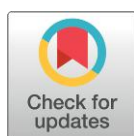


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Making grassroots people and the vulnerable digitally inclusive: the roles of nigerian libraries and librarians in perspectives

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ABSTRACT

Introduction: The population of vulnerable digital excluded are about 50 percent of the Nigeria population. **Objective:** The study examined the perception of librarians on how grassroots people and the vulnerable in Nigeria can be digitally inclusive. **Methodology:** Through a purely qualitative method, a survey research design was adopted using a sample of 25 librarians selected from five public libraries in five selected states in Southwest Nigeria. Data was collected through an open-ended survey prepared on Google Forms. **Results:** The findings of the study revealed that the grassroots people are the people living in the rural areas of the country while the vulnerable are those whom the governments and society have ignored or sidelined from having access to technologies, e-services, and or mobile services. The results also showed that libraries can play many roles in making the grassroots people and the vulnerable digitally inclusive by championing digital adoption programmes where the socially excluded are exposed to the use of various technologies and partnership with the communities to organise workshops and seminars where those who have been excluded digitally are included. Librarians can also play the role of teachers, teaching and exposing these digitally excluded to the use of technology and services thereby making them digitally included. Contents and language, network coverage and policies, and user barriers like illiteracy were identified as challenges confronting the grassroots people and vulnerable to becoming digitally inclusive in Nigeria. **Conclusion:** The uniqueness of this study comes from its emphasis on a topic that is seldom studied: digital inclusion for marginalised and grassroots communities, particularly in the Nigerian context.

KEYWORDS

Digital inclusion. Digital exclusion. Grassroots people. Librarians. Role of libraries.

Tornando as pessoas básicas e os vulneráveis digitalmente inclusivos: os papéis das bibliotecas e bibliotecários nigerianos em perspectivas

RESUMO

Introdução: A população vulnerável excluída digitalmente representa cerca de 50% da população da Nigéria. **Objetivo:** O estudo examinou a percepção dos bibliotecários sobre como as pessoas de base e os vulneráveis na Nigéria podem ser digitalmente inclusivos. **Metodologia:** Através de um método puramente qualitativo, foi adoptado um desenho de investigação de inquérito utilizando uma amostra de 25 bibliotecários

selecionados de cinco bibliotecas públicas em cinco estados selecionados no sudoeste da Nigéria. Os dados foram coletados por meio de uma pesquisa aberta elaborada no Google Forms. **Resultados:** Os resultados também mostraram que as bibliotecas podem desempenhar muitos papéis para tornar as pessoas de base e os vulneráveis digitalmente inclusivos, defendendo programas de adoção digital onde os socialmente excluídos são expostos à utilização de várias tecnologias e parcerias com as comunidades para organizar workshops e seminários onde aqueles que foram excluídos digitalmente estão incluídos. Os bibliotecários também podem desempenhar o papel de professores, ensinando e expondo estes excluídos digitalmente ao uso de tecnologia e serviços, tornando-os digitalmente incluídos. Os conteúdos e a língua, a cobertura e as políticas da rede e as barreiras dos utilizadores, como o analfabetismo, foram identificados como desafios que as pessoas comuns enfrentam e são vulneráveis para se tornarem digitalmente inclusivas na Nigéria. **Conclusão:** A singularidade deste estudo advém da sua ênfase num tema raramente estudado: a inclusão digital para comunidades marginalizadas e de base, particularmente no contexto nigeriano.

PALAVRAS-CHAVE

Inclusão digital. Exclusão digital. Pessoas de base. Bibliotecários. Papel das bibliotecas..

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1. INTRODUCTION

The use of information and communications technology (ICTs) to keep people alive and businesses operating is hastening the speed of digital transformation as government-imposed lockdowns and confinement measures are used to stop the spread of COVID-19. By 2021, the number of employees working remotely around the world is expected to double, according to current forecasts (Chavez Dreyfuss, 2020). Individuals are rapidly flocking to the Internet to work, communicate, socialise, consume, and enjoy themselves, increasing Internet traffic (OECD, 2020). Companies and industries have responded by digitising their product portfolios, core internal operations (such as back-office, production, and R&D processes), and supply-chain interactions to keep up with the trend (McKinsey & Company, 2020).

National and municipal governments are expanding their online services to include business registration, tax filing, birth certificates, and other kinds of identity (UN UNDESA, 2020b). Rapid digital transformation, which had already begun before the COVID-19 crisis, has accelerated during the pandemic, resulting in a greater possibility for digital inclusion. E-rapid commerce's expansion has resulted in new jobs and money-making opportunities, which have the potential to increase household income, lift people out of poverty and build the resilience of rural communities. Examples of these are evident in the following:

- In China, e-commerce is assisting in the revitalization of rural villages by providing rural producers with more market access.
- In Chile, the Ministry of Agriculture has created digital channels to promote the products of small-scale farmers.
- In Ghana, Agrocenta, a business-to-business e-commerce network, connects 10,000 farmers with buyers, allowing them to get a better price for their produce.

| 3

The digitisation of important governmental services has accelerated as a result of the contact limitation regulations established in response to the crisis. To satisfy the needs of approximately 1.6 billion children (more than 91 percent of pupils worldwide) affected by the COVID-19 problem, more than 90% of education ministries have established some sort of policy to boost digital and broadcast remote learning (UNICEF, 2020; United Nations, 2020a). Some governments promote learning continuity by airing curriculum information on the radio, while others have developed a programme to provide a dedicated education channel on digital television, satellite television, and mobile devices.

In many countries, the crisis has accelerated the adoption of eHealth, hastening the uptake and deployment of teleconsultations, electronic health records, and health workforce eLearning. The following are only a few examples:

- The Ministry of Health in Tanzania partnered with the Communication Regulatory Authority, the e-Government Authority, and all mobile network providers to give free information and calls to health professionals using a dedicated short code number 199 for COVID-19.
- There is also a COVID-19 Toll-Free Call Number 3262 in Nigeria.

Not only in governments' immediate response to COVID-19 but also as part of national recovery programmes, technology has played a significant role in promoting social protection delivery to benefit the most vulnerable. Governments have employed digital tools to expand social protection coverage and administer financial aid more efficiently (often in

partnership with the corporate sector and civil society organisations). For instance, there are examples from developing countries of which Nigeria is a part:

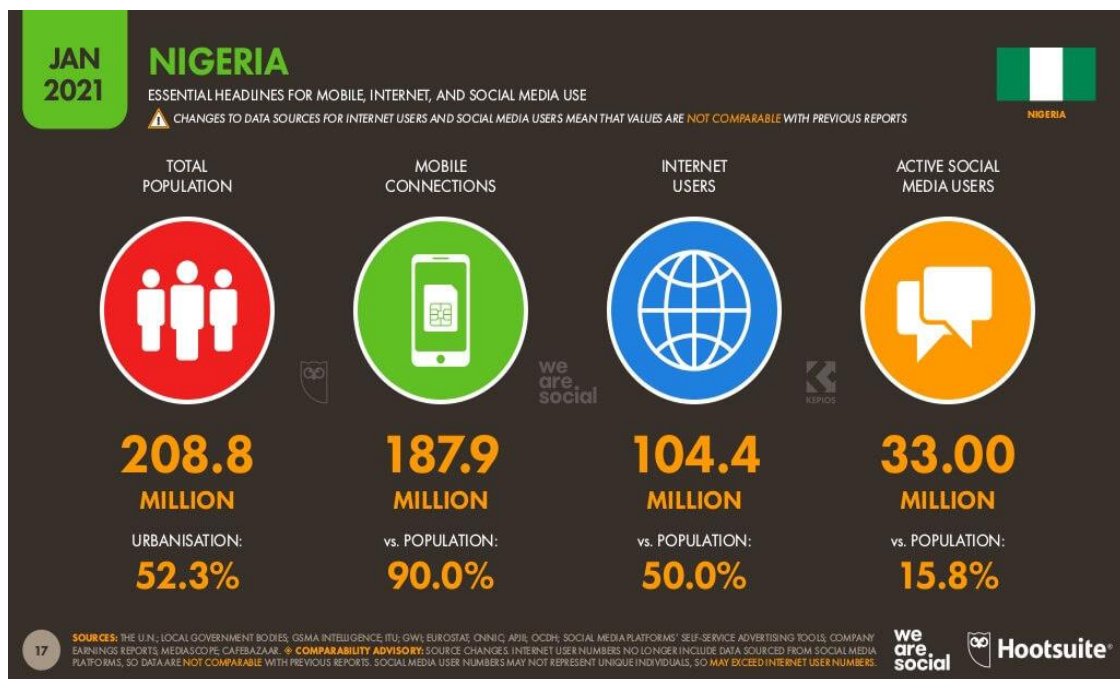
- The 'Novissi' digital social safety net programme in Togo gives monetary aid to disadvantaged informal labourers whose daily earnings are affected by the COVID-19 problem. Citizens register on their phones, and those who meet the requirements receive bi-monthly cash transfers equal to 30-35 percent of the minimum wage, paid directly into their mobile money accounts.
- In Bangladesh, the government announced a mobile-powered cash support initiative for 5 million pandemic-affected families in April 2020, in conjunction with the four main national mobile money companies.

Rapid digitalization will expedite the shift to digital finance by 2020. Digital tools (e.g., mobile money and e-wallets, crowdfunding, alternative credit scoring, and cross-border remittances, such as eNaira in Nigeria) have the potential to help underserved people and communities achieve financial inclusion, lower costs, and create new livelihood and market opportunities. M-Pesa in Kenya, eNaira in Nigeria, and Alipay in China are all well-known examples of mobile money (United Nations, 2021).

Without a doubt, technology dominates today's culture, and most of us believe in the narrative of quick and ever-changing technical discoveries that have transformed, or have the potential to revolutionise, the way we live and interact. Because technology can be a double-edged sword, this transformation may not be altogether positive. It can either narrow or widen societal divides. Perhaps we've already seen the advantages of digital inclusion in action. Individuals who are unable to take advantage of technology's benefits are disadvantaged, marginalised in society, and so digitally excluded in a scenario geared at correcting injustices. It's vital to remember that when we see e-in-everything, e-learning, e-services, e-this, and e-that, certain people are vulnerable, disregarded, and excluded. This is when the library comes in handy. Libraries must incorporate and transport these people in their services. Of course, leaving no one behind also means leaving no one offline (United Nations, 2021, p. 2); sadly, half of Nigeria's population, or 104.4 million people, lacks Internet connectivity (Data Reporter, 2021). In Nigeria, internet penetration reached 51.44 percent in 2021 and is expected to rise to 59.92 percent by 2026 (Gilbert, 2021).

Still in Nigeria, according to a report from Data Reporter (2021) shown in Figure 1, roughly half of the population uses the Internet and about 90% of the population owns a mobile phone. According to the report, Nigeria had a population of 208.8 million people in January 2021, with roughly 104.4 million of them using the Internet, giving it a mobile penetration rate of 50%. 93.3 percent used a mobile phone to access the Internet.

Figure 1. Essential headlines for mobile, internet, and social media use



Source: Digital Reporter (2021).

Similarly, there were 187.9 million mobile phone connections in Nigeria in January 2021. As seen in the figure, the number of mobile connections in the country increased by 17 million, or 10%, between January 2020 and January 2021 (Gilbert, 2021). Many Nigerians have multiple mobile connections, according to researchers, thus penetration numbers may appear larger than they are (Forenbacher *et al.*, 2019; Data Reporter, 2021; Ogunde, 2022). Furthermore, many of those phones are feature phones that may or may not be Internet-capable, which explains the lower Internet penetration rates.

It is evident that mobile connections are higher; nevertheless, we should not forget that most people in urban areas have five or six mobile lines. Internet users account for 50.0 percent of the Nigerian population on average, while active social media users account for 15.8 percent (Gilbert, 2021). If this is the case, where are the remaining 50% of Nigerian internet users, as well as the remaining 84.2 percent of social media users? They are the people living at the grassroots who do not have access, as well as the most vulnerable. Because of where they belong, they have been digitally excluded. However, if we want to follow the adage that "no one should be left behind," these people must be properly taken care of and carried along for digital inclusion to be complete (United Nations, 2021). The realities demand that libraries and librarians, who function as information gatekeepers or gateways, step forward to assist the poor and vulnerable who have been mostly excluded from the information society.

2. OBJECTIVES OF THE STUDY

The broad objective of the study was to examine the perception of librarians on how grassroots people and the vulnerable in Nigeria can be made to become digitally inclusive. The specific objectives were to:

1. Examine the perception of librarians on the grassroots people and vulnerable that need to be digitally included.

2. Determine the perception of librarians on the role of libraries in making the grassroots people and vulnerable digitally inclusive.
3. Determine the role of librarians in making the grassroots people and vulnerable digitally inclusive.
4. Identify barriers or challenges associated with making the grassroots and the vulnerable digitally inclusive based on the perception of librarians.

3. LITERATURE REVIEW

3.1 Digital inclusion and exclusion

Working with communities to solve challenges of opportunity, access, knowledge, and competence regarding using technology, particularly the internet, is what digital inclusion is all about. "Digital Inclusion refers to the efforts necessary to ensure that all persons and groups, particularly the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs)", according to the National Digital Alliance (2021). Affordable, reliable broadband internet service; internet-enabled devices that match the user's needs; access to digital literacy training; excellent technical assistance; and apps and online content that enable and encourage self-sufficiency, participation, and cooperation are all part of this. Digital inclusion, digital participation, digital capability, and digital literacy are all terms that are used interchangeably to describe people's ability to use digital technologies, particularly the internet, in ways that improve their lives and help them overcome other disadvantages they may face (The Wales Co-operative Centre with Carnegie UK Trust, 2018).

3.2 Digital exclusion

Digital exclusion has grown over time from a simple "user/non-user" distinction to an evaluation of various levels of internet use and skill disparities (Carnegie UK Trust, 2016b). Its reach has also been expanded to include elements other than internet use. Digital exclusion, broadly defined occurs when a segment of the population has unequal access to and capacity to use Information and Communications Technologies (ICT) that are essential to fully participate in society (Schejter, 2015; Warren, 2007). As a result of the foregoing, it appears that some demographics are disproportionately affected by the issue of 'e' in everything, with a concentration of certain populations inside the digitally excluded (Just Economics, 2016). What are they? The socially isolated, aged persons, physically handicapped, rural residents (grassroots people), homeless, prisoners, non-digitally connected learners, and others are among "the vulnerable."

Digital inclusion, according to Seal (2009), aims to address disparities in which those who are unable to access technological affordances are disadvantaged, marginalised in society, and hence digitally excluded. It includes a variety of interconnected notions in addition to equity, explicit, and tacit definitions of digital inclusion. Access, usage, empowerment, and participation are the four pillars.

3.3 Related studies

There available some related studies but most of them did not focus on the grassroots and vulnerable in Nigeria or any African country. For example, Damodaran, Gilbertson, Olphert, Sandhu, and Craig (2015) first evaluated the desired state of digital inclusion before turning their attention to the actual situation. It looks behind the bluster to offer a status quo analysis, a discussion of some obstacles to development and facilitators, as well as some recommendations

for going forward with fresh vigour and determination. Consideration is given to the extensive advantages of digital inclusion as well as the vital function it plays in enabling full participation in our digital society. The deceptively straightforward objective of ensuring that everyone can access and benefit from the extensive advantages transformative opportunities and impacts it offers is at the core of the idea of universal digital inclusion. The vision and the reality are very different: despite numerous national campaigns and measures to lessen access disparity, it remains. All participants in the larger society will gain from and profit from a digital society, not just the individual (Duvfa; Duvfa, 2019). According to research, proper design and (ii) readily available and ongoing ICT (Information and Communication Technology) support in the community are the two most important success elements for successful digital engagement. There are problems and tested fixes offered. The idea of setting up community hubs in nearby locations to offer older and disabled people user-centered ICT help and education is put forth. Although there are many obstacles to achieving digital inclusion, there are also technology and expertise that can help. Making digital inclusion a reality rather than a concept requires harnessing political will. Although difficult, the realization of the vision of a digitally inclusive society is possible with the cooperation and dedication of all stakeholders and will bring opportunities and rewards that outweigh the costs of implementation.

Martzoukou and Elliot (2016) looked at how well-equipped public librarians are to promote digital inclusion and literacy in the community. An investigation of policy documents, current training programs given by the libraries, semi-structured interviews with public librarians, and library management were all used as part of a qualitative, multiple case study research design. An examination of master's programs in library and information science was then given. The majority of public librarians believed that both transferrable skills and information technology skills were valued equally. The majority of public librarians, however, noted a number of gaps between what they had studied in their library programs and how it applied in their workplaces. In order to increase digital literacy and improve their ability to comprehend the demands of the community, they also expressed a strong interest in and need for extra ongoing technical training and development. A lack of instruction in e-books, basic PC troubleshooting, social media, and communication skills was found in MLIS programs. The report ends with a number of suggestions for MLIS programs and public libraries on how to promote digital inclusion and literacy.

Asmar; van Audenhove and Marin (2020) made improvements to our comprehension of social support patterns in relation to digital inequality. The variety of support networks and assistance seeking practices were revealed through a thorough qualitative investigation. The support-deprived, the community-supported, the supported through substitution, the network-supported, the vicarious learners, and the self-supported typology of six help-seeking types were presented and characterized. The piece also engages critically with the scholarly literature on social support, which is frequently simplistic. According to the research and typology, socioeconomic issues are not the only ones that affect the kind of support available or how readily it can be found. Instead, a key determinant is the quality of the bond and degree of closeness between the parties. This paper demonstrates how highly social mechanisms of inclusion and exclusion are because they involve a variety of official and informal support-seeking behaviors, which in turn have a significant impact on the adoption and usage of digital media. According to the article, comprehending such mechanisms requires bridging connections between small- and large-scale inequality patterns. The notion of social support for digital inclusion was established to demonstrate the distinctiveness of social support within the context of research on digital inequality and to distinguish the term from definitions of other academic disciplines.

Reisdorf and Rhinesmith (2020) looked at digital gaps, inequalities, and injustices, i.e., those nations, communities, and people who were digitally disadvantaged or left behind. There is less emphasis on what reduces these disparities and divides in a variety of cultural contexts,

even if we are fairly aware of what is lacking and for whom. This theme issue gathers academic work and research on digital inclusion initiatives from over 20 countries and in the context of many diverse factors, including various initiative kinds and various target audiences for these projects. Each article offers distinct perspectives on what functions well and poorly in diverse communities and offers suggestions for how the projects under study could be improved. It is hoped that the breadth and depth of the articles presented here will be helpful for policymakers and digital inclusion initiatives as well, who are eager to advance their work on digital inclusion within their communities as well as academic audiences seeking to broaden their understanding of digital inclusion and "what can be done" rather than focusing on "what is amiss."

It can be inferred from few available studies on digital inclusion that studies which focused on making the grassroots people and the vulnerable digitally inclusive through libraries and librarians are very scarce, particularly from the developing country contexts.

4. METHODOLOGY

4.1 Design and method

This section detailed and discussed the method adopted to carry out the study. It includes the design, population, sample, and instrument for data collection, the procedure of administration, data analysis, and presentation of results. The study adopted a purely qualitative method. The qualitative method focuses on obtaining data through an open-ended survey. Qualitative methods usually give room for in-depth and additional probing and questioning of respondents based on their responses, where the respondents and or researcher try to understand their motivation and feelings. Understanding what the respondents in this study (the librarians) perceived as digital inclusion, the grassroots people and vulnerable, and the challenges associated with making the grassroots people and vulnerable digitally inclusive will help to derive a conclusion in the study. A qualitative method was chosen because it is assumed to help reveal the perception and awareness of librarians in public libraries regarding the subject matter of the study which focuses on digital inclusion for the grassroots and vulnerable. Similarly, the design was chosen because the results are usually more descriptive and the researcher can draw inferences from the data obtained from the respondents. Also, the qualitative method is inexpensive especially when it is self-administered. The use of an open-ended survey in this study enabled the researcher to gather relevant data on digital inclusion. Though many types of qualitative methods are available (Creswell; Poth, 2018), however, the open-ended survey was embarked upon because it is one of the most common qualitative research methods; and because it is considered the most practicable method during this pandemic period where social distancing is being observed.

Population and Sample: The population for the study comprised librarians of all statuses in FIVE selected state public libraries in Nigeria. The lockdown and coronavirus issue limited the extension of the study to public libraries in other states. The libraries are located in the following states: Ekiti, Lagos, Kwara, Osun, and Oyo. The study did not extend beyond these five public libraries due to fuel scarcity which restricts the researchers' movement. The study targeted librarians with minimum qualifications for a professional librarian in Nigeria which is a Bachelor's degree in librarianship. From each library, FIVE librarians were purposively selected; this gave a total of 25 librarians that represent the sample for the study.

Instrument: An open-ended survey that featured pre-informed questions relating to the four objectives of the study was developed. The survey featured instructions on how to respond to it and defined the concept of digital inclusion for the respondents to have a good understanding of what it is. The items in the open-ended survey are those that are relevant in capturing data on the four variables focused on the objectives of the study.

The Procedure of Administration: Initially interview was to be conducted by the researcher. However, this could not happen because of fuel scarcity which restricted the researcher from traveling to each of the participating libraries to administer the interview. Instead, an alternative arrangement was made with the head in each of the libraries and this resulted in preparing an open-ended questionnaire (survey) which was mailed to the respective respondents. The respondents were asked to fill out the survey and return it to the researcher at the earliest possible time. Out of the 25 copies of the survey mailed to the respondents, 22 were returned filled and good for the analysis. The breakdown of the returned survey is presented in Table 1.

Table 1. Survey administration and return rate

SN	Libraries	No of Survey Administered	No of Survey Returned
1.	Ekiti State Public Library	5	4
2.	Kwara State Public Library	5	5
3.	Lagos State Public Library	5	4
4.	Osun State Public Library	5	4
5.	Oyo State Public Library	5	5
	Total	25	22

Source: The author.

Looking at the data in Table 1, Ekiti State Public Library, 4; Kwara State Public Library, 5; Lagos State Public Library, 4; Osun State Public Library, 4; Oyo State Public Library, 5. This gave a total of 22 out of 25 representing a 60% return rate. The returned copies of the open-ended survey were sorted, collated, and transcribed by the researcher and reported accordingly.

Ethical Consideration: Informed consent of the respondents was sought and each of them glidingly expressed their intention and willingness to take part in the study. Similarly, they were allowed to withdraw their participation provided they thought their involvement might prove otherwise.

5. RESULTS AND DISCUSSION OF FINDINGS

5.1 The perception of librarians on the grassroots people and vulnerable needs to be digitally inclusive

Respondents were asked to indicate their perception of the grassroots people and the vulnerable. The result indicates from the respondents' point of view that the grassroots people are the people who are living in remote areas of the country where there is no access to the internet, mobile phones, good roads, and even access to electricity or better still, people who are living where there is lack of nearly all the social amenities. To drive home his point, a respondent stated that:

“grassroots people are the people who have been cut off from the urban centres either by lack of access road, information, and communication technology, who do not have the opportunity of benefiting from government provisions such as electricity, health, and other social amenities”.

Also, the result reveals that the vulnerable, just like the grassroots people are people who have been more or less sidelined from society without having access to what others are enjoying such as mobile connectivity, the internet, and related matters. Another respondent when explaining further pointed out that:

“the vulnerable are people who have been forgotten or ignored. The governments sometimes do not consider them as a citizen as part of the society any longer because there is no element catering for them or considering them when planning for, or taking care of the needs of others” The finding reveals the examples of people in this categories as the older people in the rural areas, the prisoners and convict, learners without connectivity, the isolate, physically challenged, among others.

The results here imply that grassroots people from the perception of librarians in this study are the people living in the rural areas of the country while the vulnerable are those whom the governments have ignored or are sidelined from having access to technologies, e-services, and or mobile services. This result follows Helper (2018) who claimed that the socially isolated one of the examples of the vulnerable because they have less access to and use of the internet, devices, and online services; and ONS (2019) who argued that older people are vulnerable because they lack digital ability; while some authors have found that people with disabilities are less likely than people without disabilities to use the internet or have access at home (Helsper; Reisdorf, 2016), hence categories as part of the vulnerable.

5.2 The perception of librarians on the role of libraries in making the grassroots people and vulnerable digitally inclusive

The respondents were asked to indicate their perception of the role libraries can play in making the grassroots people and the vulnerable digitally inclusive. Generally, the findings reveal that libraries have so many roles to play. When explaining the roles of libraries, a respondent pointed out that:

“Libraries should champion digital adoption programmes that can benefit the society and thereby close the gap in the digital divide” They can explore the community of their existence in support of a programme to ensure a sustainable and efficient 21st-century library model which centres on providing equality of access to all the citizens”.

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Another respondent has this to say:

“Libraries can meet with and interview subject matter experts (SMEs), from nonprofit and community organisations, state library associations and libraries, grant-making institutions, governmental entities, and the private sector. They can use these meetings as an opportunity to gather information and organise workshops with the goal of better understanding the role that libraries and public-private partnerships play in bridging the digital divide”.

The result here implies that librarians can play many roles such as championing digital adoption programmes where the socially excluded are exposed to the use of various technologies and partnership with the communities to organise workshops and seminars where those who have been excluded from digital inclusion are included. The finding here corroborates Brioché *et al.* (2021) who stated that libraries are very much tied to driving digital adoption efforts within opportunity communities.

5.3 The role of librarians in making the grassroots people and vulnerable digitally inclusive

When the respondents were asked about the roles of librarians in making the grassroots and the vulnerable digitally inclusive, the excerpts from the explanation given by some of the respondents are stated thus:

“Librarians must assert themselves as key players in the learning process, thereby changing their roles from the information providers to educators, and they have been transferred from ‘information gatekeepers’ to information gateways and advocates the librarian’s involvement in teaching communities to shift the focus from explaining library resources to meeting the ongoing information needs of the students in the broad information environment”.

“Librarians should have some amount of time dedicated to supporting library users’ digital skills (including foundational skills) recognised as an important part of their workload”. “The library is seen as a source of training and guidance to the socially isolated who are concerned with navigating the complexities of locating and using digital resources and services”.

The results here mean that librarians can play the role of teachers teaching and exposing these digitally excluded to use of technology and services thereby making them digitally included.

5.4 Barriers or challenges associated with making the grassroots and the vulnerable digitally inclusive are based on the perception of librarians

The respondents were asked to state the challenges they perceived militating against making the grassroots people and the vulnerable digitally inclusive. Challenges indicated include lack of cooperation on the part of some communities, reluctance to learn on the part of some grassroots people and the vulnerable, inadequate funds for libraries and librarians to fund the project of organising workshops and seminars in the absence of workable partnerships and donors. Some of the explanations by respondents are stated here:

“Content plays a vital role in the adoption of mobile internet in developing countries, however, at present most content is in English and is largely focused on data-heavy smartphone apps. Smartphone penetration is still low in the developing world and English is not the primary language for most of the populations, thereby limiting accessibility and usefulness of the content”.

“Network coverage is critical for access to the mobile internet. The economic case for mobile operators to expand networks into remote, rural areas is challenging because of the cost of maintaining and powering cell towers in remote, off-grid locations, combined with lower revenues expected from thinly spread, low-income populations”.

Illiteracy, digital illiteracy, and lack of internet awareness are consumer barriers to mobile internet adoption. In developing countries, illiteracy is most prominent across rural areas and marginalised groups, such as the poor and youth, and this causes a major challenge in accessing predominately text-based internet content”. The result here implies that there are barriers such as content and language, network coverage and policies, and user barriers like illiteracy.

Collaborative initiatives between libraries, government organisations, and non-governmental organisations can be an effective way to address the challenges that have been identified. Together, these parties may take advantage of their unique skills to eliminate infrastructural gaps and advance digital literacy. This partnership may result in more extensive and long-lasting initiatives to guarantee that marginalised groups and grassroots activists are included online. For grassroots communities and vulnerable people, inclusive digital programme design necessitates community participation and participatory methodologies (Aristizábal *et al.*, 2019). This importance results from the realisation that these groups have particular demands and difficulties that call for understanding and cooperative problem-solving.

First and foremost, community participation guarantees that programme design places a premium on the opinions and views of the target communities. Through the active engagement of these communities in decision-making processes, including needs assessments and programme planning, stakeholders can obtain important insights into the particular obstacles to digital inclusion that vulnerable and grassroots groups confront (Zikargae *et al.*, 2022). Through empowerment and a sense of ownership, this participatory method helps community people create treatments that are more successful and long-lasting.

Community involvement also encourages cultural sensitivity and relevance in programme development. To create interventions that are in line with the realities of the target populations, it is crucial to comprehend their cultural background, preferred language, and customs. By removing linguistic and content-related obstacles, this strategy guarantees that digital programmes are understandable and useful to the intended recipients (Haleem *et al.*, 2021).

Furthermore, co-creation and co-learning between programme implementers and community members are promoted by participatory approaches (Belgrave *et al.*, 2022). This cooperative approach promotes respect, trust, and shared accountability, which improves results and has a longer-lasting effect. Through the development of skills, self-assurance, and agency in navigating the digital environment, community members take an active role in their journey towards digital inclusion.

Moreover, community participation makes it easier to identify resources and assets in the community that can be used to further initiatives for digital inclusion. To increase the reach and effect of digital programmes, this asset-based approach promotes partnerships and engagement with volunteers, leaders, and local organisations. In general, the value of bottom-up, inclusive initiatives is shown by the significance of community participation and participatory techniques for tackling issues related to the digital divide. Through prioritising communities in digital inclusion endeavours, stakeholders can effect substantial and enduring transformations that genuinely assist marginalised communities and susceptible groups (UNHCR, 2024).

It is imperative to highlight the role that policy advocacy plays in fostering an atmosphere that is supportive of digital inclusion, especially for marginalised and grassroots communities. To support and advance programmes for digital inclusion, policy advocacy involves arguing for changes to laws, rules, and institutional norms (Sanders; Scanlon, 2021). The following elements are involved in this:

First, closing the digital divide requires us to promote inexpensive internet access. Access to digital technologies can be greatly increased by policies that support low-income households with subsidies for broadband services, and internet service providers with incentives to expand their coverage to underserved areas (Rivera *et al.*, 2022). This is especially crucial for underprivileged groups and grassroots communities that might have trouble affording an internet connection.

Second, to guarantee that digital resources are available to a wide range of linguistic groups, language diversity in digital material is essential. Promoting the production and accessibility of digital information in a variety of languages, including regional tongues used by grassroots groups, might be the main goal of policy advocacy (Llanes-Ortiz; Huiza-Capo, 2023). This can include programmes like financial support for translation services, incentives for content producers to provide content in many languages, and linguistic standards.

Furthermore, promoting inclusive technology design is crucial to guaranteeing that digital tools and platforms are usable by those with a range of needs and abilities. The creation of inclusive technologies, such as assistive technology, user-friendly interfaces, and usability guidelines that take into account the requirements of those with low digital literacy or disabilities, can be encouraged by policy (Botelho, 2021). To guarantee that no one is left

behind, inclusive design principles must be incorporated into digital service delivery models and technology procurement procedures.

To overcome structural obstacles to digital inclusion, such as financial constraints, discriminatory practices, and regulatory obstacles, policy advocacy is also essential (Dine, 2023). To put digital inclusion at the top of the policy agenda, advocates can work with legislators, government organisations, and business stakeholders to allocate funds for focused interventions.

In all, systemic transformation and ensuring that vulnerable groups and grassroots communities may fully participate in the digital society depend on highlighting the role that policy advocacy plays in fostering an environment that supports digital inclusion. Policymakers and advocates may work towards a more equitable and inclusive digital future for all by promoting inclusive technology design, language variety in digital content, and inexpensive internet access.

6. CONCLUSION

The study examined the perception of librarians on how grassroots people and the vulnerable in Nigeria can be made to become digitally inclusive. The study's conclusions draw attention to some crucial issues addressing digital inclusion for Nigeria's vulnerable communities and low-income individuals. The report highlights the critical role libraries may play in fostering digital inclusion for marginalised and grassroots populations. This position involves advocating for digital adoption initiatives, collaborating with local communities to host workshops and seminars, and serving as a technology instructor. The study noted issues with language and content, acknowledging that these obstacles may impede attempts to promote digital inclusion. Given the linguistic diversity of Nigeria, it is imperative to create information that is both comprehensible and accessible to a wide range of users. Another issue that the study pointed up is network coverage and policies. Infrastructure issues like restricted network coverage and governmental regulations might make it difficult to use digital services. To increase connection and develop supportive policies, stakeholders must work together to address these concerns. Similarly, the study found that user hurdles that significantly impede digital inclusion include illiteracy and a lack of digital literacy among users.

Methods for getting around these obstacles could include customised training courses, streamlined user interfaces, and community involvement projects. The study concluded that the grassroots people are the people living in the rural areas of the country while the vulnerable are those whom the society has ignored or sidelined from having access to technologies, e-services, and or mobile services. Libraries can play many roles in making the grassroots people and the vulnerable digitally inclusive by championing digital adoption programme where the socially excluded are exposed to the use of various technologies. Others include a partnership with the communities to organise workshops and seminars where those who have been excluded from digital inclusion are included. Librarians can play the role of teachers, teaching and exposing these digitally excluded to the use of technology and services thereby making them digitally included. Contents and language, network coverage and policies, and user barriers like illiteracy were identified as challenges confronting the grassroots people and vulnerable to becoming digitally inclusive in Nigeria.

7. IMPLICATIONS OF THE STUDY

The findings' implications are highly relevant for a range of stakeholders, such as researchers, practitioners, and policy-makers, as they further Nigeria's efforts towards digital inclusion. The significance of adopting a multi-stakeholder approach cannot be overstated when it comes to optimising the effectiveness and durability of digital inclusion programmes. Each stakeholder group can gain from and contribute to this strategy in the following ways:

- **Policy Makers**

The results show how urgently policy changes that promote digital inclusion for underprivileged groups and grassroots communities are needed. These insights can be used by policymakers to set priorities for digital inclusion on the national agenda and to determine which initiatives to fund. This entails supporting laws that advance inclusive technology design, diverse linguistic representation in digital material, and inexpensive internet access. Policymakers can also encourage cooperation amongst governmental, non-governmental, and private sector organisations to create all-encompassing plans for closing the digital gap.

- **Practitioners (Librarians, Community Leaders, NGOs)**

When it comes to putting digital inclusion initiatives into action locally, practitioners are essential. The study's conclusions highlight the value of participatory methods and community involvement in the development and provision of inclusive digital services. By using these findings, practitioners can better adapt their programmes to the unique requirements and preferences of marginalised communities and vulnerable populations. This could entail setting up training sessions, workshops, and outreach initiatives that support digital literacy, give people access to technological tools, and remove obstacles like linguistic and content diversity. The reach and impact of these projects can be increased by collaboration with other stakeholders, such as partners in the commercial sector and government organisations.

- **Researchers**

Scholars have the potential to enhance efforts towards digital inclusion by carrying out further research that expands our comprehension of the obstacles and possibilities in this domain. Building on your findings, future studies can investigate creative fixes, industry best practices, and frameworks for programme evaluation for digital inclusion. Researchers can also participate in efforts aimed at building capacity and exchanging knowledge to help with evidence-based programme design and policymaking. Through the promotion of a research and collaborative culture, scholars can facilitate ongoing enhancement and novelty in digital inclusion tactics.

To summarise, tackling the intricate and diverse issues surrounding digital inclusion in Nigeria necessitates the implementation of a multi-stakeholder strategy. Policymakers, practitioners, and researchers can collaborate to establish an inclusive digital ecosystem that benefits grassroots communities by utilising the insights gathered from your research.

8. CONCLUSION

Based on the findings of this study, it is recommended that librarians will have to step up in terms of re-skilling, and up-skilling. This is because not all librarians possess the skills necessary to perform the role of helping the vulnerable from being digitally excluded.

Infrastructure is lacking in most of the libraries; therefore, the necessary infrastructure is required and should be made available.

Local contents should be considered included in most digital information for the vulnerable to have a good understanding and perception of how they can be familiar with, and make use of most of the digital technologies.

Network coverage is needed to be extended and improved upon especially for the people in the rural area to also have the opportunity of access. Government policies should support increased network coverage including the timely release of low-frequency spectrum, supporting voluntary network sharing, and providing public subsidies for networks.

It is also important for information organisations (libraries, information centres, ministry of information, etc.), to ensure the provision of much-needed funding and resources to support the efforts of making the grassroots and the vulnerable digitally inclusive.

REFERENCES

ARISTIZÁBAL, A. *et al.* Initiatives towards a participatory smart city. The role of digital grassroots innovations. **Journal of Global Ethics**, Abingdon, v. 15, n. 2, p. 168-182, 2019. DOI: <https://doi.org/10.1080/17449626.2019.1636115>

ASMAR, A.; van AUDENHOVE, L.; MARIËN, I. Social support for digital inclusion: towards a typology of social support patterns. **Social Inclusion**, Lisbon, v. 8, n. 2, p. 138-150, 2020. DOI: <https://doi.org/10.17645/si.v8i2.2627>.

BELGRAVE, A. B. *et al.* Using a participatory design approach for co-creating culturally situated STEM enrichment activities. **Journal of Applied Developmental Psychology**, Oxford, v. 82, n. art. 101451, 2022. DOI: <https://doi.org/10.1016/j.appdev.2022.101451>

BOTELHO, F. H. F. Accessibility to digital technology: virtual barriers, real opportunities. **Assistive Technology**, Abingdon, v. 33, suppl. 1., p. 27-34, 2021. DOI: <https://doi.org/10.1080/10400435.2021.1945705>

BRIOCHÉ, R. *et al.* **The role of public libraries and community partnerships in promoting digital adoption digital empowerment and inclusion working group digital inclusion subgroup report.** [S.l. : s.n.], 2021.

CHAVEZ-DREYFUSS, G. The number of permanent remote workers is set to double in 2021. **World Economic Forum**, 23/10/2020. Available at: <https://encurtador.com.br/UN4wD>. Access at: July, 31 2025.

CRESWELL, J. W.; POTTH, C. N. **Qualitative inquiry and research design: choosing among five approaches.** Thousand Oaks: Sage, 2018.

DATAREPORTAL. **Digital 2021: Nigeria**, 2021. Available at: <https://datareportal.com/reports/digital-2021-nigeria>. Access at: July, 31 2025.

DEMODARAN, L. *et al.* Digital inclusion: the vision, the challenges and the way forward. **International Journal on Advances in Internet Technology**, Hershey, PA, v. 8, n. 34, p. 78-92, 2015.

DINE, J. **The digital inclusion outlook**: what it looks like and where it's lacking. Washington, DC: Information Technology and Innovation Foundation, 2023.

FORENBACHER, I. *et al.* Determinants of mobile phone ownership in Nigeria. **Telecommunications Policy**, Amsterdam, v. 43, n. 7, n. art. 101812, 2019. DOI: <https://doi.org/10.1016/j.telpol.2019.03.001>

GILBERT, P. Nigerian Internet and mobile penetration grows. **Connecting Africa**, 02/16/2021. Available at: <https://tinyurl.com/4bannus8>. Access at: July, 31 2025.

HALEEM, A. *et al.* Artificial intelligence (AI) applications for marketing: a literature-based study. **International Journal of Intelligent Networks**, Beijing, v. 3, p. 119-132, 2022. DOI: <https://doi.org/10.1016/j.ijin.2022.08.005>

HELSPER, E. J. **Socio-digital inequalities**: lessons learned and the road ahead. [S.l. : s.n.], 2018. Available at: <https://tinyurl.com/mttsf8mx>. Access at: July, 31 2025.

HELSPER, E. J.; REISDORF, B. C. The emergence of a "digital underclass" in Great Britain and Sweden: changing reasons for digital exclusion. **New Media & Society**, London, v. 19, n. 8, p. 1253-1270, 2016. Available at: <https://tinyurl.com/2k2mum8m>. Access at: July, 31 2025.

JUST ECONOMICS. **Digital exclusion and technology enabled care in Scotland**. [S.l. : s.n.], 2016. Available at: <https://tinyurl.com/373vdvyr>. Access at: July, 31 2025.

LLANES-ORTIZ, G.; HUIZA-CAPO, A. **Digital initiatives for indigenous languages**. Paris: UNESCO/Global Voices, 2023.

MARTZOUKOU, K.; ELLIOT, J. The development of digital literacy and inclusion skills of public librarians. **Communications in Information Literacy**, Tulsa, OK, v. 10, n. 1, p. 99-115, 2016.

MCKINSEY & COMPANY. **How COVID-19 has pushed companies over the technology tipping point**: and transformed business forever. [S. l.], 2020.

MARTIN, C. *et al.* **The role of digital exclusion in social exclusion**. [S. l.]: Carnegie UK, 2016. Available at: <https://tinyurl.com/yc3n66s2>. Access at: July, 31 2025.

NDIA – NATIONAL DIGITAL INCLUSION ALLIANCE. **Digital inclusion**. Columbus Ohio, 2021. Available at: <https://www.digitalinclusion.org/definitions/>. Access at: July, 31 2025.

OECD – ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT. **Keeping the Internet up and running in times of crisis**. OECD Policy Responses to Coronavirus (COVID-19). Paris, 04 May 2020.

OGUNDE, F. **The impact of mobile internet on Nigeria**. [S. l.]: Stears News Limited, 2022. Available at: <https://tinyurl.com/ye2yb6ch>. Access at: July, 31 2025.

ONS – OFFICE FOR NATIONAL STATISTICS. **Exploring the UK digital divide**. [S. l.], 2019. Available at: <https://tinyurl.com/bddehy9kk>. Access at: July, 31 2025.

REISDORF, B.; RHINESMITH, C. Digital inclusion as a core component of social inclusion. **Social Inclusion**, Lisbon, v. 8, n. 2, p. 132-137, 2020. DOI: <https://doi.org/10.17645/si.v8i2.3184>

RIVERA, S. *et al.* Role of digital transformation for achieving sustainability: mediated role of stakeholders, key capabilities, and technology. **Sustainability**, Basel, v. 15, n. 14, n. art. 11221, 2022. DOI: <https://doi.org/10.3390/su151411221>

SANDERS, C. K.; SCANLON, E. The digital divide is a human rights issue: advancing social inclusion through social work advocacy. **Journal of Human Rights and Social Work**, London, v. 6, n. 2, p. 130-143, 2021. DOI: <https://doi.org/10.1007/s41134-020-00147-9>

SCHEJTER, A. Re-theorizing the “digital divide”: identifying dimensions of social exclusion in contemporary media technologies. *In*: FACE CONFERENCE EUROPEAN MEDIA POLICY: NEW CONTEXTS, NEW APPROACHES, 2015, Helsinque. **Proceedings...** [S. l.: s. n.], 2015.

SEAL, J. **Digital inclusion**: a research briefing by the technology enhanced learning phase of the teaching and learning research programme. University of Southampton, 2009. Available at: <https://tinyurl.com/4d2ws3ad>. Access at: July, 31 2025.

UN UNDESA. **Compendium of digital government initiatives in response to the COVID-19 pandemic**. New York, NY, 2020a.

UN UNDESA. **E-government survey 2020**. New York, NY, 2020b.

UNHCR – UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES. **Digital inclusion**, Genebra, 2024. Available at: <https://tinyurl.com/yshjxmnh>. Access at: July, 31 2025.

UNITED NATIONS. **Leveraging digital technologies for social inclusion**. New York, NY, 2021.

UNITED NATIONS. **Policy brief: education during COVID-19 and beyond**. New York, NY, 2020a.

UNITED NATIONS. **Roadmap for digital cooperation**. New York, NY, 2020b.

THE WALES CO-OPERATIVE CENTRE WITH CARNEGIE UK TRUST. **Digital inclusion in health and care in Wales**. Caerphilly, 2018. Available at: <https://tinyurl.com/mrxrb2ds>. Access at: July, 31 2025.

WARREN, M. The digital vicious cycle: links between social disadvantage and digital exclusion in rural areas. **Telecommunications Policy**, Oxford, v. 31, n. 6-7, p. 374-388, 2007.

ZIKARGAE, M. H.; WOLDEAREGAY, A. G.; SKJERDAL, T. Assessing the roles of stakeholders in community projects on environmental security and livelihood of impoverished

rural society: a nongovernmental organization implementation strategy in focus. **Heliyon**, London, v. 8, n. 10, n. art. e10987, 2022. DOI: <https://doi.org/10.1016/j.heliyon.2022.e10987>