National ID Programs: A Multi-Country Review and Analysis of Policy and Practical Challenges

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Abstract

National identity programs are increasingly being introduced into low and middle income countries, and may be used by governments for surveillance, supporting fair and democratic elections, fostering national unity, and facilitating health, financial and agricultural transactions. We review evidence on 42 national ID programs in low- and middle-income countries, with particular attention to evidence of the implementation challenges the programs have faced. We identify seven general categories of implementation challenges, with evidence that 39 of 42 countries have faced at least one category of challenge while 8 countries have faced challenges in three or more areas. Further, we observe some associations between country and national ID program characteristics and evidence of particular implementation challenges. Better understanding of the challenges that countries have faced in implementing national ID programs may support the development of more sustainable and usable ID programs.

Keywords **–** national identity; implementation challenges; biometric identification; authentication; citizen data

1 Introduction

The ability to formally identify oneself has become integral to many aspects of civic participation and inclusion (Gelb & Clark, 2013). Proponents of formalized national identity management systems argue that national ID programs have the potential to establish strategic partnerships between the state and citizens (Cunningham, 2013; Malik, 2014). Others, however, raise concerns about costs, technical dependencies, increased surveillance, or potential restrictions on freedom of movement (Chen, 2003; Keane, 2006; The Carter Center, 2011; Gelb & Clark, 2013).

Many high-income countries have a long history of using identification systems for surveillance and security purposes (Bennett & Lyon, 2008; Gelb & Clark, 2013). But these systems are increasingly being introduced into low and middle income countries (Asian Development Bank, 2016; World Bank, 2016). The potential for national ID systems to contribute to development is noted in goal 16.9 of the Sustainable Development Goals: "provide legal identity for all including birth registration" by 2030 in order to "promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels" (The Division for Sustainable Development, United Nations, 2015; World Bank, 2015).

For low-income countries in particular, surveillance, supporting fair and democratic elections, fostering national unity, and facilitating health, financial and agricultural transactions are all motivations for implementing national ID systems. With electronic and biometric identification systems a wide range of services can now be delivered via computers or mobile devices, including "mobile money" for secure and cashless commercial transactions and social transfers (Gelb & Clark, 2013; World Bank, 2014). Biometrics have also been used beyond authentication to secure identities in order to fulfill know-your-customer (KYC) requirements for opening bank accounts, to register and de-duplicate beneficiaries of social programs, to authenticate cash or in-kind transfers at the point of service, and to fulfill various other services such as health, voting and civil service reform (Gelb & Clark, 2013). Multilateral organizations and development agencies may provide some funding in support of national ID program implementation (Dahan & Gelb, 2013). Public-private partnerships (PPPs) may also support national ID programs, by providing technical expertise and allowing financial models that may promote sustainability and usability of the programs (World Bank, 2016).

We review characteristics of national ID programs for a selection of low- and middle-income countries with particular attention to evidence of the implementation challenges the programs have faced, in an effort to understand the issues countries may face in developing national ID programs and using citizen data for policy. We seek first to categorize the types of implementation challenges that countries have faced, and second to evaluate

whether there are identifiable associations between evidence of practical and policy challenges in program implementation and characteristics of countries or of national ID program design.

2 Methods

We reviewed the design and functioning of national ID programs in 42 low- and middle-income countries with populations over 15 million and GDP per capita under US$10,000 (as of 2013). Of the national ID programs we reviewed, 17 are in Sub-Saharan Africa, 8 are in the Middle East and North Africa, 6 are in Southeast Asia, 5 are in South Asia, 4 are in Latin America, and 2 are in Eastern Europe. In countries with multiple national identity programs, we analyzed the primary or most general ID program with documented service linkages. In countries with separate civil registration and national ID systems, we include only information on the national ID system. The majority (38) of the national ID programs are general purpose government IDs, but three are voter ID cards and one is an ePassport, though these are also linked to other functions.

Building on a review of services being linked to national ID programs (Biscaye et al., 2015), we collected information on the implementation of the selected national ID programs, to analyze the main practical (economic and technical) and policy (governance and trust) implementation challenges.

We conducted searches in academic databases and online search engines and on the websites of various international development organizations, using search strings with terms relevant to national identity programs in general and to the specific national identity programs of the countries of interest. We then conducted additional searches to target information gaps and complement findings from the initial search, though evidence was limited for many programs.

Our evidence base includes 417 documents relevant to national ID programs in the countries of interest, including both country-specific documents and documents discussing national ID programs more broadly.[1] We captured information on country characteristics, national ID design features, ID service linkages, and ID implementation design, enrollment, and challenges. We then aggregated information on specific national ID programs into a coding spreadsheet to evaluate patterns between country characteristics, card design features, and program implementation design and program implementation challenges.[2]

3 Characteristics of National ID Programs Reviewed

Of the 42 national ID programs we review, 34 have been introduced since 2000, and 17 of those since 2010. Surveillance, fair and democratic elections, and fostering national unity are all mentioned in the evidence we reviewed as reasons for implementing a national identity system.

Thirty-four of the 42 programs are currently operational and in use, though 12 of these are still actively conducting their initial population enrollment efforts. Many programs conduct enrollment in phases to reduce strains on enrollment capacity, often with a pilot phase followed by expansion by geographic area, age group, or other characteristics. Five programs are actively enrolling and not yet in use, and the remaining three programs have yet to begin enrollment.

A variety of government agencies are involved in national ID program management. In many cases, there is a specific National Identification or Civil Registry Office, though other managing bodies include departments and agencies in the Ministry of the Interior and national elections, security, and statistics agencies. In 21 of the programs reviewed, we find evidence that private firms are involved in enrollment, card production and distribution, authentication, and/or database maintenance. The funding sources for national ID programs are not always clearly specified, but in addition to government funding eight countries receive funding from donors (including multilateral organizations and non-profit organizations). Private firms provide some funding for three programs, aiming to recover investments through fees for card distribution. Many programs also receive partial funding from fees for card distribution. For example, NADRA in Pakistan and RENIEC in Peru both internalize initial enrollment and production costs and charge fees associated with national IDs to earn back revenue (Ahmad Jan, 2006; Harbitz & Boekle-Giuffrida, 2009).

The target registration age of the programs, meaning the lowest eligible enrollment age and not the age for issuance of physical credentials, ranges from birth to age 18, highlighting the gap between many national ID programs and a comprehensive civil registration program. Age 18 is the most common specified age for registration (10 programs), followed by birth and age 16 (eight programs each). In some programs where national IDs are a part of broader civil registration programs, registration takes place at birth but cards are not issued until individuals reach a certain age.

[1] Due to the growth of identification systems in the last decade, our research relies on a limited number of academic sources that review identification programs more generally, and on non-academic sources and grey literature on particular country programs. Current evidence in English is not always available, so communication with officials or other sources closer to the programs may be required to obtain more up to date information.

[2] We recorded information on implementation challenges any time they were discussed for a particular country, but note that some countries may have successfully addressed certain challenges.

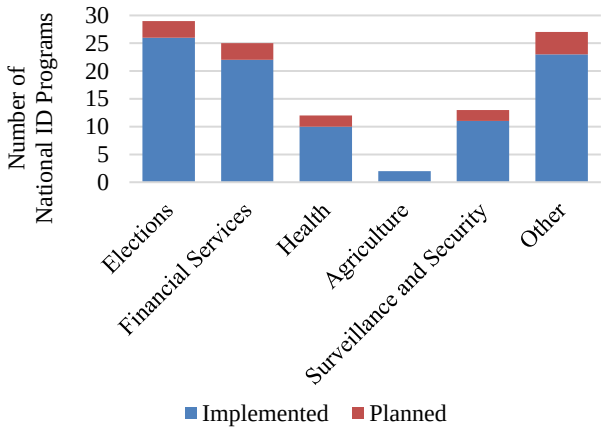
Almost all programs use a physical credential to authenticate an individual's identity, with two exceptions. In India, the Unique Identification Authority assigns a unique ID number to every Indian resident using cloud-based technology without issuing a physical national ID card (Zelazny, 2012). Yemen's voter registration assigns each resident a unique identification number and records biometric information without issuing a national ID card (Al-Junaid, 2015).

Nineteen countries have implemented new electronic ID card programs in the past five years, often replacing previous ID programs. More than half (26 of 42) of the programs we review include an electronic component in their physical credentials. Many of programs use smartcards, where personal information and digital credentials are stored securely on an embedded microchip. For example, ID cards in China and Morocco both use a type of microchip that contains a radio frequency identification (RFID) module (Immigration and Refugee Board of Canada, 2007; AGFA, 2015). Machine-readable barcodes that record and protect personal and biometric information are another electronic component of physical credentials used in five programs. For instance, the NSIS identity card in Uganda is a biometrically enhanced, machine readable card with digitally embedded face scans and fingerprints of the card holder (Uganda Convention UK, 2014; National Security Information System (NSIS), 2015). Thirty-five programs collect some kind of biometric information for identification and authentication. All include fingerprints and 18 use multiple types of biometric information, such as face or eye scans.

Registration of country populations and issuing national IDs can benefit both the private and public sectors' ability to deliver services, potentially increasing efficiency and accountability (Gelb & Clark, 2013; World Bank, 2015). Service delivery can be improved by eliminating duplicates, verifying the identity of beneficiaries, automating service provision, and generating disaggregated data to plan and track service provision and reduce opportunities for corruption (Asian Development Bank, 2016). In India for example, the Aadhaar ID program connects individual IDs with bank accounts for government transfers, supporting automated electronic benefit transfers for 45 million individuals through National Rural Employment Guarantee Scheme (NREGS). The ID program has also reportedly reduced losses in liquid petroleum gas (LPG) delivery, by identifying and removing 30 million duplicate or fraudulent LPG connections (*ibid*.).

National ID programs have been purposed to serve a wide range of functions, notably for elections and financial services (Figure 1). In addition, national ID programs are used for government social transfers, surveillance and security, civil service administration, and other functions such as travel across jurisdictions. ID cards are most commonly used for user authentication and Know Your Customer (KYC) services (using a national ID to access services). Programs that incorporate cards with electronic components or biometrics are connected to a higher mean number of different service functions than ID card programs that lack these components.

Figure 1. National ID program service linkages.



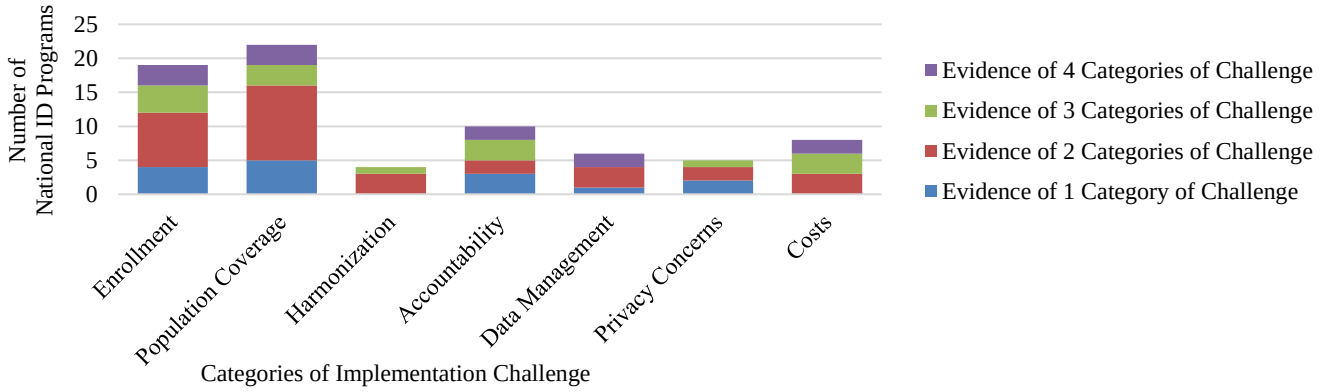
Elections are the most common service linkage of national ID programs. Thirty of the 48 programs reviewed use national IDs for voter registration or authentication, and are increasingly making use of embedded biometric information. For example, Kenya purchased and distributed more than 45,000 MorphoTablets to verify voter lists before the 2017 election, to authenticate the voters with their fingerprints and, and to support secure transmission of the voter turnout data and election results (Safran Group, 2017).

4 National ID Program Implementation Challenges

Thirty-nine of the 42 programs reviewed report implementation challenges. Only for three of the fully-implemented national ID programs (Iran, Madagascar, Romania) do we find no evidence of noteworthy implementation challenges. We identified seven general categories of implementation challenges (Figure 2). For most programs we only find evidence of one (15 programs) or two (16 programs) categories of implementation challenges, but for eight programs we find evidence of three or four distinct implementation challenges.

Nineteen programs have experienced challenges in enrolling citizens and issuing ID cards, stemming from supply-side

Figure 2. Implementation challenges of national ID programs, by number of different categories of challenges faced.



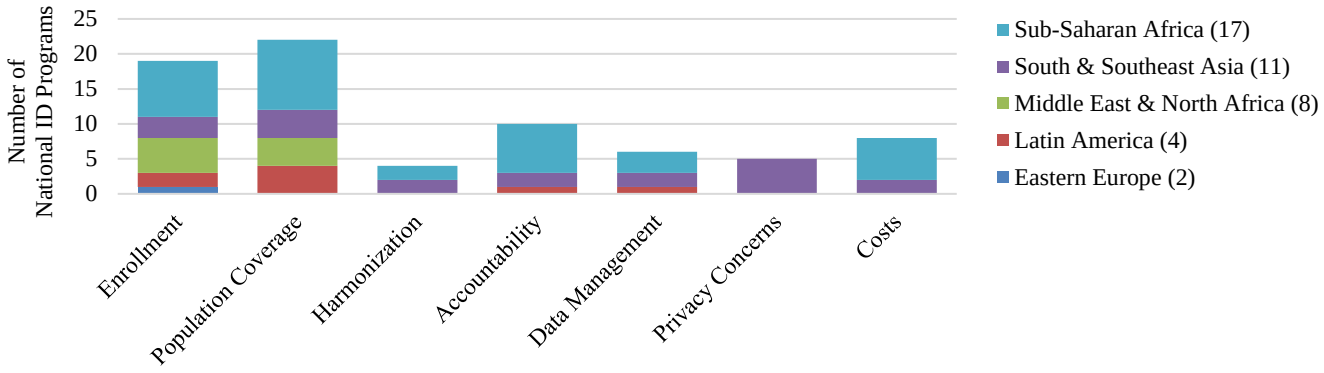
challenges with resources, centralization, and capacity and demand-side challenges related to information and costs. Twelve programs faced resource challenges including insufficient provision of equipment for enrollment, delays in installing or providing software or equipment, broken equipment, shortage of material or facilities for producing and/or distributing cards, and inefficient distribution of resources across a country. For four programs we find evidence of challenges enrolling rural and more remote populations. A few countries have undertaken mobile registration efforts, but these efforts reportedly create additional challenges with data management and technical and human resource limitations (Reyna, 2014). We find evidence of challenges with staff training and capacity for four additional programs, including challenges with providing services in multiple languages and in using enrollment equipment. Centralization of decision-making and of key enrollment processes caused enrollment challenges in four programs. On the demand side of enrollment challenges, we find evidence in five countries that populations did not understand the benefits of ID card registration, limiting enrollment. Programs with mandatory registration requirements (31 of 42 programs) were no less likely to experience challenges with program coverage in enrollment than non-mandatory programs.

Enrollment costs, either in the form of registration fees or distance to registration centers also contribute to issues with population coverage: 11 programs report challenges enrolling poor populations and seven report challenges enrolling rural populations. In addition to population coverage challenges reaching poor and rural populations stemming in part from enrollment costs, we find evidence of enrollment coverage challenges for women in three programs, and for minority groups (religious or ethnic) in ten programs. Several programs have faced planning or enrollment difficulties over decisions of whether and how to record religion or ethnicity on national ID cards. In at least three programs, certain populations faced challenges enrolling due to lack of required registration documentation, primarily affecting more remote and minority populations. We find little evidence of obstacles being put in place deliberately to block particular populations, but in practice, various administrative procedures (including the location of administrative offices and the languages spoken by implementing agency staff) or other challenges can create hurdles and/or indirect costs that prevent certain groups from participating (The Carter Center, 2011).

In addition to enrollment and population coverage challenges, we find evidence of other implementation challenges in 25 programs, including 8 reporting challenges in two or more areas: harmonization of competing national ID programs (4 programs); accountability (10 programs); data management (6 programs); data privacy (5 programs); and program costs (8 programs). Harmonization challenges stem from lack of clear legal frameworks and delegation of responsibilities to multiple governing bodies for implementation of national ID programs, especially where national ID cards are being added to a system with other existing forms of identification or where there are multiple population registration efforts. Accountability concerns include both micro-level issues (e.g., corruption in registration or card distribution) and macro-level issues (e.g., corruption in program design and the contract or tender process).

Data management challenges include setting up centralized infrastructure, collecting data on eligible populations, de-duplication of individuals, and updating citizen information. A related challenge relates to privacy concerns, which are mentioned for five programs though we find no concrete examples of privacy violations. Several countries are adopting accompanying data protection laws with their National ID card programs and implementing targeted security measures (Gellman, 2013). While these systems have the potential to address some concerns over citizen privacy and information abuse, we thus far find no supporting evidence that these measures have changed public perception on the security of information and privacy.

Figure 3. Implementation challenges of national ID programs, by region.



Finally, though technology costs related to national ID program enrollment, ID card production, and distribution are generally falling, we find evidence of challenges relating to lack of funding for eight national ID programs. Financial and capital shortfalls have led to delays or indefinite suspensions in national ID program enrollment and ID card production in five programs. Other programs have faced funding challenges related to cost of ongoing maintenance, limiting the use of the program even after successful enrollment efforts. Beyond population size, program implementation costs increase in countries with more remote populations and for programs with more advanced electronic card features or incorporating biometric information. Incorporating biometric information requires additional equipment for enrollment and registration as well as for any services using the biometric information for authentication. While many programs incorporate biometric features, few actively conduct on-site biometric authentication for service provision, largely due to costs.

5 Trends in National ID Program Implementation Challenges

The evidence suggests that there may be associations between national ID program implementation challenges and certain country characteristics and ID program characteristics. We first observe a few patterns in implementation challenges by region (Figure 3). The only challenges reported for national ID programs in the Middle East and North Africa relate to enrollment and population coverage – the latter of which largely stem from concerns over how to include information on religion and ethnicity and inclusion of minority populations. The evidence we identified on privacy concerns is entirely concentrated on ID card programs in South and Southeast Asia. Challenges related to accountability and costs are more common for programs in Sub-Saharan Africa.

Considering countries by their World Bank income classifications, we observe that concerns about accountability are primarily reported in low-income countries (LICs), with evidence of accountability concerns in six of 13 LICs but only three of 19 lower middle-income countries (LMICs) and one of 10 upper middle-income countries (UMICs). Enrollment and coverage concerns are relatively more common in LMICs, with evidence of challenges in 11 and 12 of 19 LMICs, respectively. We do not observe any evidence of data management or cost challenges in UMICs, potentially reflecting greater resources available for program implementation. We do not find any associations between country population and particular categories of implementation challenges.

The World Bank's Identification for Development Strategic Framework (2016) notes that Public-Private Partnerships (PPPs) may support ID program sustainability and usability. Programs for which we found evidence that private partners were involved in program implementation (21) are broadly equally likely to have faced most categories of implementation challenges as programs without private partners. The exception is for coverage challenges, with 15 of the 22 programs reporting issues reaching particular populations having a private partner for implementation. Programs where we found evidence of multilateral or philanthropic donor funding support (8) were more likely to face challenges with accountability and enrollment than programs without donor funding, but appear less likely to have issues with population coverage.

Programs whose national ID cards include an electronic component (26) were more likely to have evidence of challenges with enrollment and population coverage than programs without electronic ID cards, which may reflect the greater needs for equipment, material, and training for electronic cards. Since most programs include a biometric component (34 of 42), it is difficult to observe any pattern in challenges faced by programs with and without biometrics. We do observe, however, that all programs reporting data management concerns and all but one of the programs reporting privacy concerns include biometric data collection.

Among the eight programs for which we find evidence of implementation challenges in more than two distinct categories, five are in Sub-Saharan African countries, compared to two in South and Southeast Asia and one in Latin America. All eight are LICs or LMICs. Half involve private partners and half have ID cards with electronic components. All but one include collection of biometric information.

Identity management projects tend to be complex, complicated, and costly, and the importance of adequate planning cannot be understated. Better understanding of the challenges that countries have faced in implementing national ID programs may support the development of more sustainable and usable ID programs.

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