The contribution of ICTs to socio-economic development: Experience from Nigeria

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Abstract

Information and communication technologies (ICTs) are widely believed to have a part to play in transforming the life conditions of citizens in all nations, yet experience against these objectives is mixed. Outcomes are especially poor in developing countries (DCs). Furthermore, experience in some DCs is markedly worse than others, suggesting a need to understand what is locally meaningful and achievable for any given development effort. We explore these ideas with the case of the National Identity Card Scheme in Nigeria. This popular initiative is intended to improve the life opportunities for citizens of Nigeria given the lack of a secure, reliable identity system in the country. Nevertheless, the project has a history of failed implementation efforts over a period of 33 years. We examine the case using ideas from Sen's capability approach which sees development as an expansion of people's freedoms to engage in activities they value. Sen himself admits that his framework is incomplete. Therefore this research makes a theoretical contribution by identifying particular dimensions of the framework that are applicable in this case and are potentially more widely relevant. Implications for practice are also discussed.

Keywords: Information systems, socio-economic development, developing countries, capability approach, National Identity Cards, sustainable development, Nigeria, information and communication technology.

INTRODUCTION

In this paper we examine the contribution of information and communication technologies (ICTs) to improving the socio-economic conditions in developing countries (DCs). This phenomenon is studied by some researchers within the ICT for Development (ICT4D) research agenda, and by others as research on Information Systems in Developing Countries (ISDC). In both cases, researchers tend to focus on the development and implementation of IT applications and associated organizational changes while extending the research domain to consider the broader socio-economic context of the organizations hosting new technologies (Avgerou, 2009). These are also our concerns in this study, where we make no distinction between these two research domains.

ICTs are widely believed to have a part to play in transforming the life conditions of citizens in DCs. This perceived potential includes contributions to capacity building and poverty alleviation (Corea, 2007; Madon, 2004; Kenny, 2000), good governance (Navarra, 2010; De', 2008), and healthcare coverage and delivery (Miscione, 2007; Zheng and Walsham, 2008). However, concerns have been

expressed about the value to citizens of particular projects, scalability from small projects to regional or national initiatives, and long term sustainability of the developments (Madon et al., 2009). Notable successes, such as India's software industry, contrast sharply with other countries' frustrated attempts to develop substantial ICT capabilities and infrastructures to support their major industries and public services. Furthermore, the relationship between ICT success and the development policies and achievements in the countries concerned is not well understood.

In these circumstances, questions arise about how (or whether) ICTs contribute to development (Walsham et al., 2007); what development means in specific contexts (Prakash and De, 2007); and the validity of linking ICTs and economic development (Avgerou, 2003). Furthermore, there are concerns about how the development reaches people in positions of vulnerability. In this case, the concept of sustainable development (WCED, 1987) applies, with its goal to meet the needs of all people, particularly the poor and less privileged. In practice, outcomes are mixed, development is uneven and some countries have very poor records with implementing ICT-based development projects (Avgerou, 2008; Heeks, 2002). Such experience suggests a need to understand what is locally meaningful and achievable for any given development effort.

We explore these ideas with the case of the National Identity Card Scheme in Nigeria. This initiative is intended to improve the life opportunities (economic and social) for citizens of Nigeria. It is a popular initiative given the lack of a secure, reliable identity system in the country, for example, by means of international passports. Identity cards are seen as a means of enabling access to services, such as bank accounts and financial transactions, and to valued activities, such as job applications, exams, and travel, while contributing to crime control and a reduction in identity theft. Nevertheless, the project has a history of failed implementation efforts over a period of 33 years. This study asks why an initiative with such apparent developmental potential is proving so difficult to realize.

We examine the case using ideas from Sen's (1999, 2009) capability approach which sees development as an expansion of people's freedoms to engage in activities they value. Sen himself admits that his framework is incomplete. Therefore this study makes a theoretical contribution by giving substance to some of Sen's key concepts and relationships with ideas that are applicable in this case and, potentially, are more widely relevant. In terms of practice, it examines the implications of some significant issues constraining the implementation of IS in DCs – including corruption and tribalism, which have received limited attention from IS researchers. In addition to Sen's work, the research perspective adopted in the paper draws on the work of Nigerian writers as a means of appreciating what is locally meaningful in this context.

The next section contains a review of relevant literature on the relationship among ICTs, development and sustainability, focusing on the concept of sustainable development as the key concern of our study. The following section provides details of our research approach. First, we describe the theoretical perspective through which we examine the history of a development initiative in Nigeria to enable participation in a wide range of financial transactions and government services on a secure and reliable basis. We introduce some key concepts from Sen's capability approach which inform our assessment of the scope and limitations of the focal intervention. Then we outline our research methods together with a supporting rationale. The next section provides details

of the research setting, followed by our analysis of the case. The final section contains conclusions from the study with implications for research and practice.

LITERATURE REVIEW

The relationship between ICTs and development is a contested but poorly understood notion. Some authors suggest that ICTs can lead to a rapid process of development through the facilitation of market mechanisms as the means to achieving economic growth in DCs (UNDP, 2001). Others argue for a move from an economic-centric perspective on development to a context sensitive one which reflects the social conditions in which ICTs are embedded (Avgerou, 2003). The latter perspective challenges the "leapfrogging" notion and suggests prerequisites to development agendas, including the improvement of basic facilities such as healthcare and education (Bollou and Ngwenyama, 2008) and reforms of government and bureaucratic structures (Ciborra and Navarra, 2005).

However, the superiority of western and scientific knowledge over traditional and indigenous forms of knowledge continues to be implied in practice (Puri and Sahay, 2007). Time and again, development initiatives become problematic owing to their ill-conceived guiding strategies (Soeftestad and Sein, 2003) or limited consideration for local conditions affecting IS implementation and use when shaped in the context of the industrialized nations (Maumbe et al., 2008). These issues are particularly poignant in light of the relative scarcity in DCs of resources for investment in IS projects. Some initiatives, even if successful in the early stages of implementation, become problematic or fail over time, leading to abandonment in some cases. Several authors identify the way that IS projects in DCs lose commitment in the form of resources, technical and functional maintenance (Avgerou, 2008; Heeks, 2002) and call for research to examine the issues relating to the sustainability of ICT-based development initiatives (Walsham and Sahay, 2006). In this paper we adopt the view that information systems that are conceived and implemented in locally meaningful ways (Avgerou, 2003; Prakash and De, 2007) have potential to contribute to development agendas in ways that are sustainable in the longer term. Our work is informed by the concept of sustainable development (WCED, 1987) and a capability approach to the introduction of ICTs (Sen, 1999; 2009), which we go on to discuss.

Sustainable Development

The dominant ideologies in the development literature (i.e. economic and social) inform the broad measures used to evaluate growth. These measures are Income Per Person and the Human Development Index (Mann, 2003) respectively. The former accounts for market based indicators of economic activity, while the latter indicates levels of growth based on health and education metrics. Some arguments suggest a relationship between income levels and human development (Mann, 2003), particularly in low income areas such as DCs. However, such views give little consideration to the inequalities amplified by the uneven levels of infrastructural development in DCs (Elnaggar, 2008; Halewood and Kenny, 2008).

From a human development perspective, authors advocate improvements in the health and educational sectors (Midgley, 2003; Qureshi, 2009) in the belief that increases in living standards are prerequisites to national growth. This approach views income growth as insufficient, and attempts a more equitable distribution of the benefits of development initiatives (Soeftestad and Sein, 2003). It also

sees people as participants rather than beneficiaries in the development process (Srinivasan, 1994). Thus, it reflects the principles of democratic governance by promoting the involvement and participation of citizens in activities which lead to growth. Critics of this approach show concern about the differences in individuals' needs based on their cultures and values. However, as Qizilbash (2002) argues, these differences do not negate the possibility of shared needs or interests. We refer to the concept of basic needs which describes the minimum requirements for survival and wellbeing, and the prospect of providing equitable opportunities for people to participate in programmes vital to their growth. Furthermore, there are concerns about how development reaches all people, particularly those of less privileged and future generations. Here, the concept of sustainable development applies, described as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). This conception shows concern for the objectives of socio-economic development and recommends a long term view which takes account of the impacts of productivity on resources.

Conceptually, the demands of sustainable development are also its challenges. First, "meeting the needs of all" implies that people should be treated with a certain level of equity. The challenge is that satisfaction of needs may be perceived as draining resources, rather than an investment in the less privileged (Anand and Sen, 2000). Second, extending the privilege of equity to future generations may compromise the ability of present-day people to meet their own needs. In this case, deprived people are more likely to be concerned with access rather than the preservation of resources for future generations. Thus there are significant challenges for societies striving to meet the needs of all people. Nevertheless, the "meeting of needs" may be seen as a moral obligation or, as Gasper and Truong (2005) argue, an entitlement when viewed from a human rights perspective.

The concept of sustainable development has been extended and reformulated by other authors since the Brundtland Commission reported in 1987. Solow (1992) broadened the concept to focus on standards of living (rather than needs) and their preservation through the generations, but his view neglects opportunities that are valued irrespective of their contribution to living standards. In this study, we adopt the view proposed by Sen (2009) which focuses on people's freedoms and their preservation (or expansion) now and in the future. From this perspective, sustainable development is concerned with distributing the benefits of development in an efficient and equitable manner, while ensuring that such opportunities are extended to future generations. In this paper we examine a development project with goals of widening access to a range of financial transactions and government services, while curbing crime. We focus on efforts to implement a national identity card system in Nigeria, highlighting a number of key constraints to the equitable participation of citizens in identity management activities now and in the longer term.

RESEARCH APPROACH

Theoretical perspective

The theoretical perspective we adopt in this study is informed by the human development approach which arose in opposition to the prior focus on economic growth as the goal of development. Sen's (1999) capability approach takes the expansion of freedom as both the primary end and the principal means of

development. Thus, development requires making improvements in people's capabilities (or opportunities) as well as in the processes through which they engage in activities that contribute to their growth. From this perspective, capabilities cannot be assessed on economic measures (e.g. income level) alone, since individuals have different opportunities and circumstances for translating such incomes into better lives (for example, on health grounds). Rather, income is a means to development, which needs to be viewed in light of the differences in people's needs arising from conditions beyond their control.

Sen describes the role of freedom in development in two parts. The first is the *constitutive role* which refers to the *capability* to develop one's potential, unconstrained by circumstances outside one's control. Development in this sense involves expanding people's basic freedoms so that they are empowered against deprivations, e.g. literacy or health deficits. The process involves removing or counteracting constraints that limit an individual's opportunities to participate in initiatives that s/he has reason to value. Capabilities provide the potential to achieve desired goals, but they require choice and the exercise of individual agency to realize the opportunities. The second part addresses the *instrumental role*, which refers to the *means* of achieving development and the freedom to pursue it if one so desires. Development in this sense concerns the way that people's rights, opportunities and entitlements contribute to expanding their freedoms in general so that they are able to achieve economic progress. This aspect of the approach recognizes the influence of social arrangements on individual agency, as forces that can constrain people's freedom to participate, and thus restrict their capacity to act.

From Sen's (2009) perspective, then, freedom is a combined function of the opportunities made available by social arrangements and people's capabilities which in turn may be cultivated by those freedoms. Capabilities occupy a central role in Sen's approach, as a mediator between commodities (i.e. the goods and services to which a person has access) and functionings (i.e. a person's actual achievements in life). Capabilities are constitutive of a person's development because they determine the extent to which the individual can benefit from goods and services and convert opportunities into actual achievements (Robeyns, 2000). Sen argues for equity in the spaces of opportunities and capabilities to enable equality of access for people to participate in activities they value by choice. Thus a key concern in our study is to understand the constraints that limit people's engagement in such activities. Such constraints may be particular to an individual, such as literacy level and physical condition, or they may arise from social arrangements, such as infrastructure, social norms and power relations.

Sen's goal is not to provide a prescription for development. Thus, he does not suggest a set of essential capabilities that everyone should strive for or a list of desirable functionings with universal validity. He sees the capability approach as a framework of thought or mode of thinking (Sen, 1993 cited in Robeyns, 2000), which has relevance for a plurality of purposes in which development can refer to a wide range of social issues applicable to both developing and industrialized nations. With this in mind, we adopt the concepts and relationships outlined above as sensitizing devices for this study.

We acknowledged from the outset that these ideas would need to be fleshed out with further concepts of particular relevance to the socio-economic context of our research. To that end, we read the work of some leading Nigerian academics and long-standing political commentators on Nigeria and incorporated further themes to guide our data collection. These writers made repeated reference to

the effects of weak governance systems and the way they nurture and reinforce corrupt practices (Achebe, 1984; Maja-Pearce, 2010; Cunliffe-Jones, 2010). Each also referred to the fragmented nature of the country with its divisions along tribal and religious lines. During our fieldwork we explored these themes with specific reference to the National Identity Card project. Study participants drew our attention to the way these existing social arrangements constrained the achievement of desired development goals. They also pointed to a number of individual level constraints, allowing us to elaborate our initial conceptual framework. The full set of themes we identified and their relevance to the case study are discussed in full in the analysis section of this paper.

While Sen's approach may be seen to favour the practice of democracy in an idealist sense (Navarro, 2000), our stance is that citizens' interests should be taken into account in decision making. Nevertheless, through our combined reading, fieldwork and personal experiences, we are crucially aware of the dynamics of power and its reproduction within the context of study. Thus, our iterative approach to the development of a research framework helped us to elicit information on how people live, as well as to reflect upon the wider context of our study.

Data Collection

The concepts and ideas outlined above guided our data collection process and informed the analysis through which we address our research question. We adopted an interpretive research approach (Orlikowski and Baroudi, 1991; Walsham, 1995), in which the aim was to seek rich insight from some key participants which might shed new light on an enduring problem, that is, the reason why IS in DCs frequently fail to achieve desired outcomes. Data were collected by one of the authors in August 2010 at the headquarters of the National Identity Management Commission (NIMC) in Abuja. At the time, NIMC was in dispute with one of the previous suppliers to the project and was in the process of revising the proposed implementation date for the National Identity Card project from October 2010.

Data were collected via unstructured interviews with a range of key players and observations of the registration process for identity cards at NIMC's head office. Given the sensitive nature of some of the topics discussed, some study participants were reluctant to have their conversations recorded, despite assurances of confidentiality. In these circumstances, notes were taken in the meeting and expanded immediately afterwards. The interview data and observation notes was supplemented with project reports, presentations and other materials gathered from the websites of the identity management commission (NIMC) and external agencies.

The total number of interviewees was twenty-five comprising the IT director; five IT project management and project support staff; five members of NIMC departments involved in operational and legal aspects of the project, including two heads of department; five call centre staff; and nine registrants at NIMC's offices. Observations tended to be opportunistic, often the result of rescheduled or interrupted interviews. One of us also attended a meeting of the Harmonization Committee – which comprises representatives of all of NIMC's public and private sector partners – convened to discuss standards and charging mechanisms for the project. We have remained in email and telephone contact with the organization since our study to keep abreast of current developments.

CASE STUDY NARRATIVE

The Case for a National Identity Scheme in Nigeria

Nigeria is the most populous country in West Africa with over 150 million inhabitants located in 36 states and the federal capital territory of Abuja. The country is currently ranked 142 out of 169 on the human development index (UNDP, 2010) – which measures peoples' well-being in terms such as life expectancy, literacy and standards of living – and is also classified low on a range of other development indicators including per capita gross domestic product (GDP). Nigeria is rich in natural resources, yet poverty levels in the country remain high, with the majority of Nigerians still living on less than US$1 a day. Efforts to improve the levels of socio-economic development in the country are hampered by poor infrastructure, particularly outside the major urban areas. Utility supplies are unreliable, with the result that businesses turn to alternative (and usually more expensive) sources leading to higher overhead costs, for example, reliance on privately owned generators for electricity.

Leading academics and commentators point to poor governance, tribalism and corruption as issues that have a profound effect on all aspects of Nigerian life (Achebe, 1984; Maja-Pearce, 2010; Cunliffe-Jones, 2010). Public sector projects – for example, to develop essential infrastructure – are often interrupted or abandoned when changes of government occur, notably during the frequent transitions from civil to military regimes in the forty years following independence in 1960. Each regime articulated new policies and manipulated existing systems and procedures to favour members of ethnic groups affiliated to the government of the day. Such practices give rise to poor productivity, dysfunctional administrative processes and weak systems of accountability which foster corruption. Public sector organizations are filled with redundant staff and ghost workers i.e. non-existent employees or staff who have resigned but continue to receive employment benefits.

These conditions present major challenges and opportunities for the introduction of a secure and reliable national identity system. On the one hand, the physical infrastructure is ill-equipped to support a system that will need to link public and private sector institutions across the country, whilst corruption is endemic in social relations. On the other hand, a reliable identity management system has the potential to contribute to the socio-economic development of the country in a variety of ways, from widening access to financial transactions to reducing identity theft and crime control. At present, the existing means of identification in the country can be easily duplicated or forged, for example, individuals can obtain multiple copies of the Nigerian international passport and use them to operate bank accounts unlawfully. In this uncertainty, police officers and other officials can exploit situations where citizens are required to prove their identity.

History of The National Identity Card Project

Several attempts have been made to implement the National Identity Card (NIC) project in Nigeria over a period of 33 years since 1978. This study focuses on the history of the project in the last decade, in view of the limited number of archives and informants that could provide a more extensive account. During this time, the project was sponsored by the Department of National Civic Registration (DNCR) until 2007 and the National Identity Management Commission (NIMC) thereafter.

Prior to 2000 the projects were conducted during periods of great instability within the country such that most initiatives were disrupted or terminated when military regimes seized power. During this period, two attempts were made to introduce the system. In 1979 only the technology was installed, then in 1998 citizen registration was achieved, but no cards were issued to the general public. Since then, there has been relative stability in government as the country has moved from one democratic dispensation to another without military interference.

The two most recent attempts are closely linked since the latter is an upgrade of the former. The first was undertaken between 2003 and 2006 and involved a batch implementation of the system with identity cards issued to eligible citizens. The second was launched in 2007 and its implementation is ongoing. At the time of writing, no cards have been issued from the second attempt and plans to begin production in October 2010 were not achieved. These projects are discussed in more detail in following sections.

The National Identity Card (NIC) Project (2001 to 2006)

The 2003 implementation was undertaken by the Department of National Civic Registration (DNCR) in partnership with international consultants Sagem, S. A. France. Sagem was engaged in 2001 to procure and install the technological equipment required to register 60 million citizens and produce national identity cards (NICs) for registrants. DNCR provided funding and operational support from its offices located in all 36 states and 774 local government areas within the country. The main objectives of the project were to establish effective control of illegal immigration, support validation of other civic documents (e.g. international passports), and set up a reliable personal identification system for securing commercial transactions within the financial sector of the country (NIMC, 2008).

Sixty thousand mobile registration workstations (MRWs) were deployed across the country during a 3-week period set aside for a mass registration exercise. Registrants' details were recorded onto paper forms by DNCR officials and support staff engaged by Sagem. Photographs and fingerprints of the registrants were taken using the MRWs which had the capacity to capture details of 500 registrants per day. At the end of each day, these images were downloaded onto zip disks and sent, along with the paper forms, to a data centre located at the headquarters of DNCR in Abuja. At the data centre, the forms and images were stored on a database which was used to produce the NICs. Processing involved the use of fingerprint biometric verification to identify and disqualify individuals who had registered more than once. Printed cards were sent to the state and local government offices of DNCR for collection by the registrants, who used slips detached from the original paper forms as a means of identification.

About 52 million people registered for NICs (out of an anticipated 60 million) and cards were produced for approximately 37 million of them. The discrepancies were attributed to insufficient time for the registration exercise and errors in the collection and transmission of the data respectively. NICs quickly became an accepted means of identification, based on the view that individuals could not possess multiple copies owing to the biometric verification that was carried out before production. They were also a popular identity document among citizens since the cards were issued at no cost to them. NICs can be used in a range of transactions such as opening personal bank accounts, applying for loans and other credit facilities, and confirming identity in other situations, such as job applications, examinations in educational institutions and travel across the West African free trade zone.

Despite this early promise, NICs were not universally accepted by third parties, not least because of problems with correcting, maintaining and authenticating the information they contained. Other issues include allegations of bribery against government officials involved in the project, inadequate infrastructure to support operational running of the system, and a variety of governance concerns – all of which are discussed in detail in the analysis section. In these circumstances, the federal government set up a committee to review the project in 2005. It recommended establishing a new government agency to take over the operations of the DNCR and develop a national identity management system.

The National Identity Management (NIM) Project (2007 to date)

The National Identity Management Commission (NIMC) was established in May 2007 to progress work on the NIC project. It formed a public-private partnership with two local technology firms (Chams Consortium and Iris One Secure Card Consortium) and a specialist identity management firm (Nadra) from Pakistan. The main objectives of the upgrade – reconceived as the National Identity Management (NIM) project – are to create a sustainable identity management system which is managed by Nigerians, with specific goals to develop the consumer credit industry, fight the proliferation of false identity documents and identity theft, and improve administrative procedures in organizations needing to validate citizens' identities (NIMC, 2009).

The main differences between this system and the previous one are that it will: i) enable continuous, year-round registration; ii) integrate existing databases of other government agencies (e.g. health, passports, driver licensing, voting); and iii) provide identity verification services to third party organizations. Anticipated service improvements include: instant validation of citizens' details – to minimize errors during registration; real time upload of data to the data centre – to prevent data corruption or loss; and updates on request – when citizens' details change. Interoperability between this system and those of third parties is expected to minimize citizen exclusion from vital services and reduce identity related crime. To ensure that the system is in constant use, the federal government has mandated the use of NICs for a wide range of financial transactions and government services.

The initial plan was that NIMC and its partners would carry out the upgrade in two parts with a proposed implementation date of October 2010. At the front end, NIMC would work with its local suppliers to install permanent registration centres to replace one-off mass registration. These centres would be fitted with card issuing devices to enable NIC production at the point of registration. Meanwhile, card acceptance devices would be deployed in third party organizations (e.g. banks) so that they can communicate with the National Identity Database to validate transactions. At the back end, NIMC would work with its identity management partner from Pakistan to integrate the database from the 2003 implementation with the legacy systems of the third party organizations. Having inherited the assets and liabilities of the defunct DNCR, NIMC anticipated being able to reuse and update the existing database.

A dispute with Sagem, the technology supplier to the DNCR, caused a rethink of this plan. Sagem has refused to hand over the infrastructure from the 2003 project on the basis that it is owed monies for additional support provided after the winding-up of the DNCR. Sagem has denied NIMC access to the data centre where the database and the NIC production equipment are located, delaying

implementation of the full system. At the end of 2010, the dispute was referred to the Office of the National Security Advisor and the Federal Ministry of Justice. Meanwhile, NIMC decided to procure an alternative system working with its new partners. A pilot implementation is being planned at the time of writing.

NIMC has been registering citizens ahead of the implementation of the upgrade project, but the dispute with Sagem has meant that it has not produced identity cards for the new registrants. However, it has been able to distribute cards issued by the 2003 implementation. These activities are carried out at NIMC offices located across the country. A customer care unit has been set up to help with tracing each registrant's NIC and transferring them to other centres when registrants have relocated.

ANALYSIS

This section examines the NIM[1] project as an ICT-enabled initiative with potential to contribute to the socio-economic development of Nigeria. It focuses on how the project may contribute to sustainable development i.e. equality of participation in the outcomes of development initiatives among people of both the present and future generations. At the heart of this initiative is a National Identity Card which constitutes a commodity in Sen's sense of the word, i.e. a good or service that may be used in transactions that lead to growth.

Different Meanings of Development

In proposing freedom as the central object of development, Sen (2009) emphasizes the relevance of what people value in any analysis of the quality of their lives. What development means in this case may be understood through the perceptions of those who have a stake in the NIC project.

Access to Consumer Credit

One of the ways in which NICs are expected to expand individual freedoms is through their use in commercial transactions which in turn would expand the financial sector of the country. From a policy perspective, NICs are expected to facilitate access to consumer credit because the identity of the card holder can be authenticated via online links between NIMC and third party organizations. To encourage participation, the project sponsors have made the issuance of NICs free to all citizens. Their underlying belief is that increased access to loans and credit facilities will enable the acquisition of commodities that improve the quality of citizens' lives in areas like accommodation, transportation, health, and so on.

Opportunities for Employment

Since a steady income is one of the requirements for obtaining credit facilities, unemployed individuals are unlikely to benefit from these services. They will be deprived of these opportunities, regardless of their desires to live better lives or start businesses of their own. Being unemployed is thus a form of capability deprivation with the risk that such people will fall further into poverty while others benefit from the new arrangements. For such individuals, the opportunity to gain employment would be a basic capability that could then further their development in other ways. The expansion in government business and commercial activity envisaged under the new arrangements could provide such opportunities. Since

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[1] Hereinafter, references to the NIM project mean the combined NIC and NIM efforts to create a national identity management system, while NIC is used to refer to the identity card and NIC project means the specific project undertaken by the DNCR in collaboration with Sagem.

the new system involves a public-private partnership with permanent registration centres and identity verification units across the country, it should generate income and provide employment opportunities for citizens now and in the future.

Crime Control

Another way in which NICs are expected to expand people's freedoms is through crime control. The project sponsors believe that the police will be better able to confirm people's identities and trace offenders. From a policy perspective, crime control will enable people to move around freely without fear of losing their possessions. In this view, the emphasis is on freedoms to carry money, make purchases and conduct business in relative safety.

Freedom from Harassment and Extortion

On the other hand, some citizens give a different meaning to these situations. They apply for NICs in the belief that holding them will prevent harassment and extortion from the police during stop and search procedures which are common on the country's roads. From these citizens' perspectives, what is of value is having the freedom to avoid harsh treatment in their dealings with the authorities.

Efficient Conduct of Government and Business Operations

Major objectives of the NIM project are to fight the proliferation of false identity documents and identity theft, control illegal immigration, improve administrative procedures in organizations needing to validate citizens' identities, and plan effectively for health and pension services. A Harmonization Committee has been constituted with representatives from each of the third party organizations to which NIMC will provide identity verification services. Such transactions include, but are not limited to (NIMC, 2009):

- applications for international passports;
- opening personal bank accounts;
- purchase of insurance policies;
- purchase and registration of land;
- consumer credit transactions;
- payment of taxes;
- pension transactions;
- national health insurance; and
- driver licensing.

In conjunction with the other development goals discussed in this section, an overarching aim is to improve Nigeria's image on the world stage.

Management of Identity

NIMC (2009) describes the NIM project as concerned with 'identity management not card issuance' to distinguish the current project from the one undertaken by the DNCR and Sagem. The above list of transactions indicates that the NIM system will touch very many aspects of people's lives. On the one hand, the efficient execution of such transactions would have benefits for citizens and help to improve the image of the country as a whole. On the other hand, since the proposed general multi-purpose smart card has been mandated for use in all of the listed transactions and also for employment, questions arise about its potential for use as a tracking or surveillance mechanism – in this sense, a deprivation of freedom, given the privacy concerns raised by such an approach.

The Relationship Between Means and Ends of Development

Development projects may be understood in terms of the combined effect of how they enrich the quality of people's lives, and how that process is mediated by social arrangements that enable or constrain people's engagement in activities that contribute to growth. This issue is addressed in this section by examining the relationship between the means and ends of development of the NIM project.

Contribution to the Financial Sector

The use of NICs in the conduct of financial transactions is one of the most publicized means by which the project is expected to contribute to development. Within banks in Nigeria, 'irrefutable identification' is required to own and operate accounts, and this criterion also applies when individuals wish to cash cheques. In the absence of NICs, banks usually identify individuals through the use of references, i.e. guarantees of the credibility of an applicant from other individuals who already have bank accounts. Given a ratio of about 1:7 account holders to population in Nigeria, individuals are currently excluded from these services through lack of social capital. Furthermore, the dependency on references complicates procedures for both banks and citizens, since account holders are not always willing to accept liability for other individuals' transactions. Thus, the capability to own and operate bank accounts will be an achievement in itself.

Subsequently, the value of this capability in terms of enhancing freedoms may be understood as a product of an individual's initiative (choices, based on what s/he finds valuable) and the conditions within which s/he is able to pursue desired goals. A major objective of the NIM project is to facilitate access to consumer credit e.g. bank loans and hire purchase plans. Normally, eligibility for these facilities requires formal applications endorsed by well known employers, or possessions that can be used as collateral to secure loans – in addition to a steady income. These conditions are designed to boost a lender's confidence in the identity of the applicant and ensure against default. While NICs may give confidence in the former, it remains to be seen how (or whether) they will affect the latter, and thus the extent to which they will contribute to widening access to credit facilities, e.g. to start new businesses or acquire valued commodities. While it is beyond the scope of this paper, there are lessons to be learnt here from the financial crisis in the developed world about the issues associated with managing access to consumer credit.

Opportunities for Employment and Commercial Activity

The NIM project is also expected to contribute to development through increased employment and commercial activity within the free trade zone of the Economic Community of West African States (ECOWAS). Although the federal government remains the largest employer in Nigeria, most of its organizations are plagued by ghost workers. The NIM project is expected to improve administrative processes within these organizations and reform employment procedures, enabling more people to benefit from available job opportunities. Indeed, it is common practice for job advertisements to list NICs as part of the required documentation from applicants. NICs are also accepted as a travel document across the borders of the West African countries which make up the free trade zone, making them attractive to traders who need to commute across the zone to conduct business.

For the most part, citizens are enthusiastic about the NIM project. Eight-five per cent of the eligible population presented at the registration centres during the mass registration exercise in 2003. At the time of this study, citizens continued to present at NIMC offices in large numbers. Some had attempted to register during

the previous exercise, while others believed they had missed out on valuable opportunities by not having the cards, for example, because they were deprived of the capability to apply for jobs that required NICs as part of the application.

Mediating Mechanisms

Existing social arrangements mediate the achievement of the development goals discussed above. The most significant mechanisms in this regard are corrupt practices, poor planning and weak governance which affect the registration and production processes in ways that constrain people's freedom to acquire NICs in the first place. Subsequently, personal circumstances such as employment status and property ownership mediate the achievement of desired goals, as discussed below.

Corrupt Practices
Development in this case is dependent on people's freedoms to acquire NICs. Corruption is a significant constraint on such opportunities. Numerous registrants complained that they did not receive their cards after the registration exercise. While some of the data collected were unusable for NIC production, other cases were a result of corrupt practices. Study participants referred to cases where officials with access to the card storage centres either withheld the cards in the hope of extorting money from registrants or took the cards to the owners' homes, again in the hope of receiving some form of gratuity. These practices run counter to the 'free of charge' nature of the NICs and often led to the cards being misplaced, with no possibility of obtaining a replacement until card production is resumed.

Poor Planning and Weak Governance
Crucially, millions of people lost the opportunity to acquire NICs at the time of the mass registration exercise in 2003 owing to the effects of poor logistical planning and management compounded by weak governance. Specifically, the 3-week period allocated for registration was insufficient to capture the details of the 60 million eligible citizens. This situation was exacerbated because some registration officers did not remain at their posts but went from house to house registering citizens they knew or those who had provided an incentive to receive the service at home, leaving large numbers with no means of registering. Finally, no cards have been produced for citizens who registered after the mass registration because NIMC and Sagem have been locked in a legal dispute for three years with the result that card production has been suspended.

Poor governance systems in the country mean that legal disputes, like the one between NIMC and Sagem, take years to resolve. In the meantime, citizens continue to register with the expectation of obtaining their cards, only to be disappointed when they return to the centre to collect them a few weeks later. A lack of accountability means that no official statement has yet been issued about the non-production of cards, so citizens are unaware when they register that they have no chance of receiving their NICs in the foreseeable future. Indeed, it is only with persistence that they learn the true picture. In these circumstances, NIMC makes ad hoc arrangements to provide interim documents for people in critical need of identity services. However, individuals complain about the waiting time for such documents and the lost opportunities they suffer as a result.

Efficient Conduct of Government and Business Operations

The list of transactions for which NICs have been mandated gives an indication of the scope of the NIM initiative and the diverse range of interests that come into play in this case. Some 'value added' services are being incorporated within the current implementation. For example, the system is being designed to enable

non-repudiation of transactions so that each time the NIC is used, the transaction will be traceable to the individual concerned by means of their unique national identification number (NIN). The design rationale is that third party organizations will be more confident about providing services to citizens if inappropriate use of the card can be detected at the point of conducting a transaction. This facility will be enabled by the interconnectivity between the new system and those of NIMC's third party partners. In response to partners' complaints about the cost of maintaining connectivity to the National Identity Database, NIMC has agreed to pay for both the provision and maintenance of the connections. Third party organizations will be required to pay for identity verification services either per transaction or on a lump-sum basis for a fixed period. These costs are likely to be passed on to citizens bundled in with the existing transaction cost.

Mediating Mechanisms

Corruption and weak governance are again significant mechanisms affecting the goals of efficient conduct of government and business operations. Poor infrastructure in the country further constrains the achievement of these goals. Crucially, tribalism acts as a medium in which the development process with all of its enabling and constraining mechanisms takes place. At an individual level, accent, place of residence and degree of habituation to one's world influence the achievement of desired outcomes, as discussed next.

Poor Infrastructure
Study participants raised several concerns about the infrastructure required to support the ambitious nature of the NIM project. For example, non-repudiation of transactions relies on being able to locate people within the country. Without the kind of standardized address system available elsewhere, or other reliable systems for authenticating demographic data, registrants can give false addresses to avoid being traced or false names to assume a new identity or impersonate someone else. This suggests that access to loans and credit may continue to rely on an individual's social capital and collateral.

Furthermore, Non-Nigerian nationals can exploit the limitations of existing infrastructure. Without a reliable system (e.g. widespread use of international passports) to verify registrants' nationalities, registration officers may accredit individuals for registration informally based on their accents and geographic knowledge of their alleged states of origin (or local government areas). This issue presents challenges for the control of illegal immigration since non-eligible individuals may be certified because they have acquired local Nigerian accents.

Corruption
Some NIMC staff (who transferred from the DNCR) reported that Sagem made deliberate efforts to prevent them from operating or accessing the data centre so as to lock-in the DNCR and maintain control over future operations. Staff felt that the former management team did little to alleviate the situation because their interests had been compromised through bribe taking. Three former ministers and two officials were indicted on corruption charges in 2003, but no convictions have been achieved to date. This issue continues to affect the current administration. Since NIMC has no access to the data centre, NICs cannot be produced and issued to registrants – a state of affairs that has persisted since 2007. Some participants were of the opinion that powerful vested interests continue to manipulate the situation enabling Sagem to hold out on the handover in the hope of obtaining further payments from NIMC.

Weak Governance

Such weak governance processes and citizens' habituation to them constrain access to further opportunities, for example, in healthcare. One of the states in the country launched a social safety net programme to provide free health care for pregnant women and children under the age of five (CRS, 2010). The plan was to use the mobile registration workstations (MRWs) from the 2003 exercise to issue beneficiaries with exclusive identity cards to ensure that only eligible people got the services. However, the MRWs are proprietary systems that can only be upgraded and reused by Sagem or an organization operating under its licence. So, another unsatisfactory set of ad hoc arrangements is required to address this situation. Citizens have to prove their eligibility for the services by providing documents such as school certificates or tax certificates.

Tribalism

The organization of life in Nigeria along tribal lines acts as a medium for much of the poor practice discussed in this section. Personal, work and political life are subject to fragmentation and rivalry, which breeds corruption that can spill unexpectedly into violence. Under the federal quota system – which seeks to equalize the distribution of resources and appointments among the different ethnic groups – candidates must be appointed in equal numbers from each of the country's geo-political zones which reflect tribal groupings. Study participants highlighted cases where appointments were given to unqualified people on this basis. These members of staff were identified as 'redundant' by the current management of NIMC and are currently undergoing skills training. While this approach may benefit the individuals concerned and thus the project as a whole, this study highlighted areas where the lack of competition inherent in the quota system meant that the project was deprived of knowledgeable resources. In short, a policy that seeks to equalize on the basis of numbers alone is subject to abuse, since employers can choose among eligible candidates on criteria of their own making. This process has hindered the current implementation and seems likely to continue to do so in the future while merit need not be a criterion for continued employment.

Management of Identity

This section has addressed different stakeholder views of how the NIM project may contribute to socio-economic development in Nigeria. Contrary to experience in some countries, notably the United Kingdom, identity cards are viewed positively by Nigerian citizens and policy makers alike. In addition to the transactions for which they are mandated and their potential for stimulating employment and commercial activity, some individuals expressed a desire to possess the cards because they make a statement about their Nigerian nationality, while others want them to replace existing means of identification because they display more relevant contact information in case of emergencies (i.e. next of kin).

Without denying the obvious benefits, some circumspection is appropriate. Given the range of transactions in which NICs are required, key questions relate to the data that will be stored on the smart card and how it will be used. This study revealed manoeuvring by a number of third party organizations in a bid to persuade NIMC to collect data that would favour their interests, despite NIMC's position to provide basic infrastructure only for identifying citizens. Requests included holding criminal information on offenders, or linking data fields of family members, to assist the Police and the National Immigration Service respectively.

The rationale for NIMC's public-private partnership is based on sharing the costs of development with the private sector combined with prospects of a profitable venture for the government. The partnership is backed by legal agreements which are designed to safeguard and regulate the use of data. Nevertheless, Nigeria's legal mechanisms do not inspire confidence. The country has a history of failing to enforce the terms of such agreements, suggesting that, in addition to the security risks posed by collecting and processing high volumes of sensitive citizen information, individuals' privacy may be threatened through deliberate data misuse in pursuit of *vested interests*. Such *privacy threats* would run counter to the goals of the NIM project, and would constitute a deprivation of freedom.

NIMC's immaturity as an organization is important in this regard. The NIM development is a mega-project which even some of the most experienced operators might fail to bring to fruition. Members of the project expressed concerns about the absence of established processes/procedures and lines of communication. Some specific incidents were highlighted in which decisions were made without due consideration, e.g. the acquisition of an automated fingerprint identification system in a matter of days, and the acceptance of software prototypes without sufficient testing. Thus, *management inexperience* and vested interests combined, again, with weak governance systems are further important mechanisms influencing this development initiative.

CONCLUSIONS

Much research on DCs highlights the potential for ICTs to contribute to improvements in the socio-economic conditions in these countries. However, such initiatives are often problematic to realize and difficult to sustain. Concerns have been raised about the value to citizens of particular projects (Madon et al., 2009); the need for improvements in basic facilities and government structures as prerequisites to development agendas (Bollou and Ngwenyama, 2008; Ciborra and Navarra, 2005); and the continued dominance of western, scientific knowledge over local, indigenous forms of knowledge guiding the development efforts (Puri and Sahay, 2007). In this paper we examine the developmental potential associated with the introduction of a National Identity Management system in Nigeria. This initiative is popular with policymakers and citizens alike, it seeks improvements in government procedures and services, and is managed by Nigerians except in the specialist area of identity management where local expertise was not available. The project has clearly articulated development goals which, if achieved, should contribute to improving the socio-economic conditions in the country. Thus prospects for this initiative should be bright since it seems not to be blighted with many of the ills that have plagued such projects in the past. In these circumstances, our research sought to examine the reasons why the developmental potential of the system is proving so difficult to realize.

We employed key concepts from Sen's capability approach to assess the opportunities that this initiative seeks to provide, the way they might contribute to citizens' development now and in the future, and the constraints arising from both individuals' personal circumstances and existing social arrangements. Our analysis shows that the opportunities arising from this project are sufficiently attractive to encourage citizens to register in high numbers – and to persist with trying to collect their cards, sometimes for years after they have first registered – but this potential may prove inadequate to sustain the initiative in the longer term. Some citizens are being deprived of opportunities because card production has been suspended for three years, others are paying bribes to gain access to

their cards, and government ministers have been indicted on corruption charges but no convictions have occurred. The overarching goal of this project – a secure and reliable identity system – is also its major challenge because such a state of affairs would threaten vested interests. Already there are cases of corruption, even before the system is fully operational. Weak governance nurtures corruption and ethnic rivalry means that citizens lack a shared sense of identity that might prompt the kind of revolution in Nigeria that has occurred in parts of the Middle East and North Africa. On the other hand, the recent elections returned President Goodluck Jonathan with a reform agenda in one of the most credible electoral processes in the country's history. Enacting his agenda will require strong leadership, corrective economic measures to raise revenues to pay for infrastructure updates, and a clampdown on corruption (This Day Live, 2011).

Although widely acknowledged in other disciplines, Sen's ideas are still relatively unfamiliar in the IS field, particularly in their application to case study material (for examples, see Madon, 2005; Zheng and Walsham, 2008). As Sen (1999) acknowledges, his framework is incomplete. This presents a challenge, but also an opportunity, since it provides space to consider a wide range of capabilities and means of (and constraints on) achieving them appropriate to the diverse development contexts in which such initiatives are attempted. It also provides scope to use the ideas in conjunction with other theories rather than striving to complete the framework by adding to or refining its dimensions.

In our study, the major constraints on the achievement of development objectives are weak governance, corruption and tribalism which interact and sustain each other. Poor infrastructure in the country threatens the goal of a secure and reliable identity system, providing another avenue for fraudulent activity. Some of these constraints are well understood in the IS field, but the effects of corruption and tribalism are under-researched. Further work might explore the issues we raise here in other DC contexts.

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