Application of Technology for Alleviating Poverty in Nigeria

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-- **Abstract** --
Poverty has always been a subject that is linked to human development. To get rid of poverty, researchers have devoted their time to examining poverty from a variety of perspectives, including the economy, society, and culture. The government has initiated several poverty alleviation programmes to lift poor Nigerians out of poverty but there are many problems associated with these programmes, several of which are associated with managing citizens' information, inadequate file storage mechanism, poor file update system, insecurity of data, and diversion and embezzlement of funds. To address these challenges, technology adoption is the key. It would enhance the design of the poverty information management system (PIMS) that would assist in collecting, organizing, storing, updating, and retrieving information for decision-making by the government. The system would also establish direct contact between the poor and the government thereby boycotting the embezzlers and diverters of government funds meant for the development of the poor Nigerians. There would be outlets for the poor to register their complaints which would help the government to re-strategise their development plans. This research studies the lapses of the existing poverty alleviation programmes and interacts with managers to propose a framework with a web-based application that can help the government to correct the errors that led to the past falling programmes. Measures are put in place to uniquely identify individuals and secure the system from unauthorised access. The system can operate on various platforms that would be available to a user such as a personal computer, tablet, and smartphone with a user-friendly interface. Adopting a system that offers solutions to the challenges of poverty alleviation programmes such as diversion and embezzlement of funds would greatly assist the government to lift many Nigerians out of poverty thereby boosting the nation's economy.

KEYWORDS: Development, Economy, ICT, Poverty, Poverty Alleviation.

1. Introduction

The United Nations Development Programme (UNDP) ascertained that information and communications technology (ICT) has evolved into a crucial weapon in the fight against global poverty (Marker et al., 2002). ICT gives developing countries unprecedented potential to achieve crucial development goals including poverty reduction, access to basic healthcare, and education (Sachs, 2012). The economies of those countries that are successful in utilising the potential of ICT should expect to increase significantly, while human welfare and democratic institutions will also be strengthened. One of Nigeria's major development difficulties is poverty, which has turned into a top priority for both national and regional development. Poverty reduction becomes a top concern for

national development as attempts are made to push up the well-being of the poor population to benefit from the economic growth of increasingly skilled people. In Nigeria and throughout the world, poverty is an inherited condition. When a son or daughter is born to a poor household, they will likewise live in poverty, exactly like their parents except very few broke the jinx through special intervention either by God or their destiny helpers. Technology plays a critical role in enhancing services for the disadvantaged population and helping them escape poverty (Zhao et al., 2022). As such, this article proposes the creation of poverty management information systems (PMIS) to enable the government to have a direct transaction with the poor without interruption of the middlemen most especially the politicians.

According to Celhay et al. (2022), the country cannot function successfully without an updated record to distribute funds to places that most need them, to support local decisions, and to support their future, just as we cannot survive without roads and bridges. PMIS is therefore essential for streamlining and accelerating data processing. Government can rely on it to move information, make decisions, and provide tools for administration and planning quickly. Viewing historical data on a family or person who is living below the poverty line as well as individuals who have benefited from a programme to reduce poverty might be helpful to the government. PMIS will offer all the necessary data about people, such as population size, age distribution, educational attainment, income, labour force participation, and socioeconomic traits. To prevent major undercover and diverting of poverty alleviation funds, this research aims to create an accurate targeting mechanism to assist the government.

2. Literature Review

According to the World Bank, being in a state of poverty means having not enough money to pay bills, acquire food or shelter, access healthcare, get a good education, being unemployed, have non-potable water, are physically unattractive, or making less than $1 per day (Freistein, 2016). As a result, there are various elements to take into account when defining poverty. In contrast to depravity, which is not being able to meet people's needs, poverty refers to a lack of the resources needed to meet people's needs (James, 2021). Pokharel (2015) went one step farther and divided poverty into two categories: human poverty and absolute poverty. Whereas human capital is the degree of poverty in terms of the absence of basic human capacities, such as food, education, and employment, while absolute poverty is defined as the line of poverty below the minimum level, such as the lack of standard necessities (clothes, healthcare, and education). Additionally, since the 1960s, the definition and standard of poverty have evolved. As before, poverty is quantified economically, and income per capita is used to estimate the standard of life (Bourguignon & Chakravarty, 2019). The idea then changed to the capabilities method before progressing based on the current perspective, which relates to a multidimensional vision (Bader et al., 2016). According to the concept of multidimensional poverty, in addition to having insufficient money or a lack of material resources, those who live in poverty also lack access to opportunities such as education, clean water, basic healthcare, and political power, among other things (Menshikov et al., 2020). Additionally, Sumner (2007) points out that the most important criteria for a poverty indicator should be affordable, user-friendly, straightforward to collect, and difficult to manipulate. It should also be simple, direct, and measurable following a universal definition of poverty. According to Shamshiry and Abdulai (2014), poverty is defined as the absence of sufficient income and productive resources to support sustainable livelihoods, a lack of access to education, hunger, malnutrition, and ill health, as well as an increase in morbidity and mortality from disease; inadequate housing and homelessness; unsafe environments; and social discrimination and exclusion. According to Smollan (2011), poverty is not only difficult to describe but also has many facets and touches on a variety of topics. According to the study of Nkwede (2014) on the approaches for poverty alleviation and sustainable development in Nigeria, there is a need for all government policies and programmes aimed at reducing poverty to be sufficiently comprehensive to clearly explain the most efficient and effective ways by which various indicators of poverty can be addressed holistically. Odebode et al. (2020) inform that the Remote Desktop Protocol (RDP), housing and agriculture, health and education, considerably improved the poverty condition for poor people by enhancing sample households' economic, human, protective, and political skills. Kowo et al. (2019) say that tasks and responsibilities have been incorrectly assigned to entities that are implementing programmes to reduce poverty. According to Yustini (2018) research findings, financial allocations for programmes and activities must be consistent, and the target audience must be identified. Nawawi et al. (2020) underlined that not all actions in each programme to reduce poverty are targeted specifically at

the poor. Based on past literature reviews, it may be concluded that funding for initiatives aimed at reducing poverty is frequently not directed to the poor. Therefore, the purpose of this study is to determine how the poor can benefit from the poverty reduction programme directly from the government without middlemen. Hence, the need for information systems for managing poverty (PMIS).

3. Methodology

The research uses data gathered from secondary sources to inform the decision about the subject matter. To construct a thorough bibliography for the research work on poverty alleviation in Nigeria, a few prominent electronic resources were searched including Google Scholar, IEEE, Science Direct, Springer, Elsevier, Wiley, Scopus, and Emerald. The research steps which included a search strategy, study selection (inclusion/exclusion criteria), research eligibility, and quality evaluation, were guided by Purba et al. (2021) methodology. Regarding search strategy, a search was conducted on poverty alleviation-related literature published between 2000 and 2022. In addition, studies were found using the following search terms: Development, Information System, Poverty Alleviation. For Study Selection (inclusion and exclusion criteria), the research was based on peer-reviewed English-language papers. Abstracts, introductions, and conclusions of the articles were screened during the research selection process. Opinion pieces, non-peer-reviewed papers, incomplete articles, and studies in languages other than English that were not translated into English were also eliminated. Concerning eligibility and assessment of study quality, all articles were double screened by all authors. Article names and abstracts were evaluated. There were no more duplicates. We verified that all articles giving information on development and poverty alleviation that is tied to economic growth in Nigeria are included by completing citation chains for extra study for each retrieved article, and we published our findings in the next section.

4. Discussions

4.1 System Flow Diagram of the Poverty Management Information Systems

The research framework demonstrates the flow of information from different terminals. The system is designed for government use. The usage of the system requires a computer system, internet connection, and a web browser. The framework offers an interface where residents are registered and their credentials are stored for future use. Government can directly contact the person they intend to assist out of poverty directly without the need for a middle person. Also, residents can view those benefitting from the poverty alleviation programmes by the government at any point in time. The connection of the user interface to the database ensures information centralisation, unlike the paper-based approach that separates information into different storage thereby causing data inconsistency, data replication, data insecurity, and difficulty in updating information. The proposed system promotes easy communication between the government and the beneficiaries of the poverty intervention programmes. Residents' information can be easily logged, accessed, retrieve, and update by the government. Also, data protection is ensured, and duplication is avoided because residents are uniquely identified and authenticated using National Identification Number (NIN) before adding to the system. The framework is designed to address the challenges posed by government empowerment programmes where funds meant to support poor citizens are usually diverted by the middlemen mostly the politicians. The system flow diagram is shown in figure 1.

Figure 1: System Flow Diagram

4.2   Entity Relationship Diagram of the Poverty Management Information Systems

According to Li and Chen (2009), Entity-Relationship Diagram (ERD) is a common technique for the structuring of data and designing database systems. ERD is used to show the relationship among tables. In this article, five tables created are the admin, nation, state, local government area, and village. The relationship between these tables is established. The tables' relationships link tables and help in retrieving the desired information from the database. With this development, the government can directly contact anyone they intend to empower who has lived below the poverty line thereby boycotting the middlemen. Figure 2 shows the entity-relationship diagram of the poverty management information systems.
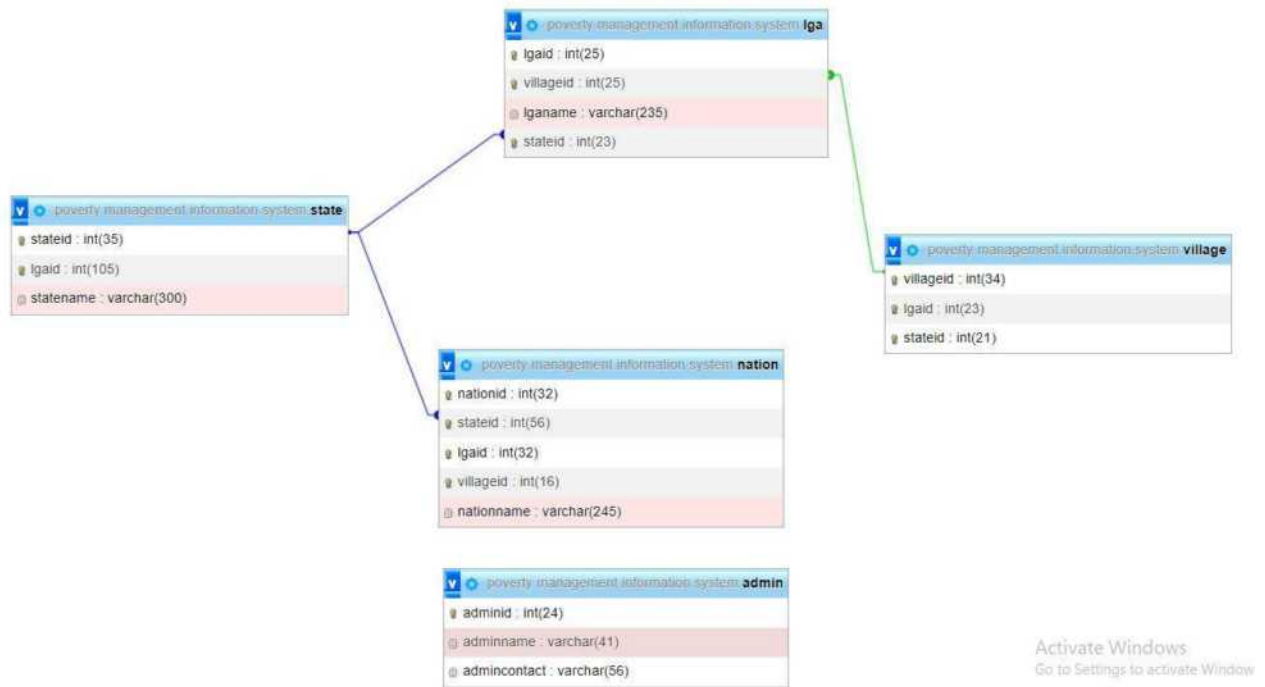
Figure 2: Entity Relationship Diagram

5. Conclusion and Recommendation

The lack of a firm information system for poverty alleviation programmes and interventions has sunk many Nigerians below the poverty level. The implementation of poverty management information systems (PMIS) in Nigeria is vital to the effective handling of information, and the proposed framework would bring about a significant change. The framework offers several interfaces for the completion of tasks by the users. For instance, the government can contact the intending beneficiaries of the poverty alleviation intervention programme directly, citizens can access those benefitting from the programme as well as their empowerment levels. Having one application that can handle these tasks is expected to dramatically improve the quality of life of poor Nigerians by effectively removing third parties and decreasing the time for the government to make decisions. The application does not need installation on a separate computer, therefore it is also expected to be easier to use. With further improvements, the application may become a powerful guide for people living below the poverty line to be managed more effectively by the government.

In recommendation, the government should make significant efforts to automate citizens' information; this would strengthen the poverty intervention programmes and it will boast working settings in terms of storage and accessibility of information; it will enhance efficiency in lifting many Nigerians out of poverty thereby boosting the economy of the nation.

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