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UNDERSTANDING SOCIO-ECONOMIC BENEFITS, COSTS AND CHALLENGES OF DIGITAL IDENTITY SYSTEMS IN UGANDA, KENYA AND TANZANIA



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Cover Photo credit: *Left*, The Weekly Observer, Uganda; *Right*, Aljezeera.com

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ACRONYMS AND ABBREVIATIONS

AML	African Micro-finance Limited
AOR	Authorized Organization Representative
API	Application Programming Interface
CDD	Center for Digital Development
DID	Digital ID
ESB	Enterprise Service Bus
FGDs	Focus Group Discussions
ID4D	Identification for Development
ID	Identity
IDs	In-depth Interviews
IPRS	Integrated Population Registration System
KII	Key Informant Interviews
KYC	Know Your Customer
NHIF	National Health Insurance Fund
NID	National Identity
NIDA	National Identification Authority
NIIMS	National Integrated Information Management System
NIN	National Identification Number
NIRA	National Identification and Registration Authority
NMB	National Micro-finance Bank
RAN	Resilient Africa Network
REC	Research Ethics Committee
RITA	Registration, Insolvency and Trusteeship Agency
TPA	Tanzania Ports Authority
TRA	Tanzania Revenue Authority
UNCST	Uganda National Council of Science and Technology
URSB	Uganda Registration Services Bureau
USAID	United States Agency for International Development

KEY TERMS



Digital ID

Information on an entity used by computer systems to represent an external agent. The agent may be a person, organization, application, or device. The information is a “set of attributes related to an entity” that enables the entity to be autonomously identified.



National ID

A unique identity card that is issued to citizens above 18 years of age as the primary identification document. The card has information or a “set of attributes related to an entity” that enables the entity to be autonomously identified.



Digital Identity Systems

Infrastructure and processes used to design, establish, use and maintain digital identities either for civil identification, or as an adjunct to broader service delivery.



Third Party User

An entity that taps into the information captured in the DID system to identify individuals as part of their service delivery processes. They are also referred to as ‘tertiary users’.



Biometric

Unique attributes including fingerprints, hand geometry, earlobe geometry, retina and iris patterns, voice waves and deoxyribonucleic acid (DNA) in digital form. In this report, biometric refers to fingerprints.

EXECUTIVE SUMMARY

Over the last decade, countries in sub-Saharan Africa including East Africa have set up and implemented electronic identification systems albeit at different stages. While the primary purpose is fostering identification and accounting for individuals, they have been used by governments for various civic and social services to the populace (Anderson, C. L., Biscaye, P. E. & Reynolds, T.W., 2013). The broadest of these systems - the national identities (IDs) have involved registration of all adults together with capturing their biometric data. However, USAID's Center for Digital Development (CDD) notes that formative studies done across sectors and countries report many development gains from digital identity systems, but also common gaps depicting a fragmented ID landscape, siloed systems and short-term design motivations. CDD also discovered a lack of strong evidence for exactly when and how identification systems provide value, both to institutions that invest in them, and individuals who use them (USAID, 2017).

Upon this background, CDD supported ResilientAfrica Network (RAN), to conduct studies in Uganda, Kenya and Tanzania to understand the landscape around National IDs in these countries, specifically understanding the costs of implementing the Digital Identity (DID) systems, the socio- economic benefits as well challenges faced in implementing these systems. The study comprised three categories of stakeholders within the DID systems: investors in the ID systems (Governments), primary users (ID card holders 18+ years), and third party users of the ID systems (entities that utilize NID systems). Within the three countries, we interviewed 400 participants through key informant interviews, focus group discussions, and in-depth interviews.



Registering for Huduma Namba in Kenya (Credit: dignited.com)

KEY INSIGHTS

NID as a foundational versus a functional system



Findings from the three countries (Uganda, Kenya, and Tanzania) demonstrated that national ID systems were rolled out with the intent of serving a more foundational purpose¹. This role however, is being realized more in Kenya and Uganda. In Tanzania, the National ID system continues to serve a more functional purpose, with primary use being identification of individuals in socio-economic activities².

- 1 Foundational purpose: single ID system that underlines multiple purposes ('USAID Identity in a digital age')
- 2 Functional purpose: single ID system with a single purpose e.g. voters' identification, driving permit ('USAID Identity in a digital age')




Privacy and security considerations



Concerns were raised about data security and privacy, especially regarding potential misuse of data. Specifically, there are fears about potential misuse of data by ill-intentioned individuals, criminals, institutions or even the government. Some agencies expressed fear that the system could be easily compromised because of the way it is setup. In Uganda, some respondents felt that officials running the National ID system could be compromised through inducements, to release people's data.

According to the Principles on Identification for Sustainable Development, championed by the World Bank, a sound National ID system should fulfil ten principles which have been grouped into three broad categories of: 1) inclusion which considers universal coverage and accessibility, 2) design which emphasizes robust, secure, responsive, and sustainable systems, and 3) governance which focuses on building trust by protecting user privacy and rights. To be in alignment with these Principles, National ID systems must develop cybersecurity and data privacy protective measures and technical capabilities to guide implementation of registration and use of data for service delivery.

Table 1: Key Findings on Benefits, Challenges and Costs as Perceived by three Categories of User Groups

Category			
	Government	Primary users	Third party users
Benefits	<p>Proof of citizenship</p> <p>Planning and accountability</p> <p>Unification of different identification systems to avoid use of multiple artefacts</p>	<p>Benefits</p> <p>Credentials- authentic artefact for routine self-identification</p> <p>Financial inclusion - business transactions and contracts</p> <p>Access to citizen services, programs and political participation</p>	<p>Benefits</p> <p>Proof of identity during transactions</p> <p>Minimizes fraud including identity theft and facilitates detection of 'suspicious' persons and criminals</p>
Challenges	<p>Suboptimal uptake due to user attitude and serious information biases</p> <p>Inadequate resources to fully decentralize registration</p> <p>Recurrent system failures and failure of point-of-service equipment to capture biometric data</p>	<p>Facilitating internal and cross border travel</p> <p>Challenges</p> <p>Bureaucratic procedures for card replacement and modification</p> <p>Discrimination and exclusion of vulnerable people from services</p> <p>Concerns about privacy and fraudulent use of NID data</p>	<p>Ease adherence to 'Know Your Customer' policy</p> <p>Challenges</p> <p>Bureaucratic processes to access the NID system</p> <p>System and technology failures while accessing the NID database</p> <p>Limited integration and interoperability of the NID system with other systems such as driving permit register and tax register</p>
Costs	<p>Pre-enrollment costs- capital (non-recurrent) costs</p> <p>Enrollment costs- mass enrollment, training of data clerks, materials, salaries and wages</p> <p>Card issuance and post issuance costs- printing, issuance, M&E costs</p>	<p>Information asymmetry -purpose of registration, use and renewal of NIDs.</p> <p>Costs</p> <p>Out-of-pocket fees (transport, photocopying of documents)</p> <p>Costs for card replacement and correction of errors</p>	<p>Costs</p> <p>Third party system set-up costs</p> <p>User subscription fees to access the NID system</p>

1.0 INTRODUCTION

About one billion people globally are estimated to lack official identification (World Bank ID4D Global Data set, 2018) with more than 1 in 3 adults in Low Income Countries not having an ID (ID4D Findex Data, 2017). This poses a serious obstacle to their participation in political, economic and social life; exercise of human rights; and perpetuates exclusion from social service delivery. Furthermore, countries with weak identification systems have difficulty with government administration, planning and service delivery (Gelb and Clark, 2013). Achieving inclusive development, therefore, requires a sustained effort to address the world's identification gap. The Sustainable Development Goals give credence to this, with goal 16.9 calling for "legal identity for all, including birth registration" (United Nations, n.d.).

Although several countries in sub-Saharan Africa have established Digital Identity (DID) systems, it is not clear if these

systems are providing the expected benefits, the extent of the benefits to different stakeholders, as well as potential challenges and unanticipated harm arising from the systems. Such an understanding will allow countries to better shape how they effectively and inclusively leverage this nascent technology for the benefit of individuals and institutions.

This report explores the DID systems in Uganda, Kenya and Tanzania. In all three countries, we qualitatively explored the process of setting up national ID (NID) systems, socio-economic benefits as well as sustainability of these systems. Additionally, within Uganda, we conducted a survey with NID primary users to understand the process and costs involved in acquiring a national ID, and a cost-benefit analysis with government officials to examine the costs incurred by the government to set up the NID system.



NID Registration (credit: [digidigi photography.files.wordpress.com](https://www.digidigi.org/wordpress.com))

2.0 ESTABLISHMENT OF NATIONAL IDENTIFICATION SYSTEMS

2.1 Landscape and legal framework of National Identity Systems

While all three countries are currently implementing NID systems, each has its own history regarding registration and issuance of national IDs. For instance in Kenya, issuance of NIDs dates as far back as 1915, when the colonial government passed a Native Registration Ordinance that made it mandatory for all male Africans 16 years and older to register and be issued with a “Kipande”- a copper chained metallic container worn around one’s neck to keep identification documents. The first identity cards were however issued in 1947. Further, all three governments had a vision of setting up NID systems to identify citizens and non-citizens. The NID systems were envisioned to improve access to services, accountability, political participation of citizens in voting, security and citizen identification. In all countries, the National ID Authorities are semi-autonomous and are supervised by the respective ministries of internal affairs/interior.

In all the three countries, it is important to note that National Identity Cards are only issued to citizens. Non-citizens are issued with Aliens’ Identification Cards after registering with the respective national immigration offices. Refugees seeking asylum in Uganda, Kenya and Tanzania are required to register with the Office of the Prime Minister, the Ministry of Interior and Coordination of National Government and the Ministry of Home Affairs respectively, following which they are issued with a Refugee Card. Additionally, all the three countries issue work permits to foreign workers.

The operationalization of digital NID systems following their legal enactment might demonstrate the level of political will, or might result from availability of resources. All three countries have a designated institution that is mandated to register and issue national identity cards as specified in the respective Registration of Persons Acts. These institutions are referred to as: National Registration Bureau (NRB) in Kenya, National Identification Authority (NIDA) in Tanzania, and National Identification and Registration Authority (NIRA) in Uganda.

The current Kenyan NID card was introduced in 1995 by the National Registration Bureau (NRB) under the Ministry of Interior. NRB is mandated to manage the National Integrated Identity Management System (NIIMS) which is designed to create, manage and store data on the country’s population (citizens and foreign residents/non-citizens), as stipulated in the 2018 Amendment of Kenya Citizenship and Immigration Act No. 12 of 2011. Biometric data is captured, stored offline and then transferred for online management, which includes verification and final storage in an individual database at NIIMS under the enhanced Integrated Population Registry System (IPRS). Once registered, one is allocated a unique and sequential 7- or 8-digit NID number (NIN) referred to as “Huduma Namba” in Kiswahili. This eliminates the need to carry several documents, which were previously required for one to access various government services. A unique 9-digit serial number is also associated with each card. Compulsory nationwide registration for the NIIMS Huduma Namba was conducted in 2019 to harmonize registration of persons living in Kenya to address the segregated “identity” information of the Kenyan popu-

lation. Citizens aged 18 years and older are eligible to register for and get a NID card free of charge.

The NIIMS Huduma Namba, “created under section 9A of the Registration of Persons Act, was designed to collect biometric and demographic data, including deoxyribonucleic acid (DNA) and geographic positioning system (GPS) coordinates” KICTANet 2019. However, the Huduma Namba has been faced with some controversies. These include data protection concerns, compulsory registration, concerns of exclusion from access to services and collection of significantly more biometric data than would be required. Consequently, in January, 2020, Kenya's High Court halted the controversial biometric ID scheme until new data protection laws are enacted. Before this, in November 2019, Kenya had passed a Data Protection Act that required the creation of a Data Commission. It is not clear how long it will take to operationalize the creation of this commission, but once established it should contribute to addressing the aforementioned privacy issues and aligning operations to internationally accepted data protection principles and standards. The office of the Data Commission is independent and oversees implementation and enforcement of the Data Protection Act of Kenya.

In Tanzania, NIDA which is under the Ministry of Home Affairs was established in 2008. It launched the current NID project in 2011, with the aim of establishing a national population registry of all citizens, legal residents, and refugees aged 18 years and over, in accordance with the Registration and Identification of Persons Act, (Act No.11 of 1986) Revised Edition 2012. Registration and production of NIDs commenced in 2013. All registered individuals are assigned a 20-digit NIN and issued a card.

Uganda's NID project—officially known as the National Security and Identification System (NSIS)—was launched in 2014 as a multi-sectoral project, under the leadership of the Ministry of Internal Affairs. The National Identification and Registration Authority (NIRA) was established in 2016 as a permanent agency in accordance with the Registration of Persons Act 2015. NIRA is charged with the responsibility of maintaining the national identification register, taking over civil registration from the Uganda Registration Services Bureau (URSB). It is responsible for registering and issuing unique 14-digit NINs and cards to citizens and legal residents aged 16 years and older. In 2017, registration was scaled up to include children below the age of 18 years; however, only a NIN is issued until their 16th birthday when they receive their NID card.

2.2 Registration process

NID registration in all three countries has been decentralized to increase access to registration points. The level of decentralization differs across the countries; in Uganda, registration services are decentralized to parish level, in Kenya to sub-county level, and in Tanzania to district level. Printed NID cards are delivered to respective registration stations or designated pick-up locations.

In Tanzania, NIDA utilizes mobile phones for applicants to track the status of their NID registration and to get their NIN. While registration in Uganda is decentralized, NID replacements are still centrally managed by the NIRA Headquarters in Kampala—the capital city. In Kenya, NID replacements are initiated at any nearby Huduma Centre. An application for replacement of a lost NID should be accompanied by a police letter in all three countries. This letter serves to authenticate loss of NID and can

be obtained at any police post.

In all three countries, physical presence of applicant and submission of a duly filled registration form accompanied by supporting documents are uniform requirements. Noteworthy, in Kenya, applicants can download, complete and submit an online registration form. Thereafter, an applicant

books an appointment where they physically present the supporting documents to facilitate verification and final processing of the NID. Supporting documents differ across the three countries as illustrated in Figure 1; as well as the type of information printed on each country's NID as shown in Table 2.

Table 2 : Type of information on country-specific National IDs



















Country	Identity Card	Data Displayed
 Uganda		Name Sex Date of Birth Nationality National Identification Number Card Number Date of Expiry Holder's Signature
 Kenya		Name Sex Date of Birth District of Birth Nationality Serial Number Identification Number Place of Issue Date of Issue Holder's Signature Finger Print
 Tanzania		Name Sex Date of Birth Nationality National Identification Number Date of Expiry Holder's Signature

Photo Credit: From top to bottom- The Weekly Observer, Uganda; The Citizen, Tanzania; Aljazeera

Figure 1: Requirements for Registration for NIDs in Uganda, Kenya and Tanzania

NID Registration Requirements		 Uganda	 Kenya	 Tanzania
	Duly filled form, Photo & Biometric data	✓	✓	✓
	Copies of parents' NID (*if alive)	✓	✓ *for individuals below <18 years	✗
	Birth Certificate	✓ *In absence of parent's NID	✓ *for individuals below <18 years	✓
	Letter from local authority	✓ *In absence of parent's NID or birth certificate	✗	✓
	Other forms of identification (e.g. baptismal card, passport, driving permit, voters card, old forms of identification)	✗	✓ *might be requested	✓
	Revenue Authority Documentation/TIN Number	✗	✓ *might be requested	✓
	Academic certificates	✗	✗	✓
	Other proofs of citizenship (e.g. certified copy of dual citizenship, citizenship by registration/naturalization)	✓ *dual citizens or citizens by registration only	✗	✗
	Resident or work permit or student visa (non-citizens)	✗ *dual citizens or citizens by registration only	✓ *Residents only	✓ *Residents only

2.3 Third party access to NID systems

Besides citizen identification, one of the benefits of a digitized NID system is facilitating third party users to validate the identity of their clients remotely by linking personal information and biometric data of identity claimants to their unique NINs. All three countries have granted access to authorized third-party users. In Uganda, for example, NIRA has established a third-party interface (TPI) with telecommunication companies, commercial banks and other government agencies like the Uganda Revenue Authority, Uganda Registration Services Bureau, National Social Security Fund, Bank of Uganda.

“We have a system named Enterprise Service Bus (ESB); it links our systems and other external systems. This system enables us to communicate with the national identity system. In order to access client's information from NIDA we must use ESB to facilitate integration of our system with national identification system.”
Third party user, Tanzania

Digital verification of customers is a gateway to harness access to services for development. Through third party access, NID systems are directly supporting countries to achieve SDG targets such as financial inclusion, poverty elimination, safe and orderly migration, universal health coverage and reduced inequalities, among others.

In spite of the benefit offered by TPI systems, a number of challenges related to TPI were highlighted in the three countries. In Uganda, linkage between the NID system and third-party systems was reported to be the least developed, with many insti-

tutions citing numerous challenges including stringent conditions for accessing the database. Further, in Uganda, some telecommunications companies and banks reported challenges in accessing customer information from the NID database through the short code developed to authenticate customers' details. Other agencies including local governments are yet to access the system due to lack of infrastructure and/or stringent requirements.

2.4 Costs associated with digital identity systems

All countries incurred costs, of which a substantial amount were capital (non-recurrent) costs. In Uganda where a detailed cost-benefit analysis was conducted, capital costs contributed 97% of the total costs from an investor perspective (refer to Table 3). The costs can be broadly categorized into three: a) pre-enrollment¹, b) enrollment², and c) card issuance and post issuance³. The unit cost per national ID issued in Uganda is estimated to be US \$4, approximately twice that of India's Aadhaar ID (estimated at US \$1.5 per person), and 40 times less than United Kingdom's identity authentication program (estimated to cost \$165 per individual) (Observatory of Public Sector Innovation, 2018; Abraham et al., 2017). Suggestions for the differences between costs in India and Uganda might include: economies of scale, more advanced Information, Communication and Technology (ICT) infrastructure, and more readily available technical expertise and necessary software.

- 1 Costs such as establishment of the secretariat, Information Education and Communication (IEC) material costs, and establishment of the personalization and data center
- 2 Costs including centralized mass enrollment activities, delivery of registration materials to the decentralized service points, supervisory activities, mass enrollment IEC materials and recruitment, training and deployment
- 3 Costs such as printing NID cards, and monitoring and evaluation

In all three countries, initial registration and issuance of an NID card is offered at no cost to citizens, while non-citizens pay varying amounts for respective identity documents. However, some indirect costs are incurred by both citizens and non-citizens including transport to registration and pick up centers or local leaders' offices, photocopying of documents, obtaining supporting documents for the registration process, and waiting time during registration and collection of IDs. The findings from a house-

hold survey conducted in Uganda showed that the cost of acquiring an NID was very low, where 95% of the participants reported to have incurred not more than UGX 5,000 (US\$ 1.4).

On the other hand, NID card replacements in all three countries come at a cost to ID holders. This fee ranges from KES100 (about US\$1) in Kenya, TZS 20,000 (about US\$9) in Tanzania and UGX 50,000 (about US\$14) in Uganda.

Table 3: Estimated financial costs for roll out of Uganda's National ID by core components (US\$)

Cost Category	Non recurrent	Recurrent	Total	%
Pre-enrollment	24,650,557	1,338,237.27	25,988,795	46%
Enrollment	29,165,474	-	29,165,474	52%
Card Issuance and post enrollment	845,714	197,142.86	1,042,857	2%
Total Cost (US\$)	54,661,746	1,535,380	56,197,126	
Percentage (%)	97%	3%		100%

*1US\$=UGX 3,500

Source: RAN NID cost-benefit analysis report, Uganda



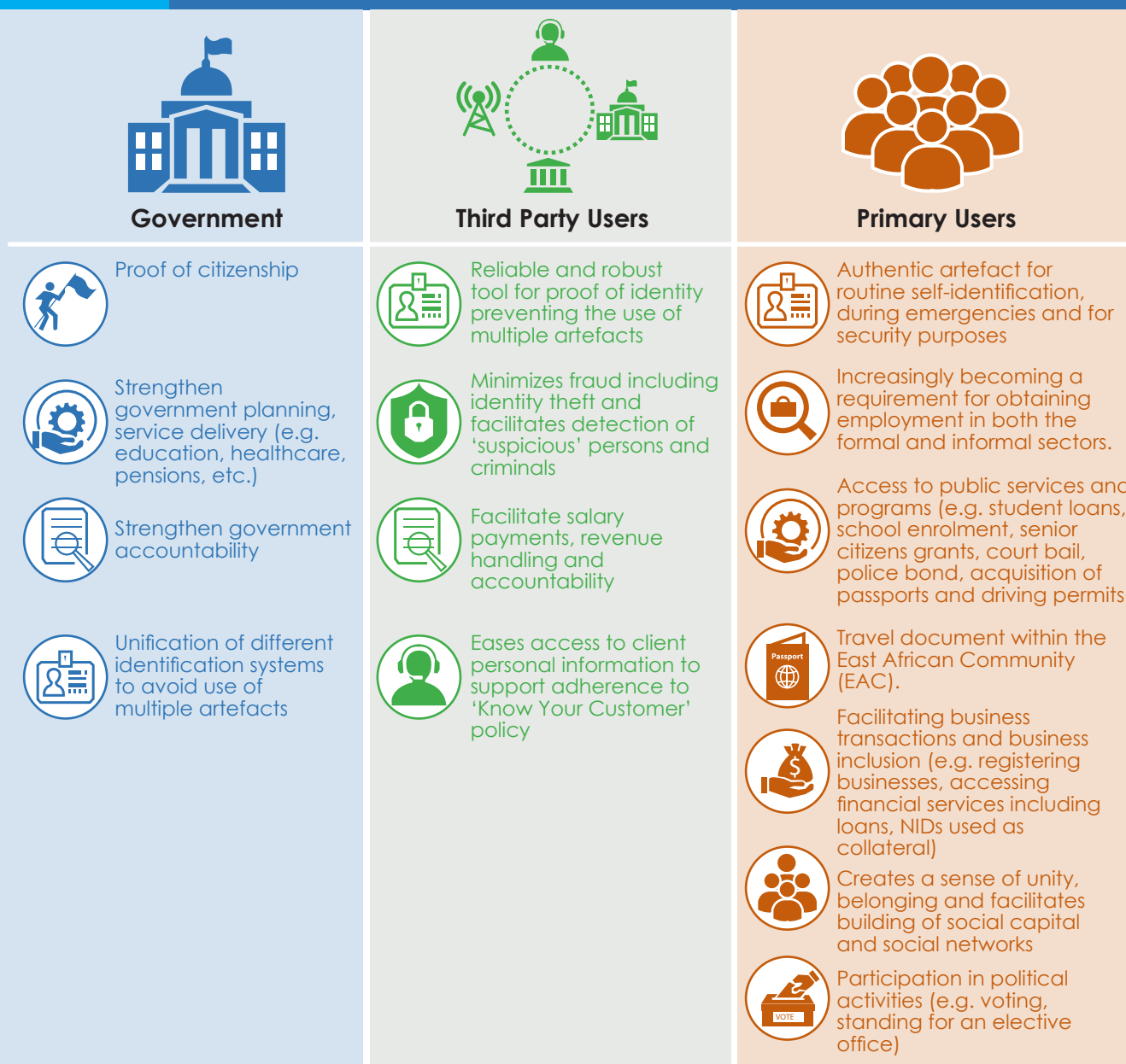
Uganda NIDs being issued to owners

3.0 BENEFITS OF THE NID SYSTEMS

This report expands on the existing knowledge of the benefits accrued from NID systems in Uganda, Kenya and Tanzania. The report presents benefits of the NID from the perspectives of investors, primary and third party users, summarized in Fig. 2. These benefits can be harnessed to achieve SDG targets.

From the perspective of the governments/ investors, the NID is beneficial for citizen identification, planning and service delivery. Citizen identification, for the first time, is part of the global SDG agenda. The NID is increasingly linked to the delivery of services such as education, health, social grants and pension schemes.

Figure 2: Benefits of the NID system



The NID was reported as the most reliable and robust tool for proof of identity by third party users prior to providing services such as, public service, banking and telecommunication within Uganda and Kenya. In Tanzania however, NIDs have not yet been fully embraced as the sole mechanism of identification. As such, one is required to present an additional identification artefact to access these services. NIDs facilitate access to personal information to support adherence to 'Know Your Customer' policy. While the lack of a unified identification system prior to Aadhaar⁴ presented a barrier to financial inclusion in India, in Uganda multiple forms of ID artefacts were generally acceptable (Observatory of Public Sector Innovation 2018). This however allowed for use of fraudulent documents in Uganda, which has now been curbed by introduction of the NID.

"... the NID has helped in elimination of ghost workers among teachers, health workers, police and army forces where previously an individual would be paid four times but now you have to have one ID captured in the database. It has also helped with tracking of pensioners." KII, NID registration authority

Across the three countries, NIDs are facilitating cross border travel as agreed under the East African Community (EAC). In Kenya, the NID is accepted for cross border travel to Uganda, Tanzania, Rwanda and Burundi, while in Uganda and Tanzania the NID can only facilitate travel to Kenya and Rwanda. Prior to the introduction of NIDs, travel between EAC countries required the presentation of either a passport or a temporary travel document issued by a country's immigration offices.

⁴ Aadhaar is a 12-digit unique identity number assigned to residents of India

"I once went to Nairobi, but the very first time we went, we had to pay Shs. 20,000 Uganda shillings to get a document that authorizes us to cross the border. But when I went back the next time, I had my ID. When I got to the border it is what I showed them. They did not charge me the other fee; they simply gave me clearance that authorized me to enter Kenya." Primary user, Uganda

Whereas the three countries are providing student loans as a measure to improve access to higher education, in Tanzania, the NID has been integrated into the provision of the student loans, which is not the practice in Uganda and Kenya. With respect to political participation, having a national identification number is mandatory for participation (voting and being voted for) in Kenya and Uganda. In Tanzania, citizens can participate in the electoral processes using only a voter's card.



Queuing during NID registration in Kenya (Credit: MSN.com)


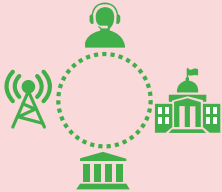


















4.0 CHALLENGES OF THE NID SYSTEMS

A number of challenges have been encountered during implementation of NID systems across the three countries. Similar to the perceived benefits of NID systems, primary users of IDs reported the most challenges. In Figure 3, we list the challenges cited by the different respondents across all user groups (investors, primary and third

party users).

Whereas NIDs are widely acceptable by third parties in Uganda and Kenya, NID cards in Tanzania lack signatures and are therefore not accepted by some service providers especially banks, hindering access to services.

Figure 3: Challenges of NID systems

 <p>Government</p>	 <p>Third Party Users</p>	 <p>Primary Users</p>
 <p>System and infrastructure challenges that interrupt registration, printing and issuance of NIDs</p>	 <p>Bureaucratic processes to access the NID system</p>	 <p>Errors on the NID card; unrecognizable photos and fingerprints, wrong and misspelled names leading to denial of services, and incurred financial costs to correct these</p>
 <p>Limited resources for establishment and maintenance of registration points</p>	 <p>System and technology failures when accessing the NID database, therefore delaying access to KYC data</p>	 <p>Slow registration and issuance processes resulting in long waiting times (due to inadequate equipment and personnel, staff time input, and difficulties in completing registration)</p>
 <p>Falsification of documents required for registration leading to issuance of NIDs to aliens</p>	 <p>Inclusivity issues related to use of NID as a criterion to access social services, business transactions and others.</p>	 <p>Equipment breakdown and failure to capture some people's fingerprints (e.g. In Uganda) resulting in multiple visits to the registration points by intending registrants</p>
 <p>Skepticism from registrants on the use of the personal and biometric data being collected resulting in slow take-off of the registration exercise</p>	 <p>Limited integration and interoperability of the NID system with other systems such as driving permit register and tax register.</p>	 <p>Out-of-pocket expenditure such card replacement fees, bribes.</p>
	 <p>Security and Privacy concerns</p>	 <p>Concerns about privacy and the use of NID data for fraudulent activities and malicious motives such as; tracking people's movements, vote rigging during elections and to conduct crimes</p>
	 <p>In Kenya, some older generation ID cards are not digital making it difficult to retrieve information required for access to services.</p>	 <p>Inadequate availability and provision of information on the purpose of registration, use and renewal of NIDs.</p>
		 <p>Discrimination and exclusion of some groups within the society</p>

Some individuals who have IDs face discrimination during service on the basis of region of origin or tribe, because that information is included on the ID card. In Uganda, vulnerable persons such as people with disabilities and the elderly without NIDs are excluded from accessing social programs such as social grants for the elderly, livelihood programs like agricultural inputs, and some health facility services. In Kenya, persons from border regions encounter challenges during NID registration on suspicion of being foreigners. There are also reported instances of discrimination on the basis of one's tribe and region of origin - details that are indicated on the NID.

"There is an IT job I applied for (far from here) and unfortunately, I then heard that they only wanted people from that locality. So, my ID betrayed me as it shows where I come from." Primary user, Kenya

Additionally, the cost of time cannot be underestimated because some people give up on registration due to the processes.

"The cost of acquiring the national identity card was in terms of time because I waited for a long time to be registered. I stayed the whole day in the queue because services were not enough and some of the equipment were not functioning. At the end I was registered" Primary user, Tanzania

Prior to accessing the NID system, third party users need to fulfill certain requirements such as procurement of biometric reader machines, acquisition of an application programming interface (API) for accessing NID databases, and subscription fees among others. Furthermore, there are issues related to unreliable connectivity to NID databases, resulting in substantial delays

and hindering clients' access to services.

Limited integration and interoperability of the NID system has contributed to delayed service delivery, extortion and duplication of resources. The current technology requires capturing of finger prints during registration, issuing of the NID and access to services through third parties. However, there are some fingerprint capture challenges due to poor fingerprint quality amongst certain individuals like casual laborers. This has led to invalidation of some IDs and exclusion from services. In Uganda, in instances where there is failure in capturing fingerprints, individuals are referred to NIRA offices in Kampala for validation and re-registration at a cost of UGX 50,000 (approximately US \$14). This further exacerbates challenges around inclusion, as there might be significant overlap between persons who have difficulty with capturing their fingerprints and the poorest communities who may have worn-down fingerprints due to repeated heavy/manual labor.

Data generated during NID registration is owned by the Governments, and is hosted at respective central databases controlled by government agencies responsible for the NID systems. These agencies are mandated to ensure accurate, valid and secure data systems. Access to these NID databases is restricted to service delivery points after fulfilling specified requirements. Each third party is assigned a unique code for access to these databases. However, across the three countries, there are trust issues regarding the security and privacy of the NID data, in spite of the safeguards in place. There were concerns regarding privacy and use of NID data for fraudulent activities and malicious motives such as tracking peoples' movements, vote rigging during elections and committing crime.

5.0 SUGGESTIONS TO MITIGATE CHALLENGES FACED BY NID SYSTEMS

This section (Table 4) presents proposals to mitigate the challenges encountered during the implementation of the NID systems. The Table also presents the target

beneficiaries and implementers of the suggested actions. If well implemented, these solutions could improve access to, and utility of NID systems.

Table 4: Proposals to mitigate NID challenges

Proposals	Beneficiary	Implementer
Improve NID infrastructure	Government Primary users Third party users	Country specific registration authorities (NIRA, NIDA, NRB)
Careful planning for and sustenance of logistic aspects of setting up, management and maintaining NID systems	Government	Country specific registration authorities (NIRA, NIDA, NRB)
Improve linkage between government and third party users' systems for verification of identity	Third party users	Country specific registration authorities (NIRA, NIDA, NRB)
Strengthen data security systems of third party users.	Government Primary users Third party users	Third party users
Increase efficiency in the processes of registration, issuance and replacement of NIDs to enhance access to and utility of NIDs.	Primary users	Country specific registration authorities (NIRA, NIDA, NRB)



President Kenyatta registering for Huduma Namba (credit: twitter statehouse Kenya)

6.0 SUSTAINABILITY OF THE NID SYSTEM

Financial and operational sustainability without compromising accessibility is one of the principles for building a sound ID system. All three countries have made attempts at ensuring sustainability to varying degrees. All governments of the three countries provide funds to run the NID registration bodies. They also charge a service fee to third party groups for accessing the NID database as a means of ensuring financial sustainability.

“NIDA as an institution should not solely depend on the budget of the government to operate its activities. For the system to be sustainable NIDA should innovatively create other sources of income such as collecting revenues from institutions which are linked to the NID systems.”
Third party user, Tanzania

There have also been efforts to integrate the NID system into existing government systems that require digital identification such as the public service system, passport and driving permit issuance, among others. Uganda reported a reduction in operational costs, realizing total savings of US \$10 million in the first year of using the NID system for verification of the public service payroll system.

Kenya intends to fully digitalize their registration process. This will minimize registration costs related to paper work, as well as improve the security of the system. Uganda is focusing on increasing NID data security with the aim of building trust of both ID holders and third-party users. This is also envisaged to increase the utility of NID, as more users are likely to engage with the system if they perceive its ability to adequately maintain privacy and confidentiality, and

protect their information against fraudulent and malicious motives.

Having supportive government policies is critical to NID system sustainability. In all countries, NID systems were established through Acts of Parliament, and are thus entrenched in national legal frameworks. Tanzania has a three-year roadmap with a Vision 2020 to attain a world leading, inclusive, secure and trustworthy NID system.

Expansion of third-party use of NID database also contributes towards its sustainability. This necessitates having a robust NID database with synchronized data that is regularly updated, making it the reference database of choice for most up-to-date citizen identification information. NID systems need to plan for and avail adequate resources to realize this. While none of the countries reported having attained a robust up-to-date NID database, attempts are being made to address this.



Use of NID during simcard registration (credit: the Ugandan.com)

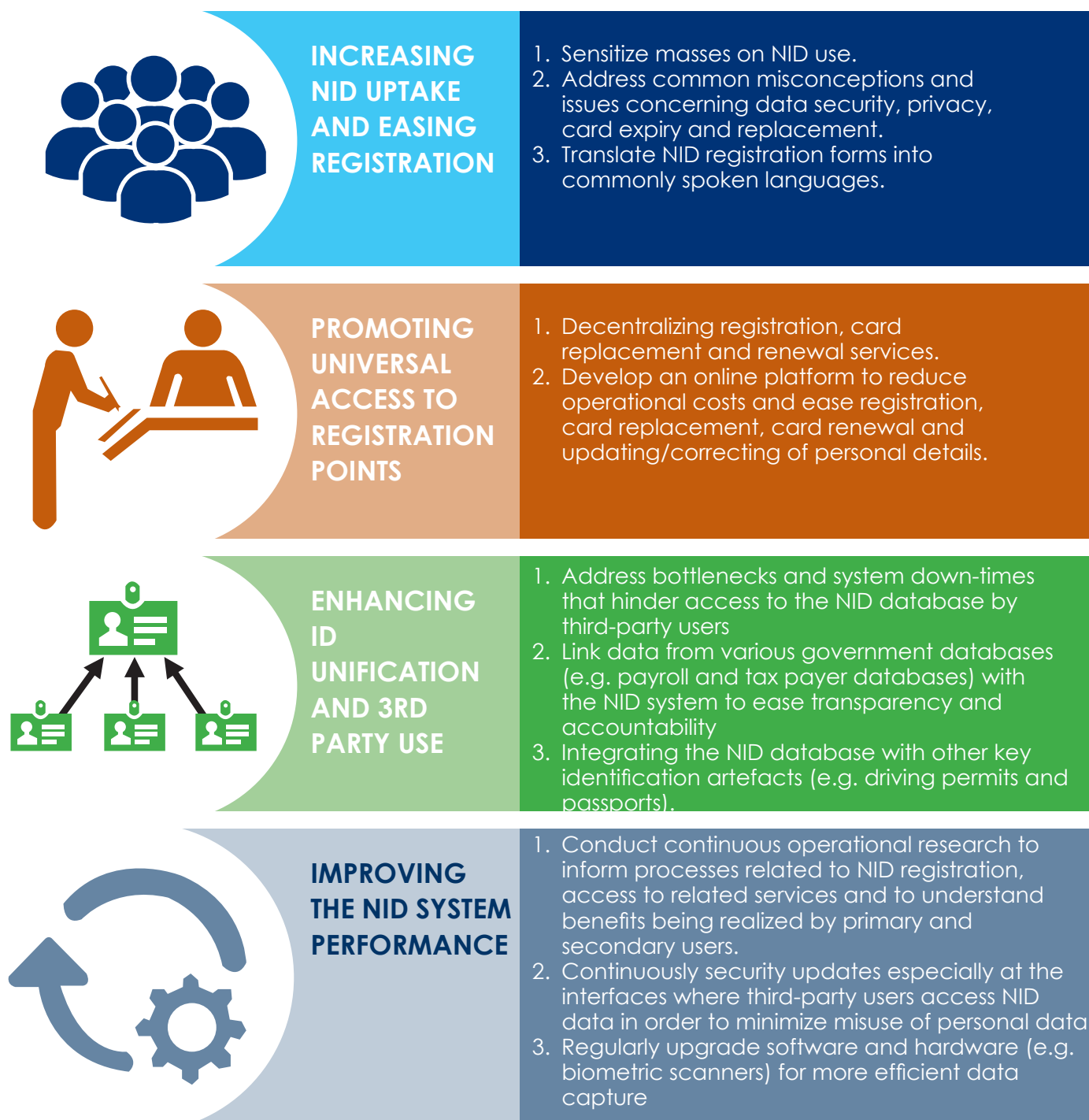


Tanzania NID (credit: Laxton group)

7.0 PROGRAMMATIC RECOMMENDATIONS

Respondents proposed several programmatic recommendations to their respective national governments to strengthen their NID systems.

Figure 5: Programmatic Recommendations



8.0 CONCLUSION

Across the three countries, establishment of national DID systems was entrenched in national statutes. This provides an enabling environment for the systems to operate, especially if backed by relevant policies. Investors in the systems incurred more costs than any other category of user, and will need to incur more costs to maintain the systems, if their utility is to be enhanced and sustained. Primary users reported minimal direct costs at first issuance of NIDs, but reported significant indirect costs and apprehension about current costs of ID replacement following loss or resulting from need for correction of particulars, and anticipated costs of ID replacement following expiry. Third party users also faced significant direct and indirect costs of setting up and managing third party systems. This is a long term cost that must be planned for and if possible subsidized to enhance the use of NIDs by third party users – some users cited high costs as a hindrance to accessing NID databases.

DID systems were perceived to have some level of benefit by all stakeholders. NIDs conferred social and economic benefits to all users. Benefits were both expected and unexpected and ranged from the foundations of NID systems – proof of identity to facilitating business transactions and enrollment for education and social services. However, the systems are not without challenges, the majority of which need to be addressed by the respective governments/investors in the system to enhance access and utility of NIDs.

To an extent, sustainability of the systems was in-built in their establishment. Supporting legal frameworks and policies provide a supportive environment. Beyond this, rel-

evant national authorities need to continuously raise awareness about NIDs' utility and ensure security and integrity of DIDs, complete registration and availability of adequately skilled and equipped manpower to operate the systems. This requires continuous funding, which has been provided by governments. Registration authorities also charge for some services offered as a means to raise funds to sustain the systems. However, efforts should be taken to ensure that such fees/charges do not hinder access by the population to NIDs. As NID systems develop further, trust will continue to be a crucial factor for sustainability. Governments must work to ensure appropriate privacy-preserving safeguards are put in place. Additionally, efforts need to be made to strengthen linkages and interoperability between DID systems and third-party systems owned by governments and other institutions such as banks and telecommunications companies. This will be a key driver of sustainability of these systems, as DIDs will be the primary accepted mechanisms for proof of identity of individuals seeking access to government and other providers' services.

This study demonstrates that DID systems offer utility and benefit in a number of ways. It also demonstrates that investors in the system have to continuously work towards making the ID systems more accessible to all users to promote unification and inclusion of all citizens in various social and economic services offered by governments and other agencies such as development organizations, banks and telecommunications companies.

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ANNEXES

Methodology

Study sites

The study was conducted in Kenya, Tanzania and Uganda. This was done to determine contextual variations in stakeholder experiences. Kenya had three study sites: Nairobi City County (an urban county which has the capital city), Kiambu County (a peri-urban county) and Kajjado South Sub County which hosts the Oloitokitok border between Kenya and Tanzania that frequently receives tourists.

In Tanzania, the study was performed in three sites: Dodoma, Dar es Salaam and Kilimanjaro regions. Dar es Salaam region hosts the National Identification Authority (NIDA) offices, mobile phone companies, and many other corporate organizations/institutions. Dodoma is the capital city and home to government ministries and agencies. Kilimanjaro has the Holili border between Kenya and Tanzania where identification systems are highly used.

In Uganda, the study was conducted in six districts: Kampala, Mityana, Rubanda, Kabale, Gulu and Namutumba. Kampala is the capital city and hosts the government ministries and agencies. Mityana is in central Uganda, Rubanda and Kabale are in south-west; Gulu is in the north, while Namutumba is in the East of Uganda.

Study Design

This was a cross-sectional study that employed qualitative methods of data collection - key informant interviews (KIIs) with the investors in the systems' and 'third party users; focus group discussions (FGDs) and in-depth interviews (IDIs) with primary users of

DID system. Findings will inform the design of a planned follow-on quantitative survey to quantify the prevalence of the attributes identified in the formative study.

Ethical Considerations

Prior to data collection, each country team sought ethical clearance. In Kenya, clearance was obtained from the University of Nairobi-Kenyatta National Hospital (UoN- KNH) Research Ethics Committee (REC), in Tanzania from Muhimbili University of Health and Allied Sciences REC and in Uganda from Makerere University School of Social Sciences REC and the Uganda National Council of Science and Technology (UNCST). Informed consent was sought and obtained from all participants before interviews and confidentiality was maintained throughout the study.

Study Population and Sample size

The study population comprised three categories of stakeholders in the DID systems: (1) Investors in the system - government entities that set up the systems i.e. national identification and registration authorities, ministries of internal affairs, finance and other pertinent entities, (2) Primary users - members of the general population aged 18 years and above who hold an ID or are registered in the national ID register, and (3) Third party users of the system - entities that utilize the targeted ID systems in the provision of their services such as: financial institutions, social security funds, academic institutions, telecommunication companies, electoral commission, government ministries and parastatals and insurance companies. Table 5 illustrates the distribution of respondents across the three stakeholder categories and the number of respondents in the three study countries.

Table 5: Selected Respondents for the Digital Identity Systems Study by Country

Respondent Category	Uganda	Tanzania	Kenya
Investors	<ul style="list-style-type: none"> • NIRA • Ministry of Finance and Planning • Ministry of Public Service • Ministry of Internal Affairs 	<ul style="list-style-type: none"> • NIDA • Ministry of Finance and Planning • President's Office • Regional Administration 	<ul style="list-style-type: none"> • NIDA • National and County Government • Department of Immigration Services • Sub-county Registrar of Persons
Third Party Users	<ul style="list-style-type: none"> • Financial institutions (Banks and money lenders) 	<ul style="list-style-type: none"> • Bank (NMB) • Higher Education Students Loan Board (HESLB) • Micro-finance institutions (AML and FINCA) 	<ul style="list-style-type: none"> • Micro-finance institution
		Telecommunication Company (Vodacom)	Telecommunication and Money Transfer Service providers (M-Pesa agents)
	Government Parastatal (National Electoral Commission)	Government Parastatal (TRA and TPA)	Government parastatal (NHIF, IEBC, Postal Cooperation)
	District local governments		Department of Immigration Services
	Civil society organizations		
Primary Users	Kampala, Mityana, Rubanda, Kabale, Gulu and Namutumba districts	Kilimanjaro region	Nairobi City Region, Kiambu County, Kajiado South Subcounty
Total Number of participants	307 participants (37 KIIs and 270 FGD participants)	40 participants (10 KIIs, 6 IDIs, 24 FGD participants)	53 participants (15 KIIs, 11 IDIs, 27 FGD participants)

Data collection, management and analysis

Data was collected by experienced researchers who were trained by the respective country principal investigators. Data collection instruments were translated from the original English version into Kiswahili in Kenya and Tanzania and the commonly spoken local dialects in the 6 Ugandan study districts and then back translated to

assess for consistency of meaning. Digital voice recorders were used to record interviews and discussions. Thereafter, data was transcribed verbatim. Transcripts in local languages were translated to English. Data were analyzed by reading through all transcripts and determining certain words, sub-themes, themes and/or concepts.

