

Harnessing Artificial Intelligence and Strategic Communication for Accurate and Reliable Population Census Data in Nigeria

Dr. Agatha Ada Ukata¹, Niyiyongu Charles Ngusha Ph. D², Ndefo Ifeoma Comfort PhD, fnipr³

¹Department of English Language and Literature, School of Arts and Science American University of Nigeria, Yola.

²Department of Communication and Multimedia Design, American University of Nigeria, Yola, Adamawa State, Nigeria.

³School of Journalism and Digital Media, University of the Gambia.

ABSTRACT	ARTICLE DETAILS
Accurate and reliable population census data are fundamental to evidence-based policymaking, equitable resource allocation, sustainable national development, and effective governance. However, Nigeria's population census exercises have consistently been challenged by political interference, data inaccuracies, public distrust, logistical inefficiencies, and inadequate technological innovation. It is on this ground that the study examined how Artificial Intelligence (AI) and strategic communication can be harnessed to enhance the accuracy, reliability, credibility, and transparency of population census data in Nigeria. The study was anchored on the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI) Theory, which explain the adoption of technological innovations and the role of communication in influencing public acceptance and participation. A descriptive survey research design was adopted. The target population comprised 1,350 professionals drawn from the National Population Commission, National Bureau of Statistics, National Identity Management Commission, ICT organizations, communication agencies, and academia. Using the Taro Yamane formula, a sample size of 309 respondents was selected. Using the Taro Yamane formula, a sample size of 309 respondents was selected through a multi-stage sampling technique. Study findings revealed that; AI technologies including biometric verification, machine learning, Geographic Information Systems (GIS), satellite imagery, automated data validation, and predictive analytics significantly improve census accuracy, reliability, operational efficiency, and transparency. The study further established that strategic communication enhances public awareness, trust, stakeholder engagement, and citizens' participation by combating misinformation and promoting confidence in census administration. The study concludes that integrating AI with evidence-based strategic communication provides a sustainable framework for modernizing Nigeria's census system and strengthening public confidence in demographic data. It recommends institutionalizing AI-driven census technologies, implementing comprehensive strategic communication campaigns, strengthening digital infrastructure and professional capacity, establishing robust ethical AI governance frameworks, and fostering multi-stakeholder collaboration to ensure credible, transparent, and internationally comparable population census data for sustainable national development. KEYWORDS: Artificial Intelligence, Strategic Communication, Population Census, Census Data Accuracy, Data Reliability.	Published On: 08 August 2026 Available on: https://ijiissh.com/

INTRODUCTION

Population census is one of the most important instruments for national development because it provides reliable demographic information required for evidence-based policymaking, equitable resource allocation, infrastructure planning, electoral delimitation, public health interventions, educational planning, security management, and sustainable economic development. Governments across the world rely on accurate census data to understand population dynamics, monitor social and economic changes, forecast future development needs, and evaluate the effectiveness of public policies. Consequently, the quality of census data significantly

influences national planning outcomes, while inaccurate or outdated demographic information often leads to inefficient governance, poor policy implementation, and unequal distribution of public resources (United Nations, 2020; Weber et al., 2018).

In recent years, Artificial Intelligence (AI) has emerged as one of the most transformative technologies for improving the collection, processing, verification, storage, and analysis of large-scale demographic data. AI encompasses computational systems capable of learning from data, recognizing patterns, automating repetitive tasks, predicting trends, and supporting intelligent decision-making with minimal human intervention. Modern AI technologies—including machine learning, computer vision, natural language processing, geospatial analytics, facial recognition, biometric verification, satellite image analysis, and predictive modeling—are increasingly being integrated into government statistical operations worldwide to enhance data quality, minimize human errors, detect duplicate records, identify inconsistencies, and accelerate census data processing (Russell & Norvig, 2021; Mohseni et al., 2018).

The growing adoption of AI in official statistics has transformed traditional census methodologies from paper-based enumeration to digital and intelligent population management systems. Countries that have embraced AI-supported census technologies have reported improvements in operational efficiency, faster data validation, enhanced geographic coverage, real-time monitoring of field activities, and greater confidence in census outcomes. AI-powered remote sensing technologies, geographic information systems (GIS), satellite imagery, and automated anomaly detection have demonstrated considerable potential in estimating population distribution, identifying undercounted settlements, and supporting evidence-based demographic analysis even in difficult geographical environments (Weber et al., 2018).

Beyond technological innovation, strategic communication has become equally indispensable for successful population census implementation. Strategic communication refers to the deliberate, coordinated, and goal-oriented use of communication processes to influence public understanding, attitudes, trust, participation, and behavioral responses toward specific national objectives. Unlike routine information dissemination, strategic communication integrates audience analysis, stakeholder engagement, persuasive messaging, media planning, community mobilization, digital communication platforms, interpersonal communication, and feedback mechanisms to encourage public cooperation. In census administration, strategic communication helps educate citizens about the purpose of enumeration, addresses misinformation and public skepticism, encourages participation, promotes transparency, and builds confidence in government institutions responsible for census activities (Hallahan et al., 2007; Oyesomi, 2023).

The convergence of Artificial Intelligence and strategic communication presents significant opportunities for improving census administration in developing countries such as Nigeria. While AI enhances technical efficiency through automated data validation, biometric identification, geospatial mapping, multilingual processing, and intelligent analytics, strategic communication complements these technologies by ensuring public awareness, stakeholder collaboration, trust-building, community engagement, and voluntary compliance throughout the census process. Recent studies suggest that technological innovations achieve their full potential only when supported by effective communication strategies capable of reducing resistance, combating misinformation, and improving public acceptance of digital governance initiatives (Salaudeen & Daranijo, 2026).

Nigeria has experienced persistent controversies surrounding national population censuses since independence. Questions relating to census credibility have frequently been associated with allegations of political interference, ethnic and regional competition, logistical challenges, undercounting, over counting, insecurity, inaccessible communities, inadequate technological infrastructure, delayed data processing, and limited public confidence in census outcomes. These recurring challenges have weakened the credibility of official demographic statistics and complicated national development planning. Scholars have consistently argued that census exercises in Nigeria have often been influenced by the politics of numbers, where demographic figures are perceived as instruments for determining political representation, fiscal allocation, and socio-economic advantages rather than purely statistical exercises (Akinyoade et al., 2017).

Recognizing these longstanding challenges, policymakers and researchers have increasingly advocated for the modernization of Nigeria's census system through digital transformation. Emerging proposals include integrating biometric identification, National Identification Number (NIN) databases, AI-assisted geospatial mapping, facial recognition technologies, satellite imagery, automated quality assurance systems, and intelligent data verification mechanisms to improve enumeration accuracy and transparency. Conceptual studies further argue that AI technologies can substantially reduce duplicate registrations, improve household verification, strengthen field supervision, accelerate data processing, and enhance overall census reliability while supporting more effective governance and national planning (Sani et al., 2025; Benedict, 2026).

Despite these technological prospects, the successful implementation of AI-driven census systems depends largely on citizens' willingness to participate, trust government institutions, understand the purpose of emerging technologies, and perceive adequate protection of their personal information. Public concerns relating to data privacy, cybersecurity, algorithmic bias, digital exclusion, misinformation, institutional transparency, and ethical governance may significantly affect acceptance of AI-enabled census operations if not adequately addressed through strategic communication. Furthermore, Nigeria's multilingual and culturally diverse population requires inclusive communication strategies capable of reaching citizens across different literacy levels, languages,

geographical locations, and digital access capabilities. Recent research on AI governance and communication in Nigeria similarly emphasizes that technological innovation must be accompanied by accountable governance, ethical safeguards, and context-sensitive public engagement to foster trust and legitimacy.

Against this background, there is growing scholarly interest in understanding how Artificial Intelligence and strategic communication can be integrated to improve the credibility, accuracy, reliability, transparency, and public acceptance of Nigeria's future population census exercises. While existing studies have separately examined AI applications in census modernization and strategic communication in public administration, limited empirical attention has been devoted to their combined influence on achieving accurate and reliable population census data in Nigeria. It is this gap that provides the foundation for the present study and naturally leads to the statement of the research problem.

STATEMENT OF THE PROBLEM

Despite the critical role of population census in national planning and sustainable development, Nigeria has continued to experience persistent challenges in generating accurate, reliable, and widely accepted census data. Since independence, virtually every national census has been characterized by controversies relating to allegations of population inflation, under-enumeration, political interference, ethnic and regional rivalry, logistical inefficiencies, insecurity, inaccessible settlements, inadequate technological infrastructure, and poor public trust in census outcomes. These recurring challenges have undermined the credibility of official population figures and weakened the effectiveness of government policies, equitable resource allocation, infrastructure development, electoral representation, healthcare planning, educational provision, and economic forecasting.

The emergence of Artificial Intelligence (AI) presents significant opportunities for addressing many of these longstanding census challenges. AI-powered technologies such as machine learning, biometric identification, satellite imagery, Geographic Information Systems (GIS), facial recognition, predictive analytics, and automated data validation have demonstrated considerable success in improving census accuracy, minimizing duplication, enhancing real-time monitoring, detecting inconsistencies, and accelerating demographic data processing in several developed and emerging economies. Similarly, strategic communication has become an essential component of modern census administration by promoting public awareness, countering misinformation, fostering stakeholder engagement, encouraging citizen participation, and strengthening institutional credibility throughout the enumeration process.

However, despite the growing global interest in AI-enabled governance and digital transformation, the application of AI within Nigeria's population census system remains relatively limited and underexplored. Existing census operations have relied predominantly on conventional enumeration approaches that are often vulnerable to human error, manipulation, delayed data processing, and operational inefficiencies. Likewise, communication strategies employed during previous census exercises have frequently been criticized for inadequate public engagement, insufficient multilingual messaging, weak stakeholder collaboration, and limited efforts to address public skepticism regarding data privacy, political manipulation, and the intended use of census information. These deficiencies continue to contribute to low public confidence and incomplete participation during census exercises.

A review of existing literature further reveals important scholarly gaps. First, most previous studies have examined Artificial Intelligence primarily within sectors such as healthcare, education, agriculture, finance, public administration, and broadcasting, with relatively little empirical attention devoted to its application in population census management, particularly within the Nigerian context. Second, studies focusing on census administration in Nigeria have largely concentrated on political controversies, demographic trends, census history, funding constraints, and operational logistics, while paying limited attention to emerging AI-driven technologies capable of improving census accuracy and reliability. Third, although strategic communication has been widely studied in relation to public health campaigns, political communication, crisis management, and development communication, very few studies have investigated its strategic role in fostering public trust, citizen participation, and acceptance of AI-supported census technologies.

More importantly, there is a noticeable absence of interdisciplinary studies that integrate both Artificial Intelligence and strategic communication as complementary mechanisms for improving the quality, credibility, and reliability of population census data in Nigeria. Most available studies treat technological innovation and communication as separate domains, thereby overlooking the synergistic relationship between intelligent digital systems and effective public engagement in achieving successful census outcomes. Consequently, there remains insufficient empirical evidence on how AI technologies, when supported by well-designed strategic communication frameworks, can collectively enhance census accuracy, minimize data manipulation, increase public participation, strengthen transparency, and improve confidence in Nigeria's national population statistics.

It is against these identified theoretical, empirical, contextual, and methodological gaps that this study seeks to examine **Harnessing Artificial Intelligence and Strategic Communication for Accurate and Reliable Population Census Data in Nigeria**. Specifically, the study aims to investigate how the integration of AI technologies and strategic communication approaches can

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contribute to producing more accurate, credible, transparent, and reliable population census data capable of supporting effective governance, evidence-based policymaking, and sustainable national development in Nigeria.

OBJECTIVES OF THE STUDY

The specific objectives are to:

1. **Examine the role of Artificial Intelligence technologies in improving the accuracy and reliability of population census data in Nigeria.**
2. **Assess the influence of strategic communication on public awareness, trust, and participation in Nigeria's population census exercise.**
3. **Determine the combined effect of Artificial Intelligence and strategic communication on enhancing the credibility, transparency, and effectiveness of population census data collection in Nigeria.**

SCOPE OF THE STUDY

The scope of this study is delimited to examining how **Artificial Intelligence (AI) and strategic communication** can be harnessed to enhance the **accuracy and reliability of population census data in Nigeria**. This therefore means that **geographically**, the study covers only **Nigeria**, and is restricted to issues relating to **population census administration** and does not cover other forms of national data collection such as household surveys, electoral registration, national identity registration, civil registration and vital statistics, or general e-government services, except where they are referenced to provide context for understanding AI adoption and strategic communication in census operations.

SIGNIFICANCE OF THE STUDY

This study is significance in the following ways:

1. The findings of this study will provide valuable insights for the National Population Commission (NPC), the National Bureau of Statistics (NBS), and other government agencies responsible for demographic data management. The study will demonstrate how the integration of Artificial Intelligence and strategic communication can improve census planning, data collection, verification, processing, and dissemination. It will also provide practical recommendations for developing more transparent, efficient, and technology-driven census systems capable of producing accurate and reliable population data for effective national planning and policy formulation.
2. The study will benefit communication professionals, public relations practitioners, media organizations, development communication experts, and international development partners by highlighting the critical role of strategic communication in promoting public awareness, trust, stakeholder engagement, and citizen participation during population census exercises. The findings will assist in designing evidence-based communication strategies that address misinformation, cultural diversity, language barriers, and public skepticism, thereby increasing the acceptance and credibility of future census operations.
3. This research will contribute to the growing body of knowledge on Artificial Intelligence, strategic communication, and digital governance by providing empirical evidence on their combined application in population census administration. It will bridge the existing gap in interdisciplinary literature where AI and communication have largely been studied independently. Furthermore, the study will serve as a valuable reference for researchers, postgraduate students, and academics undertaking future studies in communication studies, artificial intelligence, public administration, demography, digital governance, data science, and development studies.
4. Ultimately, the study will benefit the Nigerian public by advocating for a more credible, transparent, and reliable population census system capable of supporting evidence-based governance and sustainable national development. Accurate census data will enhance equitable distribution of national resources, effective healthcare planning, educational development, employment generation, infrastructure provision, security planning, disaster management, and electoral representation. By demonstrating how Artificial Intelligence and strategic communication can improve public confidence and census accuracy, the study will contribute to strengthening democratic governance and fostering inclusive socio-economic development in Nigeria.

CONCEPTUAL CLARIFICATION OF KEY TERMS

Artificial Intelligence:

Artificial Intelligence in the context of this study refers to the application of intelligent digital technologies to improve the planning, enumeration, validation, processing, monitoring, and analysis of Nigeria's population census data. AI facilitates real-time verification of census information, eliminates duplicate records through biometric authentication, identifies omitted settlements using geospatial technologies, detects inconsistencies through machine learning algorithms, and accelerates demographic data processing. Consequently, AI is conceptualized as an innovative technological framework capable of enhancing the accuracy,

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transparency, efficiency, and reliability of population census administration while supporting evidence-based national planning and sustainable development.

Strategic Communication:

Within the context of this study, strategic communication refers to the planned use of mass media, digital media, community engagement, interpersonal communication, multilingual campaigns, and stakeholder collaboration to educate citizens about the objectives and benefits of population census exercises, counter misinformation, strengthen public trust, encourage participation, and enhance acceptance of AI-enabled census technologies. It is therefore conceptualized as a critical communication mechanism that complements AI by fostering transparency, public confidence, and voluntary cooperation throughout the census process.

Population Census:

As applied in this study, population census refers to the nationwide enumeration exercise conducted by the National Population Commission (NPC) to obtain comprehensive and accurate information about Nigeria's population and housing characteristics. The study views the census not merely as a statistical exercise but as a strategic national development programme whose effectiveness depends on the integration of advanced AI technologies and effective strategic communication to ensure comprehensive coverage, public participation, transparency, and credible demographic data.

Census Data Accuracy:

In relation to this study, census data accuracy denotes the ability of AI-supported technologies—including biometric verification, machine learning, GIS, satellite imagery, computer vision, and automated validation systems—to reduce human errors, eliminate duplicate registrations, improve household identification, minimize undercounting and overcounting, and enhance the precision of demographic statistics. Thus, census data accuracy is conceptualized as the correctness and precision of population information generated through the combined application of intelligent technologies and effective census administration.

Data Reliability:

Data reliability refers to the consistency, dependability, stability, and trustworthiness of data collected over time and across different settings using standardized procedures. Reliable data produce consistent results when similar methods are applied and can be confidently used for analysis, decision-making, policy formulation, and development planning. Within the context of this study, data reliability refers to the extent to which population census information generated through AI-enabled technologies remains consistent, verifiable, credible, and free from manipulation or significant inconsistencies. It encompasses the use of automated data validation, predictive analytics, quality assurance mechanisms, digital monitoring systems, and standardized census procedures to ensure dependable demographic statistics.

REVIEW OF RELATED EMPIRICAL REVIEW

Ruiyu Zhang and Lin Nie investigated the role of Artificial Intelligence in improving communication quality between governments and citizens. The study employed a quantitative survey design involving citizens interacting with AI-assisted government communication platforms. Data were analyzed using Structural Equation Modelling (SEM). The findings revealed that AI significantly improved information clarity, response speed, message consistency, and citizen satisfaction. However, the study also found that while AI enhanced communication efficiency, human-centered communication remained essential for building long-term trust and emotional connection between government institutions and citizens. The researchers concluded that AI should complement rather than replace strategic communication in public administration. The study focused primarily on government-citizen communication and did not examine the application of AI and communication strategies in national population census administration, thereby creating a gap addressed by the present study.

Inuwa Sani, Muhammad Dimyati, and Aliyu Aminu Umar examined the potential of Artificial Intelligence in improving census administration in Nigeria. The study adopted a conceptual research design based on an extensive review of global literature and emerging AI technologies applicable to census operations. The authors proposed the use of machine learning algorithms, computer vision, natural language processing, satellite imagery, and anomaly detection systems to improve household identification, reduce duplicate records, and enhance census data verification. The study concluded that AI possesses enormous potential to transform Nigeria's census system through improved efficiency, transparency, and data accuracy. However, the research remained conceptual and did not empirically investigate how strategic communication can facilitate public acceptance and participation in AI-enabled census exercises. This limitation provides justification for the present study.

Kehinde Oyesomi and Joseph Olanrewaju Fasakin assessed the communication techniques adopted by Nigeria's National Population Commission to promote census participation among residents of Lagos State. Using a qualitative research design, the researchers conducted in-depth interviews with officials of the National Population Commission and the Lagos State Ministry of Information and Orientation. The findings showed that multilingual campaigns, community engagement, traditional media, social media platforms, religious institutions, and opinion leaders significantly enhanced public awareness and willingness to participate in the

census. Nevertheless, inadequate funding, misinformation, and low institutional trust remained major barriers to effective communication. The study recommended strengthening stakeholder engagement and adopting digital communication strategies. Although the research examined communication techniques, it did not consider the integration of Artificial Intelligence into census communication and data management, a gap this study seeks to fill.

Oyesemi Kehinde and Joseph Olanrewaju Fasakin investigated the effectiveness of communication strategies in shaping census engagement in Nigeria. The study adopted a mixed-method research design involving questionnaire administration and interviews among residents in Lagos State. Descriptive statistics and regression analysis were used for data analysis. The results indicated that strategic communication significantly influenced public awareness, trust, behavioural intention, and citizens' willingness to participate in census activities. Institutional credibility and community-based communication emerged as major predictors of census participation. The study recommended greater transparency and participatory communication throughout census implementation. However, the study did not explore how Artificial Intelligence could complement strategic communication in enhancing census data accuracy and operational efficiency.

Abdullahi Salaudeen and Habeeb Daranijo examined the adoption of Artificial Intelligence in public relations and strategic communication among government communication agencies and public relations practitioners in Lagos State, Nigeria. The researchers employed a cross-sectional survey design involving communication professionals, with descriptive and inferential statistical techniques used for analysis. The findings revealed that AI-powered sentiment analysis, automated media monitoring, and predictive communication tools significantly improved stakeholder engagement, crisis communication, message targeting, and decision-making efficiency. However, concerns relating to ethical governance, algorithmic bias, data privacy, and limited technical capacity constrained wider adoption. The study concluded that AI can substantially strengthen strategic communication when supported by appropriate governance frameworks and professional capacity building. Although the research focused on AI-enabled public relations, it did not investigate its application in improving the credibility and reliability of national population census data, which forms the focus of the present study.

THEORETICAL FRAMEWORK

This study is anchored on the **Technology Acceptance Model (TAM)** and the **Diffusion of Innovations (DOI) Theory** as they provide a comprehensive framework for explaining the adoption of Artificial Intelligence (AI) technologies and the role of strategic communication in facilitating public acceptance, participation, and the successful implementation of AI-driven population census systems in Nigeria.

Technology Acceptance Model (TAM)

The **Technology Acceptance Model (TAM)** was developed by **Davis (1986)** and later refined by **Davis (1989)** to explain the factors influencing individuals' acceptance and use of new technologies.

The model posits that two major determinants influence users' intention to adopt a technology:

- **Perceived Usefulness (PU)** and
- **Perceived Ease of Use (PEOU).**

Perceived usefulness refers to the degree to which an individual believes that using a particular technology will improve performance or produce better outcomes.

Whereas, Perceived ease of use refers to the extent to which an individual believes that using the technology will require minimal effort.

According to TAM, when users perceive a technology as useful and easy to use, they develop positive attitudes toward it, which subsequently influence their behavioural intention and actual usage. Over the years, TAM has become one of the most widely applied theoretical models in information systems, e-governance, digital transformation, artificial intelligence adoption, public administration, and communication technology research.

Recent studies have extended the model by incorporating additional constructs such as trust, perceived risk, facilitating conditions, social influence, and communication effectiveness, particularly in studies involving AI-enabled public services (Venkatesh et al., 2022; Chatterjee et al., 2024).

Relationship of TAM to the Study

The Technology Acceptance Model is highly relevant to this study because the successful application of Artificial Intelligence in Nigeria's population census depends largely on the willingness of both census officials and citizens to accept and use AI-supported technologies. AI applications such as biometric verification, facial recognition, Geographic Information Systems (GIS), satellite mapping, machine learning, and automated data verification can only achieve their intended objectives if users perceive them as reliable, beneficial, transparent, and easy to understand.

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Strategic communication plays a critical role in strengthening these perceptions by educating citizens about the benefits of AI-assisted census systems, addressing concerns regarding privacy and data security, combating misinformation, and building public confidence in census operations. Consequently, TAM provides an appropriate theoretical lens for explaining how communication strategies can enhance perceived usefulness and ease of use, thereby increasing public acceptance and participation in AI-enabled population census exercises in Nigeria.

Diffusion of Innovations (DOI) Theory

The **Diffusion of Innovations (DOI) Theory** was developed by **Everett M. Rogers (1962)** and extensively revised in subsequent editions of his seminal work, *Diffusion of Innovations*, with the fifth edition published in **2003**. The theory explains how new ideas, technologies, and innovations spread through members of a social system over time.

According to Rogers, the adoption of an innovation depends largely on five perceived attributes:

- **Relative Advantage** – the extent to which the innovation is perceived as better than existing methods.
- **Compatibility** – the degree to which the innovation aligns with users' values, experiences, and needs.
- **Complexity** – how easy or difficult the innovation is to understand and use.
- **Trialability** – the extent to which users can experiment with the innovation before full adoption.
- **Observability** – the visibility of the innovation's benefits to potential adopters.

The theory also identifies five adopter categories: innovators, early adopters, early majority, late majority, and laggards. Rogers emphasizes that communication channels, opinion leaders, social networks, and change agents are central to accelerating innovation adoption within society.

The Diffusion of Innovations Theory has been extensively applied in studies involving information technology adoption, e-government services, digital governance, healthcare innovations, agricultural extension, communication campaigns, and Artificial Intelligence implementation (Greenhalgh et al., 2020; Dearing & Cox, 2018).

Relationship of DOI Theory to the Study

The Diffusion of Innovations Theory is particularly relevant because Artificial Intelligence represents an emerging technological innovation within Nigeria's population census administration. The extent to which AI technologies become integrated into census activities depends not only on their technical capabilities but also on how effectively they are communicated, understood, accepted, and adopted by government institutions, census personnel, and the general public.

Strategic communication serves as the principal mechanism through which awareness is created, misconceptions are corrected, trust is developed, and citizens are persuaded to embrace AI-enabled census processes. Through effective media campaigns, community engagement, stakeholder consultations, digital communication platforms, and interpersonal communication, information about AI-supported census innovations can spread across diverse populations and encourage wider acceptance.

The theory therefore explains how communication facilitates the diffusion of AI technologies throughout the Nigerian census system, ultimately leading to greater public participation, improved data quality, enhanced transparency, and more accurate and reliable population census outcomes.

DISCUSSION

COMBINED EFFECT OF ARTIFICIAL INTELLIGENCE AND STRATEGIC COMMUNICATION ON ENHANCING THE CREDIBILITY, TRANSPARENCY, AND EFFECTIVENESS OF POPULATION CENSUS DATA COLLECTION IN NIGERIA

The integration of Artificial Intelligence (AI) and strategic communication provides a comprehensive approach to addressing the longstanding challenges associated with population census administration in Nigeria. While AI strengthens the technical aspects of census operations through intelligent automation, data validation, and digital monitoring, strategic communication complements these capabilities by fostering public awareness, trust, stakeholder engagement, and voluntary participation. Together, these two components create a census system that is more credible, transparent, efficient, and widely accepted by citizens.

Enhancing the Credibility of Population Census Data

The credibility of census data depends on both the technical accuracy of the enumeration process and the level of public confidence in the institutions responsible for conducting the census. AI improves credibility by minimizing human errors, detecting duplicate registrations through biometric verification, validating data in real time, and identifying inconsistencies using machine learning algorithms. Technologies such as Geographic Information Systems (GIS), satellite imagery, facial recognition, and predictive analytics further ensure that all households and settlements are accurately identified and counted.

However, technological improvements alone are insufficient if citizens distrust the census process. Strategic communication addresses this challenge by educating the public about how AI technologies function, explaining the purpose of data collection, assuring citizens of data confidentiality, and countering misinformation. Through coordinated media campaigns, community engagement, stakeholder consultations, and multilingual messaging, communication professionals help build confidence in AI-

supported census operations. Consequently, the combination of AI and strategic communication strengthens both the technical and social legitimacy of census outcomes, leading to more credible demographic statistics (Russell & Norvig, 2021; Chatterjee et al., 2024; Salaudeen & Daranijo, 2026).

Promoting Transparency and Accountability in Census Administration

Transparency is essential for public acceptance of census results, particularly in Nigeria where previous census exercises have often been criticized for allegations of manipulation, political interference, and inflated population figures. AI enhances transparency by providing real-time monitoring of field activities, automated audit trails, digital dashboards, geospatial tracking of enumerators, and electronic verification of census records. These technologies make it easier to detect irregularities, monitor operational progress, and ensure accountability throughout the census process.

Strategic communication reinforces transparency by maintaining continuous dialogue between census authorities and the public. Regular updates through television, radio, newspapers, social media, community meetings, and official digital platforms ensure that citizens remain informed about census procedures, timelines, technological innovations, and safeguards protecting personal information. Open communication also enables government agencies to respond promptly to public concerns, clarify misconceptions, and demonstrate institutional accountability. Together, AI and strategic communication create an open and transparent census environment that promotes integrity and public confidence (Greenhalgh et al., 2020; Oyesomi & Fasakin, 2022; Benedict, 2026).

Improving Operational Effectiveness and Efficiency

AI substantially improves the operational efficiency of population census exercises by automating repetitive tasks, accelerating data collection, validating responses instantly, and reducing the time required for data processing and analysis. Machine learning algorithms can identify anomalies within large datasets, while AI-powered mobile applications enable enumerators to capture, verify, and transmit information electronically from the field. These innovations reduce operational costs, minimize paperwork, shorten reporting timelines, and improve overall productivity.

Strategic communication complements these technological advancements by ensuring that all stakeholders—including enumerators, government agencies, community leaders, development partners, and citizens—understand their respective roles during the census exercise. Well-planned communication campaigns facilitate training, coordination, public sensitization, and stakeholder collaboration, thereby reducing resistance and encouraging smooth implementation. The synergy between AI-driven automation and effective communication ultimately enhances the operational effectiveness of census administration by ensuring both technical efficiency and widespread public cooperation (Maslej et al., 2024; Venkatesh et al., 2022; Salaudeen & Daranijo, 2026).

Increasing Public Trust, Participation, and Acceptance of Census Technologies

One of the greatest challenges facing population census administration in Nigeria is low public trust, which often results in reluctance to participate, misinformation, and resistance to census officials. AI-supported technologies can improve data quality, but their success depends on citizens' willingness to cooperate. Strategic communication plays a crucial role in creating awareness about the benefits of AI-enabled census systems, addressing fears relating to surveillance, cybersecurity, privacy, and algorithmic bias, and promoting informed public participation.

Communication strategies such as community mobilization, engagement with religious and traditional leaders, multilingual campaigns, digital outreach, and interactive feedback mechanisms encourage citizens to participate actively in the census process. When people understand that AI is being used to enhance fairness, reduce fraud, and improve national planning, they are more likely to trust the process and provide accurate information. Consequently, the integration of AI and strategic communication fosters higher participation rates, improves data completeness, and strengthens the legitimacy of census outcomes (Hallahan et al., 2020; Oyesomi & Fasakin, 2022; Chatterjee et al., 2024).

Supporting Evidence-Based Governance and Sustainable National Development

The ultimate objective of integrating AI and strategic communication into population census administration is to produce high-quality demographic data that can support effective governance and sustainable development. AI-generated census data are generally more accurate, timely, and comprehensive; while strategic communication ensures that the public actively supports and participates in the data collection process. Together, they produce reliable population statistics that provide a sound basis for policymaking, infrastructure development, healthcare planning, educational provision, employment generation, disaster management, electoral delimitation, and equitable resource allocation.

Furthermore, the integration of these two approaches contributes to digital governance by strengthening institutional capacity, promoting transparency, improving public service delivery, and increasing citizens' confidence in government initiatives. As Nigeria continues to modernize its public administration systems, the combined application of AI and strategic communication offers a sustainable framework for conducting future population censuses that are credible, transparent, efficient, and internationally comparable (United Nations, 2020; Russell & Norvig, 2021; Benedict, 2026).

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By and large, the combined application of Artificial Intelligence and strategic communication provides a powerful framework for transforming population census administration in Nigeria. AI enhances technical efficiency by improving data accuracy, verification, automation, and operational monitoring, while strategic communication promotes public awareness, trust, transparency, and participation. Their integration not only strengthens the credibility and effectiveness of census data collection but also supports evidence-based governance, equitable resource allocation, and sustainable national development. Consequently, adopting both AI technologies and strategic communication strategies is essential for achieving a modern, transparent, and reliable population census system in Nigeria.

ROLES OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN IMPROVING THE ACCURACY AND RELIABILITY OF POPULATION CENSUS DATA IN NIGERIA:

One of the most significant contributions of Artificial Intelligence (AI) to population census administration is its ability to improve the accuracy of data collected during enumeration. AI-powered technologies such as biometric verification, facial recognition, and machine learning algorithms, satellite imagery, Geographic Information Systems (GIS), and computer vision enable census authorities to identify duplicate registrations, verify household locations, detect omitted settlements, and reduce human errors during field operations. These technologies support real-time validation of census information, ensuring that only authentic and verifiable records are captured. In Nigeria, where previous census exercises have been affected by undercounting, over counting, and political controversies, AI-driven verification systems can substantially improve data precision and minimize manipulation. Recent studies argue that integrating AI into census operations enhances demographic mapping, strengthens household identification, and produces more reliable population estimates for evidence-based policymaking (Russell & Norvig, 2021; Sani et al., 2025; Benedict, 2026). AI significantly strengthens the reliability of census data by automating data cleaning, validation, anomaly detection, and consistency checks throughout the census process. Machine learning algorithms can rapidly identify inconsistencies, incomplete records, duplicate entries, and suspicious response patterns that might otherwise escape manual verification. AI also enables continuous monitoring of field activities, allowing supervisors to detect irregularities and intervene promptly before errors compromise the quality of census data. Furthermore, predictive analytics and automated quality assurance systems improve consistency across different regions by applying standardized validation procedures, thereby reducing variations caused by human judgment. Scholars have noted that AI-supported data processing not only accelerates census operations but also enhances the dependability of demographic statistics required for national planning, resource allocation, healthcare delivery, educational development, and electoral representation (Maslej et al., 2024; Sani et al., 2025; Benedict, 2026).

Beyond improving data quality, AI contributes to more transparent and efficient census administration by enabling real-time monitoring, digital supervision, automated reporting, and evidence-based decision-making. AI-powered dashboards allow census managers to monitor enumerators' activities, track coverage, detect operational gaps, and respond quickly to emerging challenges during fieldwork. Integration of AI with national digital identity systems, geospatial databases, and secure digital platforms further reduces opportunities for data manipulation while strengthening institutional accountability. When supported by effective strategic communication, these technological capabilities also improve public confidence by demonstrating that census data are collected, verified, and managed using objective and transparent procedures. Consequently, AI-supported census systems foster greater citizen participation, increase trust in official population statistics, and provide government with more credible demographic data for sustainable development planning (Chatterjee et al., 2024; Iroche, 2024; Benedict, 2026).

THE INFLUENCE OF STRATEGIC COMMUNICATION ON PUBLIC AWARENESS, TRUST, AND PARTICIPATION IN NIGERIA'S POPULATION CENSUS EXERCISE

Strategic communication plays vital roles in the followings:

Enhances public awareness and understanding of the census exercise:

Strategic communication educates citizens about the objectives, importance, procedures, and benefits of the population census. Through coordinated use of mass media, social media, community outreach, religious institutions, and local languages, census authorities can effectively disseminate accurate information to diverse populations. Increased public awareness reduces ignorance and encourages citizens to recognize the census as a national development exercise rather than a political activity. Studies have shown that well-designed communication campaigns significantly improve public knowledge and preparedness for census participation (Oyesomi & Fasakin, 2022; Daramola & Oloruntoba, 2023; Salaudeen & Daranijo, 2026).

Builds public trust and confidence in census administration:

Effective communication promotes transparency by clearly explaining how census data will be collected, protected, processed, and utilized. It also addresses public concerns relating to data privacy, political manipulation, and the confidentiality of personal information. By providing timely, consistent, and credible information, strategic communication strengthens citizens' confidence in government institutions and the National Population Commission, thereby increasing the legitimacy and acceptance of census

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outcomes. Recent studies emphasize that institutional transparency and continuous stakeholder engagement are critical determinants of public trust in government-led data collection exercises (Hallahan et al., 2020; Oyesomi & Fasakin, 2022; Chatterjee et al., 2024).

Increases citizens' participation in census activities:

Public participation in population censuses largely depends on effective communication before, during, and after enumeration. Strategic communication motivates individuals and communities to cooperate with census officials by highlighting the direct benefits of accurate population data for infrastructure development, healthcare, education, employment, and equitable resource allocation. Community mobilization, interpersonal communication, and collaboration with traditional and religious leaders further encourage participation among hard-to-reach populations. Research indicates that communication campaigns significantly improve citizens' willingness to participate in census exercises and reduce non-response rates (Greenhalgh et al., 2020; Oyesomi & Fasakin, 2022; Salaudeen & Daranijo, 2026).

Combats misinformation and promotes inclusive census participation:

The widespread use of digital media has increased the risk of misinformation and false narratives surrounding census exercises. Strategic communication helps counter misinformation by providing accurate, timely, and evidence-based information through trusted communication channels. It also promotes inclusiveness by tailoring messages to different linguistic, cultural, educational, and geographical groups, ensuring that marginalized and vulnerable populations are adequately informed and encouraged to participate. Consequently, effective communication minimizes public skepticism, reduces resistance, and contributes to a more credible, transparent, and successful population census (UN DESA, 2020; Oyesomi & Fasakin, 2022; Salaudeen & Daranijo, 2026).

METHODOLOGY

This study adopted a **descriptive survey research design**. The descriptive survey design is considered appropriate because it enables the researcher to collect quantitative data from a representative sample of respondents to examine the relationship between Artificial Intelligence, strategic communication, and the accuracy and reliability of population census data in Nigeria. The design also allows for the description of respondents' opinions, perceptions, experiences, and attitudes regarding the adoption of AI technologies and communication strategies in census administration without manipulating the study variables.

The study was conducted in **Nigeria**, a country located in West Africa and administratively divided into **36 states and the Federal Capital Territory (FCT), Abuja**. Nigeria comprises six geopolitical zones: North-East, North-West, North-Central, South-East, South-South, and South-West. As Africa's most populous nation, Nigeria has experienced persistent controversies regarding the credibility and reliability of its population census exercises, making it an appropriate setting for investigating how Artificial Intelligence and strategic communication can enhance census accuracy and public confidence.

The target population comprised professionals and stakeholders directly involved in population data management and public communication in Nigeria. Specifically, the population included staff of the **National Population Commission (NPC)**, **National Bureau of Statistics (NBS)**, selected officials from the **National Identity Management Commission (NIMC)**, communication professionals, ICT specialists, data analysts, and selected academic researchers in communication, demography, and information technology.

Table 1: The estimated study population was 1,350 respondents, distributed as follows:

Category	Estimated Population
National Population Commission (NPC) Staff	520
National Bureau of Statistics (NBS) Staff	280
National Identity Management Commission (NIMC) Staff	180
ICT/AI Professionals	170
Communication Professionals	120
Academic Researchers	80
Total	1,350

Source: Field report (2026)

Accordingly, the study adopted a sample size of **309 respondents** using the **Taro Yamane (1967)** sample size determination formula.

The study employed a **multi-stage sampling technique**. First, **purposive sampling** was used to select relevant institutions because they are directly involved in census administration, demographic data management, strategic communication, and AI implementation. Secondly, **stratified sampling** was employed to group respondents according to their professional categories.

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Finally, **simple random sampling** was used to select respondents from each stratum, thereby ensuring equal opportunity for participation and improving the representativeness of the sample.

The primary instrument for data collection was a **structured questionnaire** titled: "**Artificial Intelligence and Strategic Communication for Population Census Questionnaire (AISCPQ)**" consisting of **two sections**: **Section (A)**: Demographic characteristics of respondents (gender, age, education, profession, years of experience, and institution). **Section (B)**: Statements measuring viz: AI technologies in census administration; Strategic communication practices; Public trust and participation; Census data accuracy; Census data reliability; Transparency and operational effectiveness.

To ensure **content and face validity**, the questionnaire was submitted to experts in **Communication and Multimedia Design, Demography, Artificial Intelligence, Public Administration, and Measurement and Evaluation**. Their observations regarding clarity, relevance, language, structure, and adequacy of the questionnaire items were incorporated before the final administration of the instrument.

A pilot study was conducted among **30 respondents** who possessed characteristics similar to those of the study participants but were excluded from the main study. The internal consistency of the instrument was determined using **Cronbach's Alpha reliability coefficient**.

Table 2: The reliability coefficients obtained were:

Variable	Cronbach's Alpha
Artificial Intelligence	0.88
Strategic Communication	0.91
Public Trust	0.86
Census Accuracy	0.89
Census Reliability	0.90
Overall Reliability	0.89

Source: Field report (2026)

Since the overall reliability coefficient exceeded the recommended threshold of **0.70**, the instrument was considered reliable for the study.

The researcher administered the questionnaires through a combination of **physical distribution and electronic (Google Forms) administration** to enhance coverage across Nigeria's six geopolitical zones. Necessary permissions were obtained from participating institutions before data collection commenced. Respondents were informed of the purpose of the study, and participation was entirely voluntary.

DATA ANALYSES AND INTERPRETATION

Data collected were coded and analyzed using the **Statistical Package for the Social Sciences (IBM SPSS), Version 29**. The analysis involved: **Frequency counts and percentages** to describe respondents' demographic characteristics and answer the research objectives.

Table 3: Demographic Characteristics of Respondents

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	182	58.9
	Female	127	41.1
	Total	309	100.0
Age (Years)	20–30	52	16.8
	31–40	103	33.3
	41–50	92	29.8
	51 years and above	62	20.1
	Total	309	100.0
Highest Educational Qualification	Bachelor's Degree	64	20.7
	Master's Degree	133	43.0
	Doctorate Degree (PhD)	74	23.9

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Variable	Category	Frequency (f)	Percentage (%)
	Professional Certification/Others	38	12.3
	Total	309	100.0
Professional Category	National Population Commission (NPC) Staff	119	38.5
	National Bureau of Statistics (NBS) Staff	64	20.7
	National Identity Management Commission (NIMC) Staff	41	13.3
	ICT/AI Professionals	39	12.6
	Communication Professionals	28	9.1
	Academic Researchers	18	5.8
	Total	309	100.0
Years of Professional Experience	1–5 years	61	19.7
	6–10 years	97	31.4
	11–15 years	86	27.8
	Above 15 years	65	21.0
	Total	309	100.0
Institution	National Population Commission (NPC)	119	38.5
	National Bureau of Statistics (NBS)	64	20.7
	National Identity Management Commission (NIMC)	41	13.3
	ICT/AI Organizations	39	12.6
	Communication Organizations	28	9.1
	Universities/Research Institutes	18	5.8
	Total	309	100.0

Source: Field Survey, 2026

Interpretation

Table 3 presents the demographic characteristics of the 309 respondents who participated in the study on harnessing Artificial Intelligence and strategic communication for accurate and reliable population census data in Nigeria.

The gender distribution indicates that **182 respondents (58.9%) were male**, while **127 respondents (41.1%) were female**. This suggests that male respondents constituted the majority of the study participants. Nevertheless, the inclusion of a substantial proportion of female respondents demonstrates that the study captured perspectives from both genders, thereby enhancing the representativeness of the findings.

Regarding age, the largest proportion of respondents, **103 (33.3%)**, were between **31 and 40 years**, followed by **92 respondents (29.8%)** aged **41–50 years**. Respondents aged **51 years and above** accounted for **62 (20.1%)**, while those aged **20–30 years** were **52 (16.8%)**. These findings indicate that the majority of participants were within the economically active and professionally experienced age brackets, suggesting that respondents possessed sufficient maturity and practical experience to provide informed opinions on the adoption of Artificial Intelligence and strategic communication in census administration.

With respect to educational qualifications, **133 respondents (43.0%)** possessed a **Master's degree**, representing the highest proportion. This was followed by **74 respondents (23.9%)** with **Doctorate (PhD) degrees**, **64 respondents (20.7%)** with **Bachelor's degrees**, and **38 respondents (12.3%)** holding **professional certifications or other qualifications**. The findings reveal that most respondents were highly educated, implying that they possessed the academic background and professional competence necessary to understand issues relating to Artificial Intelligence, strategic communication, and population census management.

The professional distribution shows that **119 respondents (38.5%)** were staff of the **National Population Commission (NPC)**, constituting the largest category. This was followed by **64 respondents (20.7%)** from the **National Bureau of Statistics (NBS)**, **41 respondents (13.3%)** from the **National Identity Management Commission (NIMC)**, **39 respondents (12.6%)** who were **ICT/AI professionals**, **28 respondents (9.1%)** who were **communication professionals**, and **18 respondents (5.8%)** who were **academic researchers**. This distribution demonstrates that the study drew respondents from key institutions and professional groups directly involved in population data management, digital technologies, and strategic communication, thereby ensuring the relevance and credibility of the responses.

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In terms of professional experience, **97 respondents (31.4%)** had **6–10 years** of experience, representing the largest group. This was followed by **86 respondents (27.8%)** with **11–15 years** of experience, **65 respondents (21.0%)** with **more than 15 years**, and **61 respondents (19.7%)** with **1–5 years** of experience. These findings indicate that the majority of respondents had accumulated considerable professional experience, suggesting that they were well-positioned to provide informed assessments regarding the integration of Artificial Intelligence and strategic communication into Nigeria's population census system.

Finally, the institutional affiliation of respondents closely reflects the professional categories. The largest proportion, **119 respondents (38.5%)**, were drawn from the **National Population Commission**, followed by the **National Bureau of Statistics (64; 20.7%)**, the **National Identity Management Commission (41; 13.3%)**, **ICT/AI organizations (39; 12.6%)**, **communication organizations (28; 9.1%)**, and **universities/research institutes (18; 5.8%)**.

Statements Measured in the Questionnaire

The table below shows the statements measured under each construct in the questionnaire.

Table 4: Statements Measured in the Questionnaire

S/N	Variable	Code	Statements Measured
A. Artificial Intelligence Technologies in Census Administration			
1	AI Technologies	AI1	Artificial Intelligence can significantly improve the accuracy of population census data.
2		AI2	AI technologies reduce errors during population enumeration.
3		AI3	AI-based biometric verification can minimize duplicate census records.
4		AI4	AI enhances the speed of census data processing and analysis.
5		AI5	AI technologies improve the overall efficiency of census administration in Nigeria.
B. Strategic Communication Practices			
6	Strategic Communication	SC1	Effective communication increases public awareness about population census exercises.
7		SC2	Strategic communication helps to reduce misinformation regarding the population census.
8		SC3	Community engagement enhances citizens' willingness to participate in the census.
9		SC4	Digital media platforms are effective channels for census communication campaigns.

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S/N	Variable	Code	Statements Measured
10		SC5	Strategic communication strengthens public confidence in census activities.
C. Public Trust and Participation			
11	Public Trust & Participation	PT1	Citizens are more willing to participate in the census when they trust the process.
12		PT2	Public confidence in government institutions influences census participation.
13		PT3	Transparency in census operations increases public trust.
14		PT4	Assurance of data privacy encourages citizens to provide accurate information.
15		PT5	Public participation improves the credibility of census outcomes.
D. Census Data Accuracy			
16	Census Data Accuracy	CDA1	AI technologies improve the accuracy of household identification during census enumeration.
17		CDA2	Automated data validation reduces inconsistencies in census records.
18		CDA3	AI-supported geospatial mapping improves census coverage.
19		CDA4	The integration of AI minimizes undercounting and overcounting during census exercises.
20		CDA5	AI contributes significantly to generating accurate population statistics.
E. Census Data Reliability			
21	Census Data Reliability	CDR1	AI improves the reliability of census information collected in Nigeria.
22		CDR2	AI-supported verification enhances

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S/N	Variable	Code	Statements Measured
			confidence in census results.
23		CDR3	Reliable census data are essential for effective national planning.
24		CDR4	AI technologies reduce manipulation of census data.
25		CDR5	AI enhances consistency in census data collection across different regions.
F. Transparency and Operational Effectiveness			
26	Transparency and Operational Effectiveness	TOE1	AI improves transparency in population census administration.
27		TOE2	AI enables real-time monitoring of census activities.
28		TOE3	AI enhances accountability among census officials.
29		TOE4	AI-supported census systems improve operational effectiveness.
30		TOE5	Integrating AI with strategic communication promotes credible and transparent census administration in Nigeria.

Source: Field Survey, 2026

Interpretation

Table 4 presents the measurement items used to assess the key constructs of the study on harnessing Artificial Intelligence (AI) and strategic communication for accurate and reliable population census data in Nigeria. The questionnaire comprised **30 structured statements**, organized into **six major variables**, and with each variable measured using **five items** on a five-point Likert scale ranging from Strongly Agree to Strongly Disagree.

The first construct, **Artificial Intelligence Technologies in Census Administration**, was measured using five statements that assessed respondents' perceptions of AI's capacity to improve census accuracy, reduce enumeration errors, prevent duplicate records through biometric verification, accelerate data processing, and enhance the overall efficiency of census administration. These items were designed to evaluate the perceived usefulness of AI technologies in modernizing Nigeria's population census system.

The second construct, **Strategic Communication Practices**, examined the role of communication in promoting successful census implementation. The statements measured respondents' views on the effectiveness of communication in increasing public awareness, reducing misinformation, encouraging community participation, utilizing digital media platforms for census campaigns, and strengthening public confidence in census activities.

The third construct, **Public Trust and Participation**, focused on the relationship between public confidence and citizens' willingness to participate in census exercises. The items assessed whether trust in the census process, confidence in government institutions, transparency, assurance of data privacy, and public participation contribute to the credibility and acceptance of census outcomes.

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The fourth construct, **Census Data Accuracy**, evaluated respondents' perceptions of AI's contribution to improving the quality of census data. Specifically, the statements measured the effectiveness of AI in household identification, automated data validation, geospatial mapping, reducing undercounting and over counting, and producing accurate population statistics for national planning. The fifth construct, **Census Data Reliability**, measured respondents' opinions regarding the consistency, dependability, and credibility of census information generated through AI-supported technologies. The items assessed AI's role in improving data reliability, strengthening confidence in census results, supporting national planning through reliable demographic information, reducing data manipulation, and ensuring consistency in data collection across different geographical locations.

Finally, the sixth construct, **Transparency and Operational Effectiveness**, assessed the extent to which AI and strategic communication can improve transparency and accountability in census administration. The statements examined AI's ability to promote transparent census operations, facilitate real-time monitoring, enhance accountability among census officials, improve operational efficiency, and foster credible and transparent population census administration through the integration of AI and strategic communication.

Ethical Considerations

The study adhered to established ethical standards for social science research. Respondents were adequately informed about the purpose of the study before participation. **Informed consent** was obtained from all participants, and participation was voluntary. Respondents were assured of **anonymity, confidentiality, and the exclusive use of the information provided for academic purposes**. Participants were also informed of their right to withdraw from the study at any stage without any consequences. The researcher ensured that no identifying information capable of revealing respondents' identities was disclosed throughout the study.

SUMMARY OF STUDY FINDINGS

Based on the study research, the following findings **were drawn, that:**

1. Artificial Intelligence technologies significantly improve the accuracy and reliability of population census data in Nigeria:

The study found that the adoption of AI technologies—including biometric verification, machine learning, Geographic Information Systems (GIS), satellite imagery, automated data validation, and predictive analytics—has substantial potential to reduce human errors, eliminate duplicate records, improve household identification, enhance real-time data verification, and accelerate census data processing. Consequently, AI contributes to producing more accurate, reliable, and credible population statistics for national planning.

2. Strategic communication significantly enhances public awareness, trust, and participation in population census exercises:

The findings revealed that well-planned strategic communication through mass media, digital platforms, community engagement, multilingual campaigns, and collaboration with religious and traditional leaders increases citizens' understanding of the census, combats misinformation, strengthens confidence in census authorities, and encourages greater public participation. Effective communication was therefore found to be a critical determinant of successful census implementation.

3. The integration of Artificial Intelligence and strategic communication produces a stronger combined effect on census credibility, transparency, and operational effectiveness than either approach alone:

The study established that while AI improves the technical efficiency of census administration, strategic communication enhances public acceptance and cooperation. Their combined application strengthens transparency, accountability, public confidence, operational efficiency, and the overall credibility of census outcomes, resulting in a more effective and trustworthy population census system.

4. Public trust, institutional transparency, and data privacy assurance are essential factors influencing citizens' acceptance of AI-enabled census technologies:

The study found that citizens are more willing to participate in AI-supported census exercises when government institutions communicate openly, guarantee the confidentiality of personal information, address privacy and cybersecurity concerns, and maintain transparent census procedures. Without these measures, the benefits of AI adoption may not be fully realized.

5. The successful modernization of Nigeria's population census requires coordinated investment in AI infrastructure, institutional capacity building, and evidence-based communication strategies:

The findings showed that sustainable implementation of AI-enabled census systems depends not only on technological innovation but also on adequate funding, digital infrastructure, continuous training of census personnel, supportive policy frameworks, ethical AI governance, and strategic communication programmes capable of promoting nationwide awareness, stakeholder collaboration,

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and public confidence. Together, these factors provide the foundation for a credible, transparent, and internationally comparable census system capable of supporting evidence-based governance and sustainable national development.

CONCLUSION

The study concludes that harnessing Artificial Intelligence alongside strategic communication provides a viable pathway for modernizing Nigeria's population census system, as their integration will not only improve the quality, credibility, and reliability of census data but also strengthen evidence-based policymaking, equitable resource allocation, effective public service delivery, and sustainable national development. Consequently, adopting AI-driven technologies supported by robust strategic communication frameworks is essential for achieving a transparent, credible, efficient, and internationally comparable population census system in Nigeria.

RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are made:

- 1. The Federal Government of Nigeria, through the National Population Commission (NPC), should institutionalize the adoption of Artificial Intelligence technologies in future population census exercises:** AI-powered technologies such as biometric verification, Geographic Information Systems (GIS), satellite imagery, machine learning, automated data validation, and predictive analytics should be integrated into census planning, enumeration, monitoring, and data processing. This will improve the accuracy, reliability, transparency, and timeliness of census data while minimizing human errors, duplication, and opportunities for data manipulation.
- 2. The National Population Commission and relevant government agencies should develop and implement comprehensive strategic communication programmes before, during, and after census exercises:** These programmes should utilize mass media, social media, community-based communication, multilingual campaigns, traditional and religious leaders, and other trusted communication channels to increase public awareness, combat misinformation, strengthen public trust, and encourage active citizen participation in census activities across all regions of Nigeria.
- 3. Government should strengthen institutional capacity by investing in digital infrastructure, professional training, and ethical AI governance frameworks for census administration:** Continuous capacity-building programmes should be organized for census officials, ICT professionals, and communication practitioners to enhance their competence in AI-enabled census technologies, while robust legal and regulatory frameworks should be established to safeguard data privacy, cybersecurity, transparency, accountability, and the ethical use of Artificial Intelligence during census operations.
- 4. Government, research institutions, development partners, and technology organizations should promote sustained collaboration in advancing AI-driven census modernization and public engagement initiatives:** Such partnerships should support continuous research, innovation, pilot testing of emerging AI applications, public education campaigns, and the development of evidence-based policies that integrate Artificial Intelligence with strategic communication to produce credible, reliable, and internationally comparable population census data for effective governance and sustainable national development.

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