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, staff training, 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 (Ukwayi et al, 2018). This

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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).

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; Ukwayi et al, 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 (Okpa & Ekong, 2017). 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.

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:

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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. 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).

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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. 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.

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. 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, Okpa et al, 2022). 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; Okpa, 2022).

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

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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. 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. 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. 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).

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 .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. 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

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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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