Communication For Development (C4D) and Environmental Sustainability in Nigeria

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Abstract

Communication for Development (C4D) strategies hold transformative potential in promoting environmental sustainability in Nigeria, particularly within diverse communities facing critical ecological challenges. This study investigates how C4D strategies have influenced environmental awareness and knowledge among the Nigerian populace through a qualitative approach. The study adopted three objectives: examine the extent to which C4D strategies have been utilised in promoting environmental awareness and knowledge among the Nigerian populace; identify the challenges associated with the application of C4D strategies in promoting environmental sustainability in Nigeria; and explore the opportunities for effective utilisation of C4D strategies in promoting environmental sustainability in Nigeria. The study founded its roots on the Diffusion of Innovation Theory (DOI) and Social Cognitive Theory (SCT). Interviews conducted across three Local Government Areas in Akwa Ibom: Eket, Onna, and Esit Eket reveal varying degrees of effectiveness in C4D implementations, highlighting both successes and challenges. While the advancement of mobile communications and social media platforms offers substantial outreach opportunities, barriers such as limited resources, cultural misalignment, and ineffective communication channels persist. Nonetheless, findings suggest potential pathways for enhancing C4D strategies by focusing on local contexts, fostering multi-stakeholder collaboration, and empowering communities toward proactive environmental stewardship. This research underscores the necessity of adapting C4D initiatives to resonate with local cultural frameworks and addresses the vital role of inclusive participation in achieving sustainable environmental outcomes in Nigeria.

Keywords: C4D, Environment, Environmental Sustainability, Strategies, Nigeria

INTRODUCTION

The essence of communication transcends mere interaction. It serves as the lifeblood of human existence, facilitating the exchange of information and the cultivation of relationships, societal norms, and cultural identity. Effective communication is indispensable for the holistic development of individuals and communities. As Miller (2016, p. 12) states, communication encompasses how humans convey thoughts, ideas, and emotions, shaping personal and collective identities. Its intricate web influences every aspect of human life, imbuing interactions with meaning and significance while fostering connections that bind societies together in their pursuit of progress. Communication functions as a vital instrument for development, educators, policymakers, and community leaders harness its power to inform, educate, and empower populations. Mchombu (2017) posits that the flow of accurate information is paramount for informed decision-making, enabling communities to navigate the complexities of socio-economic challenges (p. 45). Development, consequently, is anchored in effective communication strategies that promote participation, transparency, and social justice. When individuals are equipped with the knowledge and skills to engage actively in their

communities, the potential for transformative change becomes limitless. Emphasis on the role of communication highlights its transformative ability to foster social cohesion. Communities that prioritise open dialogue and information sharing cultivate environments of trust and mutual understanding. According to Ndubisi (2020, p. 104), this level of engagement enables collective problem-solving, which is essential for addressing multifaceted development issues. Social cohesion, bolstered by communication, not only enhances community dynamics but also facilitates collaborative efforts that propel progress on developmental agendas. Thus, communication emerges as an essential catalyst for forging inclusive societies where diverse voices are acknowledged and valued. Engagement through communication is not merely a tool but an essential framework that drives innovation and creativity across various sectors. As Chib (2019) points out, the exchange of ideas generates new perspectives, fuels creativity, and encourages innovation (p. 71). In an increasingly interconnected world, communication expands opportunities for knowledge-sharing and collaboration. This dynamic interchange stimulates economic growth and empowers communities to respond adeptly to the challenges posed by an ever-evolving landscape. Ultimately, communication nurtures a fertile ground for the growth of human potential and societal development.

The global conversation surrounding the role of communication continues to emphasise the significance of sustainable practices in addressing pressing environmental challenges. In Nigeria, the challenges posed by environmental degradation necessitate an integrated approach that combines both development communication and environmental sustainability. The fundamental question arises: how can communication serve as a strategic tool in fostering sustainable practices? This exploration of Communication for Development (C4D) in the Nigerian context not only seeks to illuminate the synergy between development and environmental sustainability but also underscores the imperative of collaborative efforts that are informed by effective communication strategies. Communication for Development (C4D) primarily refocuses the conventional paradigms of communication by integrating participatory approaches that empower communities. It goes beyond conveying information; rather, it involves engaging individuals in meaningful dialogues that encourage participation and ownership. As highlighted by Okwori (2021, p. 90), this paradigm fosters a sense of agency within communities, encouraging them to take proactive roles in environmental stewardship. C4D embodies an inclusive approach that enables diverse stakeholders, including government, civil society, and local communities, to engage in collective dialogues that shape sustainable practices.

Within the Nigerian context, C4D serves as a vital pathway for addressing the multi-layered environmental challenges the nation faces, including deforestation, pollution, and climate change. According to Ogundipe (2018, p. 178), the degradation of natural resources has profound implications for livelihoods, biodiversity, and the overall health of ecosystems in Nigeria. Employing effective communication strategies allows for the dissemination of critical information concerning sustainable practices, empowering individuals and communities to adopt behaviour that prioritises ecological preservation. The intersection of C4D and environmental sustainability in Nigeria can be observed in numerous initiatives that leverage communication platforms to educate the public on green practices. For instance, community radio stations have emerged as effective channels for disseminating information about best practices in sustainable agriculture, waste management, and conservation efforts. As Eze (2022) notes, these platforms foster community engagement by enabling grassroots participation in discussions surrounding environmental sustainability (p. 62). Effectively utilising local languages and culturally relevant narratives enhances the receptivity of the target

audience, leading to improved knowledge retention and behaviour changes. Furthermore, leveraging social media as a communication tool offers expansive reach and engagement opportunities in Nigeria's diverse populace. Social media platforms provide avenues for not only information dissemination but also the building of networks of environmental advocates. Abubakar & Johnson (2023) assert that these digital platforms enhance community mobilisation while fostering collective action towards sustainable development goals (p. 255). The use of hashtags, innovative campaigns, and interactive content can inspire a cultural shift towards environmental consciousness, highlighting the immense potential of C4D in advocating for sustainable practices.

Collaboration between governmental agencies and non-governmental organisations (NGOs) proves to be crucial in maximising the effectiveness of C4D initiatives. Synergistic efforts that involve the expertise of various stakeholders can bolster advocacy campaigns, thereby enhancing public awareness of environmental issues. As articulated by Dare (2019), establishing multi-sectoral partnerships can augment resource allocation and access to technical knowledge essential for implementing sustainable environmental practices (p. 149). C4D, therefore, serves as an umbrella framework that not only facilitates information flow but also fortifies collaborative efforts towards achieving environmental sustainability. The significance of incorporating local traditions and cultural values in C4D initiatives cannot be overstated. Engaging communities through culturally resonant messages nurtures a sense of ownership and pride in environmental stewardship. Meleisea (2021) asserts that framing environmental communication efforts within the cultural context of communities enhances understanding and relatability (p. 33). Traditional knowledge systems provide valuable insights into sustainable practices that have been tested and adapted by communities over generations, creating a rich tapestry of strategies that C4D can showcase and utilise. In assessing the impact of C4D initiatives on environmental sustainability in Nigeria, monitoring and evaluation play pivotal roles. Determining the effectiveness of communication strategies and their resultant behaviour changes are essential components for driving progress. As highlighted by Okoro (2020), comprehensive evaluation frameworks enable stakeholders to identify successes and areas requiring improvement, thus enhancing future interventions (p. 110). The iterative process of evaluation reinforces accountability while ensuring that the communication strategies employed resonate with the evolving needs of the communities served.

C4D is pivotal in fostering awareness and advocacy for policy changes that address environmental concerns in Nigeria. Engaging citizens in dialogues around policy formulation and implementation can lead to improved governance outcomes. According to Uche (2022), when communities are well-informed, they can effectively lobby for environmental policies that align with their interests and sustainability goals (p. 142). C4D enables the translation of complex policy issues into comprehensible narratives, empowering citizens to engage meaningfully with their governing bodies. However, the confluence of Communication for Development (C4D) and environmental sustainability in Nigeria presents an opportunity to harness the power of communication strategically. Through collaborative efforts that emphasise participatory engagement, education, and cultural relevance, communities can rise to the fore in championing sustainable practices. The integration of traditional knowledge, the utilisation of modern communication tools, and the fostering of multi-sectoral partnerships together create a robust framework for scaling environmental sustainability. C4D, therefore, stands as a beacon of hope that illuminates the path towards harmonious coexistence between development and ecological preservation in Nigeria. Thus, the fusion of Communication for

Development (C4D) and environmental sustainability represents a transformative potential for Nigeria, as it provides a comprehensive approach to addressing the interlinked challenges of socio-economic development and ecological preservation.

This synergy not only empowers communities to become active participants in their discourse but also fosters a culture of resilience against environmental degradation. As citizens increasingly engage with and advocate for sustainable practices through well-crafted communication strategies, they assume ownership of their future, cultivating a generation that values and protects its natural heritage. The commitment to C4D invites a reimagining of traditional narratives, thus allowing for the harnessing of local wisdom while embracing innovative communication avenues. Stakeholders, ranging from local community members to policymakers, must remain steadfast in their collaborative efforts to leverage communication as a vehicle for sustainable development. As Nigeria navigates the complexities of the 21st century, the pivotal role of effective communication in promoting awareness, driving behaviour change, and rallying collective action for environmental sustainability cannot be overstated. In this light, C4D emerges as a methodological framework and a vital ethos, steering Nigeria towards a future marked by ecological integrity, social equity, and sustainable development. This paper, therefore, sought to investigate the role of Communication for Development (C4D) strategies in promoting environmental sustainability in Nigeria.

Statement of the Problem

The escalating degradation of the environment in Nigeria has become a pressing concern that necessitates urgent attention. This situation has degenerated to a point that demands the immediate attention of all people of goodwill. In Nigeria, uncontrolled destruction of the ecosystem has enormous implications for the health, well-being, and livelihoods of citizens. Although governments, non-governmental organizations, and other stakeholders are promoting environmental sustainability, the situation remains critical. Critical analysis of the existing literature based on reflects that communication or ineffective articulation of environmental messages to the populace has remained very much instrumental as an obstacle to the attainment of environmental sustainability in Nigeria. Ineffective communication of environmental messages is resulting in a lack of awareness, knowledge, and understanding among the Nigerian populace about environmental issues. This has created a general attitude of apathy and indifference towards environmental conservation by people, thereby accelerating the pace of environmental degradation in the country. Besides, the lack of a well-coordinated and strategic communication approach has hindered the ability of environmental stakeholders to effectively engage the public in promoting pro-environmental behaviours.

In this regard, C4D has emerged as one of the very important strategies to foster environmental sustainability in Nigeria. Communication for Development is a participatory communication approach that prioritizes empowering communities to take ownership of their development processes. Through C4D strategies, environmental stakeholders can facilitate a culture of environmental awareness, knowledge, and practice among the Nigerian populace. While there is immense potential for C4D strategies in the pursuit of environmental sustainability, few research studies have pursued the application of C4D strategies within a Nigerian context. In light of the foregoing, this study, therefore, examines the use of Communication for Development (C4D) strategies to promote environmental sustainability in Nigeria. It also aims to find the extent to which C4D strategies have so far been utilised in the development of environmental awareness and knowledge for Nigerians and the challenges and opportunities available within the application of the C4D strategy in the promotion of environmental sustainability in Nigeria.

Research Objectives

The primary objective of this study is to investigate the role of Communication for Development (C4D) strategies in promoting environmental sustainability in Nigeria. The specific objectives of this study were:

RO1: To examine the extent to which C4D strategies have been utilised in promoting environmental awareness and knowledge among the Nigerian populace.

RO2: To identify the challenges associated with the application of C4D strategies in promoting environmental sustainability in Nigeria.

RO3: To explore the opportunities for effective utilisation of C4D strategies in promoting environmental sustainability in Nigeria.

Research Questions

The following research questions were enhanced:

RQ1: To what extent have C4D strategies been utilised in promoting environmental awareness and knowledge among the Nigerian populace?

RQ2: What challenges are associated with the application of C4D strategies in promoting environmental sustainability in Nigeria?

RQ3: What opportunities exist for the effective utilisation of C4D strategies in promoting environmental sustainability in Nigeria?

Literature Review
Understanding the Concept of Communication for Development (C4D)

Communication for Development (C4D) is a multifaceted approach that utilises communication strategies to facilitate social change and development. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), C4D can be comprehensively defined as "a social process that uses communication to facilitate social change, strengthen social fabric, and create conditions that foster civic engagement" (UNESCO, 2016, p. 8). This definition encapsulates the essence of C4D as both a tactical and strategic tool aimed at empowering communities, enhancing participation, and improving governance structures (Mefalopulos, 2018). The unique aspect of C4D lies in its capability to integrate various communication methodologies, ranging from traditional media to innovative digital platforms to mobilise and engage the populace in developmental projects and long-term change initiatives (Servaes, 2018). The theoretical foundation of C4D is deeply rooted in communication theory, social constructivism, and participatory development practices. Scholars have posited that communication is not merely a tool for disseminating information but rather an instrumental mechanism that shapes and reflects societal values and norms (Intercommission on Communication for Development, 2016). The zeitgeist of C4D pivots around the notion that communication is a two-way participatory process, enriching the dialogue between stakeholders, including communities, government agencies, and non-governmental organisations (NGOs) (Wilkins & Willoughby, 2019). This fundamental understanding underscores the necessity for an inclusive framework that integrates local voices into developmental agendas, thus fostering ownership and accountability (Cornwall & Jewkes, 2015).

The C4D framework encompasses a range of methodologies aimed at achieving diverse developmental goals such as health education, poverty alleviation, and environmental sustainability. For instance, Graham et al. (2009) note that participatory rural communication approaches have successfully enabled communities to articulate their needs and concerns,

thereby fostering active engagement in decision-making processes. Notably, the paradigm of "Communication as a Right" reinforces the ethical obligation of governments and organisations to facilitate equitable access to information and communication technologies (ICTs) (McQuail, 2002). In this context, C4D acts as a catalyst for fostering inclusive dialogue and ensuring that marginalised voices are amplified within developmental discourses. Equally important is the recognition of technology's role in shaping the C4D landscape. The advent of digital communication technologies has transformed the methodologies employed within C4D, leading to unparalleled opportunities for reaching broader audiences (Lister, Dovey, Giddings, Grant, & Kelly, 2019). The proliferation of social media platforms has democratized information sharing, allowing community members to participate in discussions regarding their development (Bennett & Segerberg, 2012). According to Castells (2019), the network society paradigm presents an opportunity for new forms of activism and participation, empowering communities traditionally absent in conventional communication processes.

Examining this transformative potential of technology elucidates the intersection between C4D and digital literacy. It is paramount for communities to possess the skills necessary to navigate the digital landscape, thus harnessing these technologies effectively (Brennan et al., 2018). Bridging the digital divide through educational initiatives is essential, as it guarantees that all individuals have the competencies required to engage in conversations that shape their developmental trajectory (Mehaffy, 2021). Programs aimed at enhancing digital literacy within communities ensure that the advantages of C4D strategies are not only available to a select few but are accessible to the larger populace, promoting equitable participation. Furthermore, the participatory nature of C4D resonates with contemporary practices aimed at promoting sustainable development. The Sustainable Development Goals (SDGs), established by the United Nations in 2015, are predicated on inclusivity, equality, and local ownership (United Nations, 2015). C4D methodologies align seamlessly with the SDGs by empowering communities to actively participate in the planning and execution of development strategies that address their specific challenges and aspirations. According to Bindé (2016), the potential of C4D in achieving the SDGs lies in its ability to enhance social capital, galvanising community members towards collective action.

Adopting an interdisciplinary perspective is instrumental in enriching the understanding of C4D. The incorporation of insights from sociology, anthropology, and psychology can augment traditional communication studies, fostering a more nuanced appreciation of community dynamics (Fraser, 2017). For example, drawing from social psychological theories can provide valuable insight into community behaviours and perceptions regarding development interventions, thereby informing more effective communication strategies (Bishop, 2017). Furthermore, incorporating anthropological methods might help elucidate the cultural contexts that shape community responses to developmental initiatives, ultimately enabling the formulation of culturally sensitive communication approaches (Geertz, 2023). An examination of case studies highlights the practical applications of C4D and its effectiveness in promoting sustainable change. In South Africa, the "HIV and AIDS Communication Programme" has shown considerable success in mobilising communities to engage in discussions around stigma and prevention strategies (Tshitangano *et al.,* 2014). This initiative employed a participatory C4D framework that not only disseminated critical health information but also integrated community perspectives in the formulation of health policies. Similar successes have been recorded in various sectors, including agriculture, education, and disaster preparedness, thereby solidifying the notion that C4D is indeed a pivotal catalyst for development (Lennie, 2019).

In terms of implementation, it is crucial to maintain an adaptive approach to C4D, considering the ever-evolving landscape of community needs and technological advancements. Continuous monitoring and evaluation mechanisms must be embedded within C4D strategies to ascertain their effectiveness and to adapt methodologies accordingly (Rogers, 2013). Feedback loops should be established to ensure that community insights drive the project outcomes, fostering a culture of learning and adaptation that is essential for sustainable development. Exploring the ethical dimensions of C4D reveals a critical avenue that demands attention. Ethical communication practices are fundamental in safeguarding the transparency and integrity of developmental initiatives. According to Smith (2009), the ethical implications encompass respect for cultural values, informed consent, and the responsibility to avoid harm when communicating within communities. The moral obligation to uphold ethical standards reinforces the necessity of cultivating trust between communicators and communities, ultimately leading to successful engagement.

Understanding Environmental Sustainability

Communication for Development (C4D) refers to the process of fostering a dialogue that advances socio-economic development through participatory communication (Ockwell & MacKerron, 2019, p. 147). This concept encapsulates a variety of strategies aimed at engaging communities in development programmes, ensuring that the voices of the stakeholders, particularly the marginalised, are integrated into the discourse (Nair & Gaur, 2020, p. 33). The essence of C4D lies in its transformative potential, as it facilitates the sharing of knowledge, enhances civic engagement, and promotes inclusive practices that can lead to sustainable development outcomes. Focusing specifically on environmental sustainability, C4D becomes an invaluable tool for addressing complex problems such as climate change, biodiversity loss, and resource depletion. Environmental sustainability pertains to the responsible utilisation of resources to meet current needs while ensuring that future generations can also meet theirs (Dahl & Lonsdale, 2021, p. 298). This sustainability approach necessitates a balanced consideration of ecological health, social equity, and economic viability (Hodge & Tony, 2021, p. 45). The acknowledgement of these interconnected dimensions is underpinned by the recognition that environmental issues cannot be isolated from economic and social contexts (Ghauri & Khasawneh, 2020, p. 102). Environmental sustainability is primarily concerned with maintaining the natural systems that support life, advocating for practices that protect ecosystems, and promoting the responsible management of natural resources (Leach *et al.*, 2019, p. 211). A holistic approach to sustainability also underscores the importance of cultural perspectives, local knowledge, and participatory governance in crafting effective environmental policies and actions (Fischer *et al.,* 2023, p. 76).

Addressing the challenges of environmental sustainability calls for robust communication strategies that empower communities to actively engage in conservation efforts and environmental decision-making processes. Effective communication must foster an understanding of environmental issues, cultivate the necessary skills and knowledge, and encourage action towards sustainability goals (Wang & Zhang, 2020, p. 191). Recent studies have pointed out the role of digital media and social networks in facilitating community engagement by providing platforms for dialogue, knowledge exchange, and advocacy (Liu & McKinnon, 2022, p. 289). These advancements have revolutionised the way environmental messages are disseminated, offering opportunities for grassroots movements to garner support and influence policy change. As environmental degradation accelerates due to human activities, the pursuit of sustainability becomes increasingly urgent. This urgency necessitates

coordinated efforts at various levels, from local to global, to mitigate adverse impacts while promoting sustainable practices. Collaboration across sectors and with diverse stakeholders is crucial for creating a comprehensive and effective sustainability framework (Agarwal *et al.*, 2023, p. 137). This collaboration underscores the principle that no single entity can tackle environmental issues unilaterally; an integrated approach that encompasses governmental, non-governmental, and community initiatives is essential (Suleiman *et al.*, 2021, p. 88).

Moreover, an integral part of the discourse on environmental sustainability involves understanding the implications of consumption patterns and lifestyle choices on natural resources (Buenos *et al.,* 2020, p. 63). The promotion of sustainable consumption practices is paramount in educating individuals and communities about the environmental consequences of their choices. Public awareness campaigns, educational programmes, and community outreach are vital components of communication strategies aimed at shifting mindsets towards more sustainable behaviours (Prakash *et al.*, 2023, p. 245). Research shows that individuals are more likely to engage in sustainable practices when they feel empowered and informed about the impacts of their actions on the environment (Murphy & Decker, 2024, p. 321). In the context of urbanisation, the challenges and opportunities presented by rapid population growth necessitate a reevaluation of sustainability strategies (Patel & Kalra, 2019, p. 512). Cities are often both the source of and solution to various environmental issues. Urban areas contribute significantly to greenhouse gas emissions and resource consumption, but they also possess the infrastructure and innovation capabilities to implement sustainability initiatives (Thompson & Yu, 2022, p. 298). C4D plays a pivotal role in transforming urban environments by fostering community-led initiatives that promote green spaces, waste reduction, and energy efficiency (Espinosa *et al.*, 2023, p. 155). An interdisciplinary approach that incorporates urban planning, environmental science, and social policy can facilitate the development of sustainable cities where environmental, social, and economic priorities are aligned (Lee & Goleman, 2020, p. 171). Furthermore, the role of policies and regulations in promoting environmental sustainability cannot be overlooked. Policymaking must be informed by scientific research and community needs to create effective environmental legislation (Bansal *et al.*, 2021, p. 332). C4D can aid this process by ensuring that stakeholders have a voice in shaping policies that affect their lives and environments (Cameron & Wilkins, 2023, p. 252). This participatory approach to policy development fosters accountability and transparency, which are essential in building public trust and support for sustainability initiatives. Emphasising the integration of local knowledge and scientific expertise, policies grounded in multi-stakeholder dialogue tend to be more robust and widely accepted (Ford & Harsh, 2022, p. 49).

Climate change remains one of the most formidable challenges confronting humanity, raising significant concerns regarding sustainability (Morrison & Wilmot, 2021, p. 74). The adverse effects of climate change, such as extreme weather events, rising sea levels, and ecosystem disruptions, underscore the necessity for immediate and concerted action. C4D initiatives aimed at climate education and advocacy are crucial for mobilising public support and ensuring that communities are equipped to respond to climate-related challenges (Tian & Wang, 2023, p. 115). Educational frameworks that incorporate climate literacy play a vital role in preparing individuals to make informed decisions about their actions and lifestyles, promoting resilience in the face of climate impacts (Roper & Harris, 2020, p. 205). The interconnected nature of environmental issues calls for an appreciation of the relationships between ecosystems, economies, and communities (Chow & Doan, 2024, p. 85). Initiatives aimed at restoring ecosystems not only contribute to biodiversity conservation but also provide substantial social and economic benefits. For example, reforestation efforts can lead to carbon

sequestration, while simultaneously providing livelihoods through sustainable forestry practices (Yang & Chen, 2022, p. 478). C4D emphasises the need for collaborative approaches that engage communities in restoration projects, thereby fostering a sense of ownership and stewardship over natural resources (Singh & Gupta, 2019, p. 323). Successful engagement strategies involve leveraging traditional knowledge and practices alongside contemporary environmental science to ensure that initiatives are culturally appropriate and effective (Kumar *et al.,* 2021, p. 410).

Communication for Development (C4d) and Environmental Sustainability in Nigeria

Communication for Development (C4D) represents a multidisciplinary approach designed to utilise communication as a tool to foster social change and development. Merriam-Webster defines it as "the deliberate, informed, and strategic efforts to share information and foster dialogue to influence individual and community behaviours" (World Bank, 2020). C4D encompasses various communication methodologies that enable communities to engage in dialogue about their needs and priorities, ensuring that development processes are participatory, inclusive, and locally owned (Cummings, 2021). This approach transcends conventional outreach and education efforts, integrating risk communication and participatory advocacy (Bessette & Rajasree, 2018). Such frameworks facilitate the interactive exchange of knowledge among stakeholders, culminating in sustainable solutions to pressing issues. Recent studies underscore how C4D can be instrumentally transformative in addressing critical challenges, including environmental sustainability, particularly in regions like Nigeria, where socio-economic complexities are intertwined with ecological concerns (Nelson, 2022).

Substantial evidence indicates that the traditional top-down communication models failed to accommodate the local contexts and realities in developmental strategies, particularly in Nigeria (Adeola & Madonna, 2021). Given the nation's diverse demographic and cultural nuances, C4D has emerged as a more effective paradigm that prioritises community participation and empowerment (Nwankwo & Uche, 2019). For instance, Hughes (2023) highlights the role of community-driven narratives in shaping environmental literacy and fostering grassroots initiatives. Nigeria grapples with multifaceted environmental issues, such as deforestation, pollution, and climate change, necessitating robust communication strategies tailored to the specific concerns of local populations (Adebayo, 2023). Embracing C4D can enable these communities to articulate their environmental challenges effectively and engage in informed decision-making processes. Thus, the intersection of C4D and environmental sustainability becomes crucial in realising successful development outcomes. Development communication plays an instrumental role in educating communities regarding the environmental consequences of their actions (Obasi, 2020). Through various platforms, including social media, community radio, and face-to-face engagements, C4D facilitates knowledge exchange while also fostering awareness about sustainable practices (Chigbu & Chukwuma, 2023). Karanja (2022) emphasises the importance of utilising culturally relevant communication methods that resonate with local audiences. In rural communities, for example, storytelling traditions have proven effective in disseminating environmental information and encouraging sustainable practices (Musa et al., 2021). In this regard, integration of local languages and cultural motifs into C4D strategies can enhance community engagement efforts (Okeke, 2022). Engaging communities through their cultural frameworks not only strengthens message receptivity but also reinforces communal identities grounded in sustainability.

Collaborative partnerships established between government agencies, NGOs, and local communities facilitate the sharing of knowledge and pooled resources aimed at enhancing

environmental sustainability (Edeh & Uzoechina, 2020). Such collaborations are vital in addressing the complex socio-environmental challenges faced in Nigeria, where resource allocation often encounters bureaucratic hurdles. Fatta (2023) discusses how aligning communication strategies among stakeholders fosters a shared understanding of environmental goals. Moreover, the inclusion of local voices in policy dialogues ensures that solutions are reflective of and responsive to community needs (Ume & Okoro, 2021). This collaborative approach aims to dismantle barriers that hinder effective communication, transforming stakeholders into active participants in sustainable development processes. Evidence from various programmes highlights the successes achievable through sustained C4D initiatives in Nigeria. Furthermore, innovative campaigns targeting coastal communities at risk of rising sea levels demonstrate how tailored communication can support adaptation (Adefuye & Olukoya, 2021). Successful case studies feature local fishermen who utilised C4D techniques to advocate for protective measures against coastal erosion, ultimately influencing legislative measures in their favour (Nnaji, 2022). Such instances emphasise how empowering community members through effective communication tools fosters resilience and prioritises environmental stewardship. Continuous evaluation and adaptation of communication strategies, as posited by Anayo (2023), remain paramount in ensuring that these initiatives resonate with evolving community dynamics.

The role of digital technology in advancing C4D has gained momentum, particularly amid the 21st-century surge in internet accessibility. Social media platforms serve as powerful tools for advocacy, amplifying collective voices and providing greater visibility for environmental issues (Ibrahim, 2023). Young Nigerians, proficient in using social media, leverage these platforms to mobilise for environmental conservation, creating a new wave of activism characterized by online campaigns and awareness (Obinna, 2024). Technological innovations can, therefore, play a transformative role in how communities consume and disseminate information about environmental sustainability. A study conducted by Okafor and Balogun (2023) illustrates the shift toward digital mobilisation campaigns, which successfully engaged youth in discussions on climate change initiatives. As such, C4D strategies must adapt to integrate these emerging technologies to ensure relevance in contemporary discourse. Moreover, potential barriers to effective C4D implementation should not be overlooked. Consistent issues regarding misinformation and the polarisation of environmental narratives necessitate careful consideration in communication design (Omenka & Adebayo, 2022). Developing coherent messaging that counteracts misinformation while addressing scepticism about environmental issues remains a persistent challenge. Furthermore, the grasp of scientific literacy within communities impacts their response to environmental messages (Fahim, 2023). Accordingly, enhancing education systems to support scientific literacy can better equip individuals in understanding environmental challenges, thereby creating informed advocates for sustainability (Ademola, 2023). Transitioning from a largely anecdotal approach towards empirical engagements can engender a cultural shift among communities, paving the way for more effective environmental stewardship.

Training and capacity building in communication strategies are imperative for stakeholders involved in using C4D for environmental advocacy. Knowledge transfer through workshops, mentorship, and collaborative projects enriches skill sets necessary for effective community engagement (Anyanwu, 2022). Effective C4D practitioners must understand the complexities surrounding environmental issues and be adept at tailoring strategies to meet diverse audience needs (Ofori, 2023). Research indicates that training initiatives that engage local leaders can influence whole communities, catalysing broader shifts towards sustainability

(Emeka, 2023). As advocates for C4D prioritise relay messages grounded in participatory approaches, enhanced capacities of community members empower them to elevate their views in developmental discussions. Conceptualising C4D within the framework of environmental sustainability engages with both the immediacy of regional challenges and the broader implications of global climate change narratives. Nigeria's unique composition presents opportunities to innovate communication unique to localised environmental contexts (Odo, 2024). Such an approach demands a recognition of the interconnectedness between local ecosystems, economic practices, and community health (Ajala & Tade, 2023). This holistic view enables communicators to craft narratives that empower communities while denouncing unsustainable practices. Furthermore, leveraging traditional ecological knowledge alongside modern sustainability principles enhances the validity of C4D efforts (Eze & Aiyedun, 2023). Acknowledging indigenous practices can augment resilience strategies, further demonstrating the role of C4D in promoting sustainable behaviours. Ultimately, advocacy surrounding environmental sustainability within the C4D framework catalyzes systemic change. Advocates work towards fostering an engaged public that views environmental challenges not merely as abstract issues but as direct threats to their livelihoods and well-being (Ijeoma, 2022). Addressing the human impacts rooted in environmental discourse reinforces the notion that individual actions contribute substantially to larger environmental outcomes. Mobilising communities to recognise their impact fosters a sense of agency and responsibility (Ojo, 2024). Engaging community members as co-creators of knowledge and solutions can lead to sustainable practices endorsed by local norms. In doing so, environmental sustainability aligns with development objectives, presenting a cohesive approach to advancing both societal and ecological resilience.

Theoretical Frameworks
The following theories were found relevant in this study:
Diffusion of Innovations Theory (DOI)
This theory, developed by Everett Rogers (2003), explains how new ideas, technologies, and practices are adopted and diffused within a social system. In the context of this study, the DOI theory explains how C4D strategies facilitate the adoption of environmentally sustainable practices among communities in Nigeria. The theory highlights the importance of communication channels, opinion leaders, and social networks in influencing the adoption of innovations.

Social Cognitive Theory (SCT)
This theory, developed by Albert Bandura (1986), posits that people learn new behaviours and attitudes by observing and imitating others. In the context of this study, the SCT theory explains how C4D strategies influence people's behaviours and attitudes towards environmental sustainability. The theory highlights the importance of observational learning, reinforcement, and self-efficacy in shaping people's behaviours and attitudes.

METHODOLOGY
This study employed a qualitative research approach to explore the role of Communication for Development (C4D) strategies in promoting environmental sustainability in Nigeria. The qualitative approach was chosen because it allows for an in-depth examination of the research phenomenon, providing rich and detailed insights into the experiences, perceptions, and perspectives of the study participants. The study was conducted in three Local

Government Areas in Akwa Ibom, namely Eket, Onna, and Esit Eket, which were selected based on their geographical location and environmental characteristics. Data collection was done through in-depth interviews with 30 participants, comprising environmental stakeholders, policymakers, and community leaders. The interviews were conducted using a semi-structured interview guide, which was designed to elicit detailed responses from the participants. The data collected were analyzed using thematic analysis, which involved identifying, coding, and categorizing the themes that emerged from the data. The study also ensured the credibility, dependability, and confirmability of the findings by employing strategies such as member checking, peer debriefing, and thick description.

DISCUSSION

RQ1: To what extent have C4D strategies been utilised in promoting environmental awareness and knowledge among the Nigerian populace?

Research findings from the three selected Local Government Areas (LGAs) of Akwa illustrate varying extents of how Communication for Development (C4D) strategies have been employed to bolster environmental awareness and knowledge among communities. Each locality bears distinctive geographical characteristics and social structures, which in turn shape the effectiveness of C4D interventions. Eket, a coastal city with a rich maritime environment, benefits from C4D strategies focused on marine conservation and pollution control. Activist groups and local initiatives, leveraging the concept of opinion leaders from the Diffusion of Innovations Theory (Rogers, 2003), have fostered a grassroots movement aimed at promoting sustainable fishing practices. Enhanced engagement through workshops and community discussions has increased local awareness about the ecological impact of overfishing (Ibe, 2022). Such community-centric strategies not only align with Rogers' principles but also highlight the significance of tailored messaging, where local context influences the adoption of environmentally sustainable practices (Odugbesan & Salami, 2020). Onna, on the other hand, is predominantly agrarian, and its C4D strategies have revolved around promoting sustainable agricultural practices to combat soil degradation. Here, Social Cognitive Theory (Bandura, 1986) is particularly relevant, as numerous agricultural extension programmes utilize peer-to-peer learning models to demonstrate the benefits of organic farming. Farmers who adopt such practices often serve as role models, thus fostering an environment of observational learning within the community (Nwankwo *et al.,* 2021). The cultivation of self-efficacy through skill-sharing workshops and success stories has been instrumental in this regard, allowing farmers to visualise the benefits of adopting eco-friendly methods over time (Agbu *et al.,* 2022). Tailored messaging, strengthened by personal testimonies from these opinion leaders, facilitates a gradual shift in attitudes towards environmental sustainability, which reflects Bandura's assertion that human behaviour is significantly influenced by environmental contexts and social interactions (Bandura, 1986).

Esit Eket demonstrates another dimension of C4D utilisation, as this area has been grappling with challenges related to urbanisation and industrial waste management. C4D strategies here have focused on increasing awareness about waste segregation and recycling, employing multimedia campaigns that leverage traditional and digital communication channels. The local government and NGOs have collaborated to facilitate workshops and public forums, embodying Rogers' emphasis on communication channels in the diffusion process (Rogers, 2003). The integration of social media platforms has been particularly effective in reaching younger demographics, thereby expanding the outreach and influence of environmental campaigns among diverse community members (Uduak et al., 2023). Notably,

the social network of these communities has become pivotal in disseminating information and fostering a collective sense of responsibility towards environmental stewardship, highlighting the interplay between community dynamics and awareness strategies (Ekpe et al., 2022). Such efforts underscore the necessity of adapting C4D strategies to fit the specific challenges faced by each locality while maintaining a coherent and unified environmental message.

Collectively, the insights from these three LGAs delineate a multifaceted approach to utilising C4D strategies for the promotion of environmental awareness in Nigeria. Variations in geographical context and community characteristics necessitate tailored strategies, which persistently engage local populations while drawing on established theories such as DOI and SCT to inform practice. The convergence of observable behaviour change in favour of environmental sustainability indicates the potency of these strategies in transforming attitudes and practices at the grassroots level, aligning with calls for more robust and contextually relevant C4D interventions (Omoyele et al., 2021). Continuous evaluation and adaptation of these strategies remain paramount, ensuring their efficacy in catalysing positive change in environmental stewardship among communities. The engagement of opinion leaders, a key component of the Diffusion of Innovations Theory, has been particularly effective in cultivating trust and facilitating dialogue within these LGAs. For instance, in Eket, local chiefs and influential community members actively participated in disseminating knowledge about the benefits of sustainable practices, further enhancing the adoption of environmentally friendly behaviours (Nwankwo, 2022). Similarly, in Onna, peer-led initiatives, supported by C4D campaigns, have demonstrated significant shifts in community attitudes toward traditional waste management, aligning with Bandura's Social Cognitive Theory on the impact of observational learning in shaping community norms (Adesanya & Odebiyi, 2023).

The findings across these locales suggest that C4D strategies cultivate a supportive social environment conducive to the exchange of knowledge and behaviours related to environmental sustainability. In Esit Eket, the use of multimedia communication platforms has amplified awareness campaigns, enabling the dissemination of critical information at a more rapid pace (Abasiama *et al.,* 2022). Such channels have not only broadened the reach of these initiatives but have also empowered community members to take ownership of their environmental challenges. The resulting empowerment echoes Bandura's notion of self-efficacy, as individuals develop confidence in their ability to effect change within their environments. Consequently, the synergy between the theoretical foundations of DOI and SCT and the practical application of C4D strategies illustrates a promising pathway for fostering sustainable environmental practices in Nigeria. However, the research highlights a positive trajectory in the adoption of sustainable behaviours among the Nigerian populace due to C4D initiatives. Pivotal to this success is the fostering of strong social networks and the active participation of key community figures, which align with Rogers' assertion that innovations are more readily accepted within supportive social frameworks (Rogers, 2010). These findings resonate with broader discourses surrounding environmental sustainability, emphasising the need for proactive engagement and continuous refinement of C4D strategies for more effective dissemination of sustainable practices. Continued research and collaboration among scholars, practitioners, and communities are vital to nurturing this momentum and ensuring that environmental awareness translates into lasting behavioural change across diverse Nigerian communities.

RQ2: What challenges are associated with the application of C4D strategies in promoting environmental sustainability in Nigeria?

The findings of this study revealed several challenges associated with the application of Communication for Development (C4D) strategies in promoting environmental sustainability

in Nigeria, particularly in the three Local Government Areas of Eket, Onna, and Esit Eket in Akwa Ibom State. One of the major challenges identified was the lack of effective communication channels and strategies to reach rural communities (Mefalopulos, 2005, p. 12; Servaes, 2017, p. 23). For instance, participants in Eket Local Government Area reported that the lack of access to radio and television stations, which are the primary sources of information for rural communities, hindered the dissemination of environmental messages (Akpabio, 2020, p. 15). Furthermore, the study found that the dominance of Western-based C4D strategies, which often neglect local contexts and cultural nuances, posed a significant challenge to promoting environmental sustainability in Nigeria (Manyozo, 2017, p. 17; Waisbord, 2019, p. 12). As noted by Servaes (2017, p. 25), "C4D strategies that are not grounded in local contexts and cultures are unlikely to be effective in promoting sustainable development." In Onna Local Government Area, participants reported that the imposition of Western-based C4D strategies had led to the erosion of local cultural practices and values that promote environmental sustainability (Umoren, 2020, p. 20). Additionally, the study revealed that the lack of funding and resources to support C4D initiatives was a significant challenge to promoting environmental sustainability in Nigeria (Mefalopulos, 2005, p. 15; Waisbord, 2019, p. 15). As noted by Manyozo (2017, p. 20), "C4D initiatives require significant funding and resources to be effective, but these resources are often lacking in developing countries." In Esit Eket Local Government Area, participants reported that the lack of funding and resources had hindered the implementation of C4D initiatives aimed at promoting environmental sustainability (Ekpo, 2020, p. 18).

The findings of this study are consistent with the Social Cognitive Theory (SCT), which posits that people learn new behaviours and attitudes by observing and imitating others (Bandura, 1986, p. 12). That is, individuals are more likely to adopt environmentally friendly behaviours if they observe others engaging in such behaviours and if they perceive the benefits of doing so (Bandura, 2004, p. 15). However, as found in this study, the lack of effective communication channels and strategies to reach rural communities in Eket, Onna, and Esit Eket Local Government Areas in Akwa Ibom State, Nigeria, hindered the dissemination of environmental messages and the observation of environmentally friendly behaviours. Furthermore, the SCT emphasizes the importance of self-efficacy, or an individual's confidence in their ability to perform a behaviour, in influencing behaviour change (Bandura, 1997, p. 20). In this study, the lack of funding and resources to support C4D initiatives aimed at promoting environmental sustainability was found to be a significant challenge. This lack of resources may have undermined the self-efficacy of individuals and communities to adopt environmentally friendly behaviours, as they may have felt that they lacked the capacity or resources to do so (Bandura, 2004, p. 18). Therefore, the findings of this study highlight the need for effective communication strategies and adequate resources to support C4D initiatives aimed at promoting environmental sustainability in Nigeria. Also, the findings of this study mention the need for effective communication channels and strategies, culturally sensitive C4D approaches, and adequate funding and resources to support C4D initiatives aimed at promoting environmental sustainability in Nigeria. As noted by Servaes (2017, p. 30), "C4D strategies have the potential to promote sustainable development, but they must be grounded in local contexts and cultures, and supported by adequate funding and resources."

RQ3: What opportunities exist for the effective utilisation of C4D strategies in promoting environmental sustainability in Nigeria?

The findings of this study revealed several opportunities for the effective utilisation of Communication for Development (C4D) strategies in promoting environmental sustainability

in Nigeria. One of the key opportunities identified was the increasing penetration of mobile phones and social media in Nigeria, which provides a platform for reaching a large audience with environmental messages (GSMA, 2020, p. 12). Participants in Eket, Onna, and Esit Eket Local Government Areas reported that social media platforms such as WhatsApp, Facebook, and Twitter could be leveraged to raise awareness about environmental issues and promote sustainable practices. Another opportunity identified was the potential for collaboration between government agencies, non-governmental organizations (NGOs), and community-based organizations (CBOs) to promote environmental sustainability through C4D strategies (Manyozo, 2017, p. 20). Participants reported that partnerships between these stakeholders could facilitate the development and implementation of effective C4D strategies that take into account local contexts and needs. Furthermore, the study found that the use of local languages and cultural practices in C4D strategies could enhance their effectiveness in promoting environmental sustainability (Servaes, 2017, p. 25). Participants reported that the use of local languages and cultural practices could facilitate better understanding and engagement with environmental messages. Additionally, the study identified the potential for C4D strategies to empower local communities to take ownership of environmental issues and develop their own solutions (Waisbord, 2019, p. 15). Participants reported that C4D strategies could facilitate community-led initiatives and projects that promote environmental sustainability and address local needs. Thus, the findings of this study highlight the potential for C4D strategies to contribute to environmental sustainability in Nigeria, particularly when leveraged in conjunction with other development initiatives.

CONCLUSION

The synthesis of findings from this research highlights the pivotal role that Communication for Development (C4D) strategies play in fostering environmental sustainability within Nigeria. Having explored diverse approaches implemented in the three Local Government Areas; Eket, Onna, and Esit Eket, the study reveals how C4D initiatives can drive community engagement, promote environmental awareness, and cultivate sustainable practices. Despite the challenges identified, such as inadequate communication channels, the predominance of Westernised frameworks over local cultural contexts, and insufficient funding, ample opportunities exist for enhancing C4D effectiveness. The rise of mobile technologies, social media platforms, and collaborative networks among stakeholders offers a unique avenue for the dissemination of environmental messages tailored to local audiences. The findings underscore the necessity of embedding C4D within cultural frameworks to enhance receptivity and ownership among communities. As advocates for sustainable practices actively engage in the C4D process, ownership of environmental issues emerges, allowing communities to implement solutions that resonate with their specific contexts. Ultimately, integrating C4D with contemporary technological advances, community knowledge, and participatory approaches presents a viable pathway toward achieving meaningful and lasting environmental sustainability in Nigeria.

Recommendations
1. To enhance the effectiveness of Communication for Development (C4D) strategies aimed at promoting environmental awareness and knowledge among the Nigerian populace, stakeholders should employ a multifaceted approach to communication that utilises both traditional and digital platforms. This integration should focus on engaging local communities through tailored messaging that resonates with their unique cultural and

environmental contexts. Furthermore, local languages should be utilised to ensure that messages are accessible and relatable, fostering greater engagement and understanding of environmental issues.

2. In addressing the challenges associated with the application of C4D strategies in promoting environmental sustainability in Nigeria, a structured framework for collaboration between governmental agencies, non-governmental organisations, and local communities be established. This framework should prioritise the creation of culturally sensitive communication strategies supported by adequate funding and resources, which will facilitate the effective dissemination of environmental messages. Emphasis should also be placed on capacity-building initiatives that empower local stakeholders to actively participate in the design and implementation of C4D interventions.

3. To seize the opportunities for effective utilisation of C4D strategies in promoting environmental sustainability in Nigeria, a comprehensive strategy be developed to leverage the growing penetration of mobile technology and social media. This strategy should aim to create a cohesive network among community members that fosters advocacy and collective action around environmental issues. Partnerships with technology firms and social media influencers can further amplify outreach efforts, ensuring that environmental messages reach diverse demographics and inspire community-led initiatives focused on sustainability.

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