APPLICATION OF BIOMETRICS TECHNOLOGY IN POVERTY REDUCTION INTERVENTIONS IN NIGERIA

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Abstract

This paper investigates institutional and implementation issues confronting application of identification technologies in poverty reduction programmes like Direct Benefit Transfers (DBTs). Specifically, it proposes to evaluate the existing structures put in place for institutionalizing biometrics identification in Nigeria, examine the prevalence in the application of biometrics in identifying indigents eligible to access poverty reduction interventions in Nigeria as well as intend to review level of acceptance of biometrics technology as a means of identification in Nigeria. It also proposes to assess the adoption of Direct Benefit Transfers (DBTs) in poverty reduction interventions in Nigeria and investigate factors affecting application of biometrics-driven innovations in poverty reduction interventions in Nigeria. The proposal is banking on qualitative and quantitative techniques in implementing the field project.

Keywords: Biometrics Identification, Direct Benefit Transfers, Nigeria, Poverty Reduction Programmes,

Introduction

The practice of identification is deep-rooted in the history of state craft and governance. Official gathering of citizen information in view of Higgs (2014) predates the period of industrial revolution. Traditionally, identification architecture was used during authoritarian regimes as instrument of surveillance of prisons inmates and control of colonial people most especially by the colonialist states before it crept into the administration of modern cities, due to the centralisation of citizen information in the nineteenth century (Foucault 1997; Higgs 2014). Today, the growing complexities of globalisation and the self-regenerative nature of information technology contribute to the proliferation of schemes of identification technology in the global north and the global south. Identification technologies like fingerprint, biometrics, iris capturing, radio frequency identification, and facial recognition are now being utilised by government bodies and multinational companies for everyday activities like crossing borders, applying for passport, getting driver license, collecting tax, monitoring movement, providing life chances and sorting population (Barton, Carlton & Ziehm 2007; Lyon 2009).

Previous research, code-named surveillance studies, which concentrated on identification systems had on one hand, extremely focused on IDs as tool of state intrusion into civil liberty and privacy of individual, and on the other hand equated IDs as shed through which state and commercial interests perpetuated digital discrimination and social sorting (Gandy 1996; Graham & Marvin 2002; Lyon 2003). These concerns by extension shifted attention, more strongly, towards the negatives of IDs, which cautiously relegated the human development supports and the administrative potentials of IDs in the governance network. Without trivialization of privacy and civil liberty concerns, introspective questions like should identification schemes be decommissioned, is there any acceptable alternative for IDs, should state abrogate surveillance practices, are there other gains of IDs other than state surveillance, all these questions should be enlisted in the global discourse on IDs. Here, the concern is the oversimplification of human development potentials of identification technologies, which has limit the adaptation of identification system in other social development fields.

Identification technology is being harnessed in human and social development areas based on its multidimensionality. For Higgs, deployment of identification technologies by states is not only for state surveillance but also other areas of state administration which requires accuracy and speed in processing individual data (Higgs 2014). Therefore, bringing identification technologies within the precinct of development administration especially in the poverty-ridden countries requires research concentration. Biometrics identification systems are now being developed by countries across the continent as inevitable requirement of governance domain (Forno & Schneier 2007; Anderson *et al* 2011). This indicates that in most countries, there is always a means of identification. For instance, an effective

numbering system, the Social Security Number (SSN) introduced in the United States of America in 1936 aided tracking of employers and employees earnings for determining benefits entitlement of American citizens. Similarly, South Africa had long ago institutionalised biometrics identification as far back as 1950s, although not progressively conceived at the inception (Breckenridge 2014), but now, is being used for distribution of social grants to the indigent citizens, providing assistance to tune of US$ 375 million monthly to over 20% of the South Africa's population (Info SA 2005).

This electronic-based social intervention system according to Vijay Sathe had a promising nature of homogenous coverage of the most vulnerable in India, he described the scheme as social class reformist that replaced "Closed Access" societies meant for the advantaged with "Open Access" societies for all (Sathe 2014). The Aadhaar system which is linked with bank accounts of beneficiaries supports the Direct Benefit Transfers (DBTs) in India by expanding access to cash transfer in lieu of food subsidy, agricultural inputs and cooking gas subsidy among the poor families (Saini, Sharma, Gulati, Hussain &Von Braun 2017).

Sub-Sahara Africa has been adjudged the largest hotbed of poor persons in the world (World Bank 2015; Asongu & Kodila-Tedika 2017; Tchamyou 2019). The high poverty trend in Sub-Sahara Africa has been repeatedly linked with growing number of people living in extreme poverty in Nigeria (World Bank 2018). Literature on poverty constantly cast doubt on the effectiveness of poverty eradication schemes in Nigeria (Ijaiya & Ijaiya 2004; Zuhuman 2018; Kazeem 2018; Danaan 2018; Orokpo & Mutong 2018; Sattar 2019). For instance, Dapel Zuhumnan reported that an estimated rate between 72% and 92% of Nigeria's poor might spend their entire life below the poverty life, and they might possibly escape the poverty line at 85 years old (Zuhuman 2018). This portends a setback in achieving Sustainable Development Goals (SDGs) especially SDG 1, 4 and16. These goals are systematically pillared on identification of all the indigents irrespective of their age as well as on an inclusive social protection distribution system. The argument in this proposal is that it will be almost impossible to identify and socially protect every individual without a reliable institutionalised identification structures, an opportunity provided by the DBTs – a distribution system that is built on the interplay of biometrics identification and social protection programmes.

The effort of post-authoritarian regimes to identify and socially protect every individual in Nigeria has remain elusive. This is due, largely, to the fragmented institutional framework often deployed by successive governments. Although, some institutional framework are in place to close the identity gap between the rural and urban dwellers in Nigeria, yet the implementation outcome is worrisome. For instance, by 2016 India had enrolled one billion individuals (more than 800% of Nigeria population) under her new identification regime that started in 2009 while Nigeria only enrolled thirty-three (33) million individuals (less than 20% of Nigeria population) between 2007 and 2018 (UIAI 2016; National Identity Management Commission [NIMC] 2018), an evidence that suggest huge identity gap in Nigeria. Similarly, another enabler that could drive the Direct Benefit Transfer System, the Bank Verification Number (BVN), has not covered enough rural dwellers under the financial inclusion scheme as only 46.9% of the adult are holders of formal bank accounts (Central Bank of Nigeria 2017). Comparatively, the implementation of Aadhaar system made management of big data and real-time governance feasible in India. Through this system, the financial inclusion increased from 42% to 82% reaching 340 million bank accounts (more than 170% of Nigeria population) in 2014, and 750 million Indians (i.e. 375% of Nigeria population) receive food subsidy monthly through the DBTs component of the several poverty reduction interventions in India (Hersey 2019). However, in order to reconcile these glaring discrepancies, it becomes relevant to probe the structures put in place for institutionalising biometrics identification, how often biometrics is used in identifying the indigents eligible to access poverty reduction interventions, what prospects do Direct Benefit Transfers (DBTs) has in poverty reduction interventions and what factors affect application of biometrics identification in poverty reduction interventions in Nigeria.

Previous efforts on application of biometrics identification concentrated more on issues arising from installation of biometrics identification. Privacy issues in surveillance studies (Lyon 2010); review of identification systems (Anderson *et al* 2011); identity system in Asia and the Pacific (Asian Development Bank 2016); biometrics revolution (Gelb & Clark 2013); country assessment report on IDs (World Bank 2015); biometrics technology and poverty reduction innovations (Henry 2019); prospects of DBTs in Indian welfare system (Abraham, Bennett, Sen & Shah 2017); situational report on Aadhaar system (Banerjee 2016). Given the deficit of Africa-cum Nigerian literature on the adoption biometrics technologies for distribution of social benefits, this study therefore is conceived to investigate the adoption of Direct Benefit Transfers (DBTs) within the landscape of biometrics identification ecosystem for poverty reduction interventions in Nigeria.

Aims and objectives

The broad objective of this research is to assess the adoption of Direct Benefit Transfers (DBTs) within the landscape of biometrics identification ecosystem for poverty reduction interventions in Nigeria. This is with the view to exposing areas that require policy and structural improvements in order to harness the prospects of biometrics technologies in the quest to eradicating extreme poverty in the country.

The specific objectives of the study are to:

i. Evaluate the existing structures put in place for institutionalizing biometrics identification in Nigeria
ii. Examine the prevalence in the application of biometrics in identifying indigents eligible to access poverty reduction interventions in Nigeria
iii. Review level of acceptance of biometrics technology as a means of identification in Nigeria
iv. Assess the adoption of Direct Benefit Transfers (DBTs) in poverty reduction interventions in Nigeria
v. Investigate factors affecting application of biometrics-driven innovations in poverty reduction interventions in Nigeria.

Research hypotheses (assumptions)

This study is to be comprehended on the basis of the following assumptions;
i. There are no significant structures put in place for institutionalizing biometrics identification in Nigeria
ii. Acceptance of biometrics technology has no significant relationship with adoption of Direct Benefit Transfers as poverty reduction intervention in Nigeria

Literature

In order to enhance the quality exposure with current thinking on the subject matter of this study, state of the art literature will be reviewed and documented. This is expected to review previous methods and processes adopted for the similar studies. Relevant concepts like biometrics, biometrics technology, identity, identification, poverty, indigents, and social protection will be conceptualized within the construct of this study. The review is expected to focus on modus operandi employ in identifying citizens who are qualify for social safety nets in some selected countries. The study will empirically document peculiarities of institutional structures for identity management and the practices of Direct Benefit Transfers (DBTs) for distribution of social protection benefits in some selected countries. These countries will be selected based on their ranking in the coverage of social safety nets. The study will employ theoretical framework from Technology Acceptance Model (perceived usefulness; perceived ease of use) and Diffusion of Innovation Theory (innovation; adopters; communication channel; time; social system), the selection of these theories are based on their suitability in providing theoretical footpath for adoption technology innovations in social settings.

Methodology

There are different methods available in social research. Examples include qualitative, quantitative and mixed approaches (Silverman 2006; Creswell 2003; White 2007). This research will be anchored on mixed methodology. This involves the use of qualitative and quantitative approaches (Johnson & Onwuegbuzie 2004). This method is primed because it gives room for reliable and wider coverage of multiple views on a phenomenon. Mixed method allows merging and triangulation of diverse findings from the two techniques (Quantitative and qualitative). This method has capacity to probe broader questions concerning the structure, application and acceptance of biometrics technology and direct benefit transfer as innovations toward reducing poverty in Nigeria. The probable constraints to this method include challenges of sample selection criteria, cost and time.

Research design

This research is conceived to describe structure (institutional; legal; technical of IDs), acceptance and application of biometrics technology in the distribution of social benefits in Nigeria. In order to do this, mixed method cross-sectional descriptive design will be the guiding path of this research. The justification for this design is that it involves the collection of relevant information from different agencies that deal with biometrics identification in Nigeria using quantitative and qualitative means for data collection and analysis. Primary and secondary data are the sources of information for this research. The primary data will be collected on structure application, acceptance of biometrics identification and direct benefit transfer (DBT) using survey and key person interviews as research instruments. The secondary data will be sourced from literature review, mainly from journals, textbooks, documents

from national bodies, reports from international organizations and non-governmental organisations, newspapers and thesis (Published and Unpublished).

Population and sampling technique

Population is the collection of individual element of interest a researcher has selected for the purpose of a research work. This study being a cross-sectional one targeted staff across relevant government agencies and individuals in Nigeria. The agencies will be selected because of the routine involvement in identification and poverty alleviation schemes in the country, as such provide first-hand experience on the application of IDs in reaching the poor. Another category is the public preferably a rural province and an urban province in Nigeria. They will provide access to local information on acceptance of biometrics identification and it application to distribution of social safety services to the poor across locations.

Participants in the proposed survey will be drafted using purposive and convenient sampling techniques which allow the researcher the liberty to sample individual of interest based on certain requirements. The following requirements are proposed especially for the public:

- 18 years and above
- Have you heard of biometrics identification
- Are you ready to take part in the survey
- Have you benefited from government programmes on poverty reduction
- Can you read and understand English language or need a translator

Scope and location

This research will be carried out in Nigeria. These countries are being considered for certain reasons. First, the two countries have highest poverty index of persons living in extreme poverty. Second, Nigeria started implementation of policy on identification in 2007) and DBT is being used in reaching to the poor. The study is expected to cover poverty reduction interventions implemented in Nigeria between 2012 and 2022 (10 years interval). This interval is reasonably adequate to review the use of technology innovations in poverty reduction programmes in Nigeria. It scope extends to institutional arrangements put in place to develop and apply biometrics identification to poverty schemes in the country.

Research paradigm

This study is largely empirical and utilized quantitative and qualitative approach with the aid of questionnaire and interview guide to infer inferences from the proposed survey. Hence, this study derives its philosophies from positivism school of thought, which believe that findings from empirical and numerical evidence gathered through primary and secondary sources can be triangulated for generalization of research results

Instrumentation

The instrument of this study are survey and interview. The survey involves collection of open and closed structured (and semi-structured) items that allow the respondents to freely respond to describe certain variables of this research. This instrument is suitable to gather primary data from large sample. The questions will be developed in line with research objectives and will be segmented in sections. Section A (Demographics of respondents); Section B (Structures of IDs); Section C (Identifying of indigents); Section D (Acceptance of IDs); Section E (Adoption of DBT); Section F (Factors affecting application of IDs). In-depth interview which can be face to face or electronic will also be structured in line with issues in the survey instrument. In order to avoid bias results from the field, the service of research assistants will for the period of the survey in Nigeria.

The research instrument will be tested for acceptable validity and reliability. The items in the instrument will be validated by experts in the host faculty and other relevant faculties. A pretest of the instrument will be conducted after pilot administration in order to establish adequacy and consistency in the measurement of construct raised in this research.

Data management

Data management technique will be employed to minimize the level of errors that might occur during data collection and entry. During the collection of data, the data will be edited on the field for accuracy, inconsistent responses and

omissions. Also to minimize error during data entry, research assistants will be trained for fieldwork in administering questionnaire and conduct of in-depth interview to the respondents/interviewees.

Data analysis

The sociological method analysis which involves the use of quantitative and qualitative techniques of data analysis will be employed for this study. The data, to be collected from both primary and secondary sources, will be analysed using appropriate quantitative techniques such descriptive statistics (frequency distribution; percentages; mean statistics) and inferential statistics (t-test statistics) using SPSS version 26.

For interviews, data analysis will begin after few interviews and subsequent data gathering. Early interviews will influence the questions and content of subsequent interviews. The data obtained from qualitative data sources, i.e. interview, will be subjected to Nvivo analysis. Qualitative Comparative Analysis (QCA) offers a new, systematic way of studying configurations in qualitative research. QCA is particularly useful in comparative research especially when using cross-national data as it is with this study. The QCA analyst will interpret the data qualitatively while looking at causality between the variables. In this study, the data collected through interview will be transcribed and subsequently coded.

In coding the interview transcript, the suggestion of Berkowitz, (1997) about qualitative data coding was taken into consideration. His proposition was particularly useful in the coding process with the aid of the following questions:

a) What common themes emerge in responses about local governance and service delivery? How do individual or cross-national patterns of responses help to illuminate broader question(s) or hypotheses?
b) Are there major deviations from the patterns of answers provided by cross-national respondents? If so, are there factors other than nationality that might explain these deviations?
c) How do respondents' past experiences relate to their responses?
d) What interesting accounts emerge from the responses? How do they help illuminate the central question(s) or hypotheses?
e) Do any central question or hypothesis need to be revised due to lack of information?

Ethical consideration

The participation in the survey is voluntary and any participant who wishes to opt out is free to do so. In order to promote readiness, commitment and honesty among the participants, principle of confidentiality will be strongly sustained, the rights and integrity of respondents will be respected in the course of the research. Ethical approval on the contents of the research instruments will be sought from the Institutional review committee in the host university. Data from the field work will be adequately documented, protected and made retrievable for future research. Ethical clearance will be requested from relevant government departments and agencies in Nigeria. A coding system will be developed to distinguish responses from participants in Nigeria without revealing the identity of the participants.

Expected contributions

The study will provide empirical information for possible policy options for improving institutional environments established for migrating distribution of poverty reduction interventions into digital space. This is based on the potential for wider coverage and efficiency of poverty reduction regimes in Nigeria.

The study offers opportunities for policy handlers, especially the representatives of governments in Nigeria, and other stakeholders such as private sector partners, non-governmental organisations and international collaborators to develop corrective plan for existing implementation models in Nigeria. It is expected that these policy inputs assist in drawing business (sustainability) plan for public private partnership in the selected countries in order to sustain inclusive enrollment into the IDs and inclusive access to poverty reduction schemes for the disadvantaged in Nigeria.

It is further expected that the study add to fragmented comparative literature on the adoption of biometrics technologies for distribution of social benefits to the indigents in the selected countries. This expected to expand the horizon of literature on typology of identification systems in different cultures and it usage in distribution of social benefits to the indigents.

With this study, another dimension will be added to the growing literature on installation of biometric technology in developing countries. This shift ensures that attention is not only on development of IDs but also on it application in development administration especially in social protection for the venerable, thereby establishing reasonable ground for research of this kind to be replicated in other countries.

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