and the factors surrounding it, there is likely to be more problems if it continues unchecked. Based on the social and

cultural factors identified to challenge effective census taking, the following strategies can be adopted to surmount the social and cultural barriers:

Communication and education: Increase public awareness and understanding of the importance and benefits of population census. Provide clear and accurate information about the census process and its purpose to address misconceptions and encourage participation. To ensure a complete count, effective census taking should involve robust outreach efforts to inform and educate the public about the importance and benefits of participating in the census. This includes providing clear instructions and disseminating information through various channels to reach diverse populations. The careful organization of campaigns to create awareness about census exercises can determine how successful the census will be. It is extremely important for the population to learn about the importance of the census exercise and show a willingness to cooperate (Haruspice, 2023).

The issue of population census and other vital registration should be more emphasized in the academic curricula at all level, since the Nigeria operates uniform educational system, to ensure regular and at least adequate enlightenment of all the citizens; not just the ad-hoc methods usually adopted during the census period.

Culture specific campaigns/ targeted approach: Tailor census campaigns and strategies to specific sociocultural groups. Use culturally appropriate and language-specific materials to reach out to diverse communities. Consideration should be given to the uniqueness, the unique challenges and sensitivities of each group and adapt the census methods accordingly.

Cultural competency: Recruit and train census workers who are fluent in local languages and familiar with the local culture and customs. This will help establish trust and build rapport with the community, making it easier to collect accurate and reliable data.

Address privacy concerns: Assure respondents that their personal information will be kept confidential and used only for statistical purposes. Implement strict data protection policies to safeguard individuals' privacy and maintain public trust in the census process. Maintaining respondent confidentiality and ensuring data security are critical for effective census taking. Adequate safeguards should be in place to protect the privacy of individuals and households and to comply with relevant data protection laws.

There is a general lack of knowledge about census scope, its purpose and constitutional foundation, connecting census participation to support for local communities may address apathy and lack of efficacy informing the public on the census scope, purpose and process may address privacy and confidentiality concerns and fear of repercussion.

Inclusive methods: Develop alternative methods for collecting data from hard-to-reach populations, such as undocumented immigrants, homeless individuals and street children minority groups. Explore non-traditional data collection techniques like mobile apps, online surveys, or partnering with local organizations trusted by these communities and group of people.

Empowering marginalized groups: Empower marginalized groups by involving them in decision-making processes related to the census. Provide opportunities for these groups to voice their opinions, express concerns, and suggest improvements to ensure their needs are adequately represented in the population count.

Accessibility and accommodations: Make the census accessible to individuals with disabilities by providing accommodations such as alternative formats, braille, sign language interpreters, or assistive technologies. Ensure that no segment of the population is left out due to physical or cognitive limitations.

De-politicization of population census: population issues most especially population census should be depoliticized and left for scholars and experts who are relatively neutral from religious, ethnic, economic and political bias. More so, everything about population issues in the country should be separated from political

appointment. The institutions responsible for the population issues should be sanitized, to save them from the incessant abuse of office and corrupting of the essence of institutional existence.

Engaging trusted voice and community: Engaging trusted voice and community may address trust based concerns, especially among the most skeptical and disaffected. Trusted voices and organizations with deep community roots may facilitate participation among the most skeptical by providing information about the community funding and the general census process, assuring people that participation is safe.

Collaborate with stakeholders- local community leaders, organizations, and influencers to promote the census and explain its significance. Involve community members in the planning and implementation of the census to ensure their needs and concerns are taken into account.

Building credibility: Collaborate with reputable international organizations, research institutions, and independent monitoring agencies to demonstrate the credibility and transparency of the census process. Regularly communicate updates, progress, and findings to maintain public confidence in the reliability of the census data.

Enumerators' training/ expertise: Training enumerators, who play a crucial role in collecting data and interacting with respondents, is vital for effective census taking. Enumerators should be well-trained on census procedures, questionnaire administration, data privacy and confidentiality, and effective communication skills.

Census issues should be entrusted to specialists with the necessary level of qualification and knowledge for conducting the census as experienced experts in population issues and demographers can carry out this difficult task properly.

Long-term engagement: Extend census outreach efforts beyond the immediate census period. Continue engaging with communities to address their needs, use census data for policy planning and resource allocation, and build a foundation of trust for future census exercises.

Data quality control: Implementing stringent quality control measures is essential to ensure accurate and reliable data. This includes the use of built-in logical checks in the questionnaire, conducting post-enumeration checks and verifications, and implementing data validation processes.

Data analysis and dissemination: Once the census data is collected, it should be analyzed and disseminated in a timely manner. This involves data processing, cleaning, and aggregation to generate meaningful insights for policy formulation and decision-making.

Use of appropriate technology: Leveraging technology, such as online questionnaires, mobile data collection tools, and Geographic Information Systems (GIS), can enhance the efficiency and accuracy of census taking. It reduces manual errors, speeds up data processing, and allows for real-time monitoring of census progress. Even small improvements in census technology can result in important gains in the quality and cost-effectiveness of the whole census operation (Dekker, 2001).

In summary, effective census taking requires careful planning, efficient execution, accurate data collection, and appropriate data management practices. By adhering to these principles, governments and organizations can obtain reliable and high-quality data for use in various sectors, including population planning, resource allocation, and policy development.

THEORETICAL FRAMEWORK

The theoretical underpinning guiding this work is the Malthusian theory. Malthus in his essay "Principle of population", explained the significance of population to a nation's development and underdevelopment. According to Malthus, human population has a potential for greater growth than the power of the earth to produce food for human survival (Weeks, 2020). The theory holds that if human population is unchecked; it grows geometrically while food production grows arithmetically, this means that as food supplies increases, population will expand more quickly to drive out any abundance in food supply (Malthus, 1926). Malthus in his

theory emphasized population as a factor that determines a society progressive as well as retrogressive development, he also emphasizes the importance of population check in which effective census taking is a one of the ways.

According to the theory, ignoring the force of population growth could result in disaster and suffering, which are indicators of poverty and underdevelopment (Nwachukwu, 2023). According to Malthus, moral restraint, vice, and suffering repress the population's superior power, and the means of subsistence must inevitably limit population growth (Orhero, 2020; Nwachukwu, 2023).

In applying Malthus's theory to explain the socio cultural barriers to effective census taking in Nigeria, it is obvious that the nation cannot adequately develop due to lack of effective census and consequently lack of an accurate population data for effective planning. Without effective census taking through which the distribution and composition of the population will be known, the nation cannot adequately develop as it does not know the needs of the people and where to invest education, health etc. The politicization of census, concern for privacy, incompetent enumerators etc. are all socio cultural barriers that challenges effective census thereby preventing the nation from developing adequately. The Malthusian theory is relevant to the Nigerian situation because the country's developmental planning has been truncated by lack of effective census and data for adequate planning all made possible by the over politicization of census, lack of trust, ignorance etc. These challenges among many others has made planning for the nation's development difficult.

CONCLUSION

Without an effective national census, there can be no national plan and without a national plan, no nation can adequately develop. Previous censuses in this part of the world has been largely controversial and effective census taking has been challenging. However, population census and housing enumeration in Nigeria are crucial national exercise that provides valuable insights for planning and promoting economic growth and development in the country. Census data is essential for effective planning, resource allocation, and decision-making. It provides accurate and reliable statistics that are crucial for economic growth and development and without which no nation can adequately plan for development.

In Nigeria, the basic ingredients for developmental planning – census/ population data, including the actual number of the population and its composition according to age, sex, geographical location etc. remain largely unknown. For a country whose population data remained largely inaccurate, and available estimates of the total population in the country, in each state and in each local government areas are mainly guess.

There is, indeed, need for an effective census taking that will not only put to rest the controversies regarding the country's population but also avail the different government agencies the much-need development data for developmental planning. Without effective census taking vis-à-vis accurate data, policymakers and government do not know where to invest in schools, hospitals and roads as those most in need remain invisible.

As another national census beacons, 18 years after the last census was held in 2006, the challenges and pitfall that affected previous censuses may still challenge the upcoming census if not adequately addressed. It is therefore important at this time, that the nation overcome all challenges and pitfalls to an effective census taking so as to aid in national planning and development.

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POPULATION GROWTH AND EMERGING TRENDS IN CRIMINAL BEHAVIOUR IN CALABAR METROPOLIS OF CROSS RIVER STATE

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Abstract
It's common knowledge that the population growth rate of Nigeria is alarming. The actual and projected population with accelerated urbanization growth of most of our cities with its attendant problems. Calabar metropolis is not left out of these shared problems of population growth with emerging criminal trends such as kidnapping, cybercrimes, carjacking, and other hitherto unknown crimes trending in the metropolis. Despite stiff government measures to curtail criminal elements in the metropolis, this crime continues unabated. This study interrogates population growth and criminal trends in Calabar Metropolis. A cross-sectional survey was utilized. The main instrument used was the questionnaire which was used to collect data from 400 respondents through an administered process and analyzed quantitively by the use of tables and simple percentages. The study findings showed that population growth contributed to an increase in criminality due to the heterogeneity of the study area, also emerging crimes such as kidnapping, and cybercrimes were prevalent in the area. In addition, the law enforcement agency seems to be overwhelmed with crime in the area. The study recommends amongst others the development of rural areas, birth control measures should be given adequate publicity.

Keywords: criminal behaviors, Calabar metropolis, emerging trends, population growth.

Introduction

The rapid growth of the global population has given rise to a pressing concern: overpopulation. With over 8 billion people inhabiting our planet and the numbers steadily rising, the implications of overpopulation are becoming increasingly evident. There has been a tremendous increase in population growth and urbanization in Africa, Asia, and Latin American Continents for several decades. Africa, especially the Sub-Sahara region has the fastest urban population growth than any other continent in the world. The Sub-Sahara region recorded the highest urban growth rate in the world with an average of 5% per annum (Peluso, 2023).

Nigeria in Africa and other developing nations of the world are currently experiencing the fastest rate of urbanization and rapid population growth and development. The percentage increase of world population living in urban centers from 14% to 43% between 1800 and 1985 respectively. In the year 2020, world urban population had increased to 2.9 billion. By the end of 2050, half of the world's population will live in urban areas (United Nations, 2000).

In Nigeria, the urban population has been on the increase since the colonial administration. Nigeria's urban centers are amongst the fastest growing cities in the world. The increasing urban centres without a corresponding increase in the essential basic infrastructure and employment opportunities is causing a corresponding increase in crime rate (Agbor, et al, 2022). The rate of population growth in Nigeria since the end of the civil war 1970 has become very alarming. Nigeria is now seen as the fastest growing country in the world with an estimated population of one hundred and seventy million (170,000,000) people. It is seen to be the sixth largest in the world in relation to population. The most ugly and dangerous aspect of this population phenomenon is that, as the population of Nigeria continues to increase in this fastest rate, the level of crime also continues to increase. As it stands now, Nigeria is the most populous country in the Sub-Sahara Africa and also the 10th most populous in the world after China and India (NPC, 2015).

It's important to note that population growth alone does not cause criminal behavior. However, it can contribute to conditions that make criminal activity more likely. For example, rapid population growth can lead to a lack of jobs and economic opportunities, which can push people into crime as a way to survive. It can also lead to overcrowding and inadequate social services, which can create an environment conducive to criminal activity. In addition, some research suggests that population growth can lead to a breakdown of social norms and values, which can also contribute to criminal behavior. On the comparism of different areas within a city, studies have shown that crime and delinquency vary widely in different neighbourhoods and sectors and are highest towards the centre of the city. In other words, delinquency and crime are heavily concentrated in particular areas of the major cities. They are more prevalent among the most crowded (Akwaji, Uyang & Abono, 2017). Although different scholars have analysed the problems of population growth in Nigeria and its effects on the standard of living and high cost of rents, there is currently no article on overpopulation and emerging trends in crime in Calabar Metropolis hence, the need for this study.

Statement of the Problem

There has been global increase in crime rate from 2000 to 2300 for every 1000 people between 1980 to 2000, over several decades. Specifically, 60 % of urban residents in the developing countries have been victims of crime over a five year period with victimization rates of over 70% in parts of Sub-Sahara Africa, Latin America and the Caribbeans. Cities in Africa have the highest reported cases of crime with victimization rates of over 8% of its population (UN Habitat, 2007). The increase in population growth is mostly as a result of rural to urban migration and is usually accompanied by serious social, economic and environmental problems. The less privileged and poor who migrate from rural to urban centers to seek employment end up living in slum settlements with substandard housing and poor sanitary conditions. This same group of residents engage in various criminal activities (Agbor, et al, 2022).

In Nigeria, one can see traces of overpopulation and crime in many places, especially in the study area. Crimes such as kidnapping, cyber crime, armed robbery, theft, burglary and cultism are prevalent in Calabar Metropolis and this can be attributed to the

consequences of overpopulation (Oyosoro & Willie, 2021). Calabar Metropolis has for the past decades experienced high rates of crime and insecurity due to unprecedented population growth, rural-urban migration and urbanization. In all ramifications, Nigeria's population is growing faster than development can cater to, faster than resources to maintain it, and faster than the best attempt at any type of population control. It is a concern because the magnitude of overpopulation has become a problem for national security agencies due to violent crimes, kidnappings and incessant Fulani herdsmen killings due to competition for dwindling grazing rights (Chidi, 2014; Akinyetun, 2016).

The consequences of overpopulation are at the centre of many crime problems that Nigerians are currently grappling with. (Osam, 2019). It's true that overpopulation has played a role in the prevalence of these crimes in Calabar. The rapid population growth in Calabar Metropolis has put a strain on resources and infrastructure, leading to an increase in poverty and unemployment. This has created an environment where many people are desperate for money, and some have turned to crime as a means of survival. In addition, the city's dense population makes it easy for criminals to blend in and escape detection.

Urbanization and population growth has been recognized as the leading cause of crime especially in slum areas (Okafor & Onuoha, 2016). The fact that urbanization and population growth contribute to crime suggests that areas that are heavily populated show attributes of substandard housing units and squalor. Therefore, the ever-increasing nature of human population has made it difficult to combat the corresponding increase in crime especially in developing countries of the world. Clearly in Calabar Metropolis, overpopulation, urbanization and slum prevalence cities has serious implications on city sustainability through creating diverse forms of crime (Ajom, Etim & Eteng, 2022). The rapid population growth in Nigeria has increased the crime rate in different States of Nigeria, Cross River State, not excluded. The crime rate across the country keeps breeding destruction of lives and properties as well as increasing fear of insecurity. The growth of urban areas in Cross Rivers State specifically Calabar Metropolis is a gradual process which affects the entire residents of the area. The crime trend that goes with this growth has been a rise in the rate of kidnapping, cybercrime, car theft and hired assassination. It is against this backdrop that this study seeks to investigate population growth and emerging trends in criminal behaviour in Calabar Metropolis.

Objectives of the study. The main objective of the study is to examine overpopulation and the emerging trends in criminal behaviour in Calabar Metropolis. The specific objectives include:

1. To find out the significant relationship between overpopulation and kidnapping in Calabar Metropolis.
2 To identify the significant relationship between overpopulation and cyber-crime in Calabar Metropolis.

Research hypotheses

This research will be guided by the following hypotheses, stated in null form.

H_{01}: There is no significant relationship between overpopulation and kidnapping in Calabar Metropolis.

H02: There is no significant relationship between overpopulation and cybercrime in Calabar Metropolis.

Population growth and kidnapping

Overpopulation can have an impact on the occurrence of kidnappings. As cities grow and become more densely populated, the increased concentration of people and resources can create both opportunities and challenges related to kidnapping incidents. One factor to consider is the anonymity and impersonal nature of urban environments. In large cities, individuals may be less familiar with their neighbours or community members, making it easier for potential kidnappers to blend in and go unnoticed. (Moraes, 2017).

The sheer number of people in urban areas can also make it harder for law enforcement to track down perpetrators of kidnapping or locate and rescue their victims as urban areas often experience overpopulation, high rates of inequality and disparities in wealth distribution. As a result, this creates a socioeconomic condition that increases the likelihood of kidnappings occurring. Kidnappers may target

individuals who they perceive as wealthy or vulnerable, particularly in areas where economic disparities are pronounced (Longe & Chiemeke, 2008).

In February 2023 gunmen reportedly kidnapped two women including a commissioner for Women Affairs and on 9th June 2023, two residents including a staff of the University of Calabar Teaching Hospital (UCTH) were also kidnapped in Calabar. In the last one month about 8 persons have been kidnapped including one Igbo business man, Chris, a lady at Target, and two staff of University of Calabar at Satellite Town and all released after paying ransom running into several millions of Naira.It was learnt that two days ago, a son of former council chairman from the northern part of the State, was kidnapped by hoodlums (Punch newspaper)

During the administration of former Governor Ben Ayade, one of the female commissioners, Gertrude Njar, spent 35 days in the kidnappers' den and later regained freedom after the family allegedly paid the ransom. At the onset of Governor Otu's administration, Neurology Consultant, Prof Ekanem Ephraim of the University of Calabar Teaching Hospital (UNICAL) was kidnapped on July 13, 023, and yet to be freed. The latest onslaught on residents took place yesterday night when gun-trotting men invaded Satellite Town community in Calabar Municipality and whisked away a pastor identified as Rev Dr Mike Obiora of Word Alive Church, his daughter, Shalom, and another landlord, who is a neighbour of Rev.Obiora. Residents of Statelite Town in Calabar Metropolis now live in fear as kidnapping along that axis of the water line has become a regular occurrence because they cannot predict the next move and plans of these criminal elements (Vanguard newspaper).

Population growth and cybercrime

Cyber technology has transformed virtually all human activities including the way we communicate, travel, power our homes, run our economy and obtain government services. Despite the many benefits associated with improved cyber technology, there have equally been some major disadvantages associated with it; one of which is cybercrime (Michael, 2020). In the view of Odumesi (2014), rapid population growth as well as advancement in technology and online communications has not only produced a dramatic increase in the incidence of criminal activities, but has also resulted in the emergence of what appears to be a new variety of criminal activities known as cybercrime.

A cross section of technology experts have warned the Federal Government to address the rising population in the country and close the socioeconomic gap or gear up for more local and international cases of cyberfraud involving Nigerians. The Chief Executive Officer, Enviroque Technologies Ltd, Mr Desmond Okeowo, who was a presidential aspirant under the African Democratic Party in the 2019 elections, lamented the high number of Nigerians abroad indicted and convicted for cyber fraud, popularly referred to as 419. The IT expert, in an interview, raised the alarm over the rapid rise of Nigeria's population, linking the trend to the rise in cybercrimes. Okeowo argued that the infamy arising from Nigerians' involvement in cybercrimes around the world "boils down to overpopulation and the choices the people we call our leaders made for us" (Punch Newspaper, 2021). The process of urbanization has been associated with overpopulation, increased connectivity and digital infrastructure, creating a fertile ground for cybercriminal activities as rapid urbanization often outpaces the implementation of cybersecurity measures, leading to vulnerabilities in critical urban systems and networks (Brown, 2019).

Armed Robbery and Population growth

Although armed robbery is no longer fashionable after the emergence of kidnapping in Nigeria. However, there are pockets of its activities within the metropolis. Amongst all the violent crimes, armed robbery used to be the most dreaded, and most prevalent. The core of robbery is theft accomplished under circumstances calculated to terrorize the victim. In November 21st, 2023, Cross River Watch reported that a 400level student of the Department of political Science, University of Calabar has been allegedly shot death by a gang of armed robbers on Tuesday morning in Calabar (https://crossriverwatch.com). Also, in December, 2023, the Nigeria Security and Civil Defence Corps (NSCDC) says its personnel

arrested five persons who alledgely specialize in robbery hotels and Point of Sale (POS) operators, in Calabar, the Cross River State capital (https://www.thecable.ng). Similarly, in April 2023, three suspected armed robbers were burnt to death by angry youths and vigilante groups in Ikot Ansa community Calabar(https://dailypost.ng). other instances of insecurity abound in the metropolis as many cases are not reported to the police.

Theoretical framework

This study is hinged on the ecological theory. The ecological theory is an approach that studies the quantitative relationship between geographic phenomena and criminal behaviour. According to Reid (2000:116), the ecological school attempts to explain crime as a function of social change that occurs along with environmental change. Paterson and Voss (1971), have defined ecology as the study of the relation of the organism to its environment. The ecological explanation of criminal behaviour is attributed to the pioneering efforts of the Chicago school of Sociology championed by Ernest Burgess and Robert Park. Using Chicago as a case study, the Chicago school had argued that cities expand radially from a central business area. Although the concentric circle approach was adopted by the Chicago school specifically for the study of Chicago, it was thought to be applicable to other cities. The concentric circle approach particularly considered the cities' spatial characteristics, how it is affected by social change, its population distribution and behaviour. The findings of the Chicago school revealed a positive correlation between the densely populated central parts of Chicago and high rates of crime. The findings further showed that the central part of the city which was overcrowded was mostly inhabited by the poor and unemployed and was generally characterized by dirty surroundings (Brown, et al, 1996).

The ecological theory as applied to this study indicates that due to the presence of government activities, infrastructural amenities, business opportunities, tertiary institutions, industries and other thriving economic activities in Calabar Metropolis, people tend to migrate from rural areas of Cross River State to Calabar Metropolis in search of greener pastures. This leads to making Calabar Metropolis over populated and as such gives room to the perpetration of crime. This is particularly so because, not all the people who migrate to the city centre in search of greener pastures get to find it. In a bid to survive, they turn to criminal behaviour and activities in order to make ends meet.

METHODOLOGY

Research design

The research design adopted for this study was the survey research design. This research design was adopted by the researcher because it can be used to get data from a cross section of respondents that can be considered as representatives for the whole population. This study was carried out in Calabar Metropolis of Cross River State. It is bounded to the North by Odukpani Local Government Area, to the East by the Creeks of the Atlantic Ocean, to the West by Akpabuyo Local Government Area and in the South by Calabar South Local Government Area. It lies between latitude $4^0$5TN $8^0$19E and longitude $4^0$95N $8^0$317E. Its original name was Akwa Akpa, from the Efik Language. The city is watered by the Calabar and Great Kwa Rivers and Creeks of Cross River. For the purpose of administration Calabar Metropolis is divided into 10 electoral wards. It has an area of 406KM^2 and a projected population of 245,500 (NPC, 2016). The major ethnic groups are the Efiks, the Quas and the Efuts. The languages spoken are English, Efik and Ejagham. The people of this area share common customs in marriage, birth, dressing and chieftaincy titles. The city is also famous for the Cross River State annual Christmas festival which attracts thousands of people within and beyond Nigeria. The city is known for different religious groups of which Christianity is the predominant. The people are predominantly farmers, fishermen, traders and civil servants. The people had early contacts with the Europeans and as such, embraced Western education.

Population of the study. The population of the study consists of all the adults from 18years and above residing in Calabar Metropolis of Cross River State. They are considered to be intellectually mature to give information on the study. The total population in this area from the 2006 census is 179,392 inhabitants but with a growth rate of 2.83% and based on 46% estimate

for the adult population in 2023, the projected population of Adults in Calabar metropolis is 116,912 inhabitants which forms the study population.

Sample and sampling techniques: The sample size of 400 was used in the study statistically determined using Taro Yamani (1967) formula. The multi stage design and systematic random sampling technique was adopted. In the first stage, Calabar Metropolis was divided into 10 clusters according to their electoral wards. All the wards were selected for the study. The purposive sampling technique was used to select 40 respondents from each of the wards that participated in the research.

Sources of data collection: The study adopted the use of both primary and secondary sources of data. The primary sources of data comprised the use of questionnaires to elicit information about the research topic from the respondents while the secondary sources of data consisted of information about the research topic gotten from textbooks, journals, publications, the library and the internet.

Instrument for data collection: The instrument used for data collection was the questionnaire. The questionnaire which was titled Questionnaire for Urbanization and Emerging Trends in Criminal Behaviour (QFUAETICB) was divided into two sections; A and B. Section A contains questions bothering on the demographic data of respondents while section B comprised of a four-point Likert scale questions that address the substantive issues of the study. The Likert scale of response was rated; Strongly Agreed (SA), Agreed (A), Strongly Disagreed (SA) and Disagreed (D).

Statistical tool for data analysis: The statistical tool for data analysis was Pearson Product Moment Correlation Coefficient (PPMCC) using the Statistical Package for Social Sciences (SPSS). The formula for Pearson Product Moment Correlation coefficient (PPMCC) is:

$$r = \frac{n\Sigma xy - \Sigma x\Sigma y}{\sqrt{\left\{n\Sigma x^2 - (\Sigma x)^2\right\} - \left\{n\Sigma y2 - (\Sigma y)^2\right\}}}$$

Where;

r = Correlation Coefficient
n = Number of observation
x = Independent variable
y = Dependent variable

Method of data analysis: The data collected from the field was carefully screened and sorted. The invalid questionnaires were discarded while the valid ones were used as sources of data for analysis. The data collected were analysed using Pearson Product Moment Correlation Coefficient (PPMCC) through the Statistical Package for Social Sciences (SPSS).

Data Analysis (Test of Hypotheses)

Hypothesis one: There is no significant relationship between overpopulation and kidnapping in Calabar Metropolis.

Table 1
Correlation analysis for overpopulation and kidnapping in Calabar Metropolis

		Overpopulation	Kidnapping
Overpopulation	Pearson Correlation Sig. (2-tailed) Sum of Squares and Cross-products Covariance N	1 85.172. .216 400	.637** .000 58.434 .148 400
Kidnapping	Pearson Correlation Sig. (2-tailed) Sum of Squares and Cross-products Covariance N	.637** .000 58.434 .148 400	1 98.937 .250 400

**** Correlation is significant at the 0.05 level (2-tailed)**

Source: SPSS Analysis

The correlation coefficient of 0.637 from the analysis above indicates that there is a significant relationship between overpopulation and kidnapping in Calabar Metropolis. From the table, the test was significant at the level of 0.05 which led to the rejection of the null hypothesis and acceptance of the alternate hypothesis which states that there is a significant relationship between overpopulation and kidnapping in Calabar Metropolis

Hypothesis two: There is no significant relationship between overpopulation and cybercrime in Calabar Metropolis.

Table 2

Correlation analysis for overpopulation and cybercrime in Calabar Metropolis

		Overpopulation	Cybercrime
Overpopulation	Pearson Correlation	1	.940**
	Sig. (2-tailed)		000
	Sum of Squares and Cross-products	449.753	449.372
	Covariance	1.525	1.523
	N	400	400
Cybercrime	Pearson Correlation	.940**	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	449.372	507.878
	Covariance	1.523	1.722
	N	400	400

****Correlation is significant at the 0.05 level (2-tailed)**

Source: SPSS Analysis

The analysis showed a correlation coefficient of 0.940 indicating the existence of a significant relationship between overpopulation and cybercrime in Calabar Metropolis. From the table, the test was significant at 0.05 significance level and this led to the rejection of the null hypothesis and acceptance of the alternate hypothesis.

Discussion of findings: The result of the analysis and test of hypothesis one revealed that, there is a significant relationship between overpopulation and kidnapping in Calabar Metropolis. The finding is in line with Moraes (2017) who stated that as cities grow and become densely populated, the increased concentration of people and resources can create both opportunities and challenges related to kidnapping incidents. In support of this findings, Longe and Chiemeke, (2008) assert that the sheer number of people in urban areas can also make it harder for law enforcement to track down perpetrators of kidnapping or locate and rescue their victims as urban areas often experience overpopulation, high rates of inequality and disparities in wealth distribution. As a result, this creates a socioeconomic condition that increase the likelihood of kidnappings occurring. Kidnappers may target individuals who they perceive as wealthy or vulnerable, particularly in areas where economic disparities are pronounced. The results obtained from the test of hypotheses two revealed that, there exists a significant relationship between overpopulation and cyber-crime in Calabar Metropolis. These findings corroborate with that of Odumesi (2014), which avers that rapid population growth as well as advancement in technology and online communications has not only produced a dramatic increase in the incidence of criminal activities, but has also resulted in the emergence of what appears to be a new variety of criminal activities known as cybercrime. Also, in line with this findings,

Brown (2019), maintained similar position.

The process of urbanization has been associated with overpopulation, increased connectivity and digital infrastructure, creating a fertile ground for cybercriminal activities as rapid urbanization often outpaces the implementation of cybersecurity measures, leading to vulnerabilities in critical urban systems and networks.

Conclusion

One of the significant developments worldwide is the rapid increase in urbanization. This is more so in developing countries where urbanization is proceeding at an alarming rate. Calabar metropolis is not an exception to this trend as hitherto unknown crimes are becoming the other of the day. Population growth and criminal behaviour are complex and multifaceted phenomenon that have been subjects of extensive research and debate. One key observation is that population growth alone does not necessarily lead to an increase in criminal behaviour. While it is true that a large population prove a larger pool of potential offenders, the connection is multifaceted. Rapid population growth often coincides with increased urbanization, bringing about unique challenges and opportunities. While urban areas may experience higher crime rate due to factors like anonymity and social disorganization, they also offer the potential for improved law enforcement, social services, and economic development.

Recommendations

Based on the findings of this study, the following recommendations were put forward:

1. The government should increase education and awareness efforts to help individuals and organizations understand the risks of cyber-crime and learn how to protect themselves online.

2. The government should provide specialized law enforcement training to enforcement agencies to effectively respond to and investigate kidnapping cases. This can include developing protocols for rapid response and coordination with other agencies.

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