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Unique Identification for Indians: A Divine Dream or a Miscalculated Heroism?

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Abstract

The Unique Identity Project in India is a flagship project as being highlighted by the Government of India and is being portrayed as a panacea for all ills that exist in the country. Although time can only tell about the efficiency and efficacy of the project, but the very launch of this exercise has made it the largest biometric based identity disbursing e-government project in the globe. This paper, tries to put the current UID project of India into a perspective to evaluate the set of issues and concerns, as pointed by various stakeholders and try to understand the degree of criticality of those arguments. In this light, the areas of concerns around the UID project in India are also being pointed out. Given the largest IT project in nay government globally, the topic is of immense significance besides being timely and the discussion can provide impetus to a series of research activities in the areas of public policy, Information Systems planning and execution as well as appreciating the risks that get associated with such large initiatives.

Unique Identification for Indians: A Divine Dream or a Miscalculated Heroism?

“Happy New Fear” – that was how a placard held by some of the students of the Indian Institute of Science read. It was a part of a silent demonstration outside the gate of the Institute, earlier this year after the UIDAI Chairman visited the Institute for a talk (Kelekar, 2011). The Government of India, had announced the creation of the Unique ID Authority of India (UIDAI) to generate the largest IT project of the globe – the Unique ID (UID) project – with an aim to provide a unique twelve digit number to 1.2 billion residents of India (BusinessStandard, 2009; A. Sharma, 2010).

The governments of various countries across the globe have been considering providing of unique identity to its citizens from time to time. Some countries have already implemented national identity schemes, albeit varying in “the extent to which their cards are voluntary or compulsory (to obtain, carry, or present the card), the legal frameworks that oversee them, the cost of the card itself, whether they are used for identification purposes only, or are intended for wider use in society” (Whitley & Hosein, 2010, p. 23). There have been many drivers that have actually led the governments of various nations to take a look into the possibilities of implementing a national ID scheme in some way or the other. According to Davies, Hosein & Whitley (2005 as cited in Dass & Pal, 2010, p. 172) “...enhancement of security through detection of fraud, guard against terrorism and illegal immigration are some of the prime objectives for providing unique identification to the citizens”. Another important use of national ID cards is authentication of a person's entitlement to government services (Dass & Bajaj, 2008). However, the challenges related to implementing a viable identity management system for a nation are worth considering – most importantly, if citizens do not find value in such cards or the government departments and processes are not scaled up to match the working of such identification, the whole effort would be seriously questioned. Outrageous costs, technology gaps, privacy issues, political challenges, and lack of clear vision and mapping of the perceived benefits that can be accrued out of such an exercise are some factors that hinder viable and sustainable implementation of a national identity programme. There had been serious debates in nations like Australia, Canada, and the United Kingdom about the viability of implementing national identity policy, given that the chances of misuse of data in a centralized system increases by leaps and bounds and becomes the single point of failure. In 2009, India decided to have Unique Identification (UID) for its citizens and hence launched the UID programme in the country by creating the Unique Identity Authority of India (UIDAI). The Government of India has undertaken an initiative called “Aadhaar” to provide unique identification numbers to all residents of the nation.

The UK government's decision of abandoning the implementation of the hugely debated national identity policy following criticism from the various sections of the population based on the London School of Economics (LSE) report has been a talking point among the people of various other nations including India. For a nation like India, with over 1.2 billion population spread across 32,87,263 sq. km., more than 35.16 per cent being illiterate (2001 census) and speaking 22 different languages, and following various religions, the complexity of a unique identity scheme becomes multi-fold. Even if the socio-economic, cultural, linguistic, and religious complexities are put aside for the time being, the size of the population itself is approximately 17.48 times that of the UK (58.8 million) (Census, 2001) (U K Census, 2001). Thus, there can hardly be any doubt that execution of such an exercise in India will be complex and implementation planning will be critical. The decision makers should therefore be conscious about the possible tangible benefits to be accrued against the cost to be

incurred given the current backdrop of India. Over the past months, various newspaper articles have put forth a series of concerns among various stakeholders about the viability of the project. Although in none of the sources, the total cost of such a programme has been reported, a guesstimate as reported by the *Frontline* magazine puts the cost of the project without considering the recurring cost at around INR 1.5 lakh crore¹ (US \$33.33 billion)(TheHindu, 2009). The cost of failure of such an initiative would be huge for a nation like India which has 27.50 per cent (2004-2005) (Indiastat, 2011) of its population living below poverty line and around 45.9 per cent children, under three years of age, suffering from malnutrition every year (Indiastat, 2011; Mishra, 2009).

This paper, tries to put the current UID project of India into a perspective to evaluate the set of issues and concerns, as pointed by various stakeholders and try to understand the degree of criticality of those arguments, typically in a style of bringing up the perspectives presented. In this light, the areas of concerns around the UID project in India are also being pointed out, with reference to information that already exists in the public domain. Given the largest IT project in any government globally, the topic is of immense significance besides being timely and the discussion can provide impetus to a series of research activities in the areas of public policy, Information Systems planning and execution as well as appreciating the risks that get associated with such large initiatives.

BACKGROUND

The concept of national identity scheme is not very new for India as the Government had been evaluating various alternatives for an identity scheme since a couple of decades. According to the strategy overview document released by (UIDAI, 2010d, page 1),

“...the Government of India (GoI) undertook an effort to provide a clear identity to residents first in 1993, with the issue of photo identity cards by the Election Commission and subsequently in 2003, when it approved the Multipurpose National Identity Card (MNIC). The Unique Identification Authority of India (UIDAI) was established in January 2009, as an attached office to the Planning Commission. The purpose of UIDAI is to issue a unique identification number (UID) to all Indian residents that is (a) robust enough to eliminate duplicate and fake identities, and (b) can be verified and authenticated in an easy, cost-effective way”

The Prime Minister of India, as an exemplary step, had nominated Nandan Nilekani from Infosys to head the Unique ID Authority, positing him with a rank of a Cabinet Minister (BusinessStandard, 2009).

The UIDAI authority has decided to provide a unique identification number to each resident of India. The process of generating this identification number will start with getting the biometrics of each resident of the country along with certain demographic details, as would be needed for any business (like a bank or a telecom operator) or government organization (like that of the Ministry of Rural Development) to identify a particular Indian resident. Biometrics of all ten fingers, along with the iris scan of both the eyes and the photo of the face has been decided to be taken as identifiers of all residents (uidai.gov.in). The project has been named as *Aadhar*, meaning foundation. In an interview (Tripathi & Mukherjee, 2010, para. 5-7), the UIDAI Chairman mentioned the ways to get the UID number:

¹ 1 Lakh = 0.1 million; 1 crore = 10 million; 1 million = 10 lakh; 1 billion = 100 crores

“...First, and somewhat ironically, you produce a set of documents to establish your identity. The second source would be data from the National Population Register (NPR), which will be put on display at your gram panchayat or ward office, with details on where you live, etc. The third method we have incorporated is called the introducer approach wherein somebody can vouch for that person who wants a number. And this introducer will be appointed by us (UIDAI)...”

Once the biometrics and the basic details of a resident is captured, the resident is given an electronic receipt which he/she would need to show once the UID number comes to him/her after a few days through India Post (TNN, 2010).

Some interesting dimensions emerge from the way the whole project has been envisaged. UID will be nothing but an identity number, most importantly, optional, that will be provided to a resident. The UIDAI authority will then provide an online service to validate the identity of the people that has been captured. For any other service provider (be it the government department trying to deploy various government schemes in the country or a business like bank), they have to take it up as an exercise as to how to use the identification and see if any other contextual information that the end user departments would seek on top of the information has been captured as a part of the biometric collection though yes/no questions (TNN, 2010).

EVALUATING THE ODDS AGAINST OPPORTUNITIES

The Wall Street Journal Article (A. Sharma, 2010, para. 4) states that

“critics question whether the project can have as big an impact as its backers promise, given that identity fraud is but one contributor to India's development struggles. The civil liberties groups complain that the government is collecting too much personal information without sufficient safeguards. The technology requires transferring large amounts of data between the hinterland and an urban database, leading some to question whether the system will succumb to India's rickety Internet infrastructure”.

When a question was raised in the Lok Sabha (Tewari & Singh, 2010, page 2) about abandoning of UID projects in other countries like United States of America, United Kingdom, Australia, China, Pakistan, Canada, and Germany, the response stated that

“A number of countries have various forms of identity systems based on the country-specific needs. The motivation and rationale for identity systems in different countries are specific to the country and cannot be generalized. The UID project in India has been envisioned to provide a unique identity to every resident of India which will be the foundation for better delivery of public services and targeted subsidies. The project has a basis in the developmental agenda of promoting more inclusive growth.”

UIDAI will not enforce any of the organizations or government departments to make the usage of UID mandatory and hence, all the other existing identity cards (e.g., PAN, Ration Card, etc.) will continue in parallel, even after the identity of a particular resident is proved.

In order to understand the opportunities and risks of the project, the feasibility of the project has been evaluated from four different aspects in this perspective paper: benefits as perceived and claimed by UIDAI, cost of the project, technological feasibility, and adoption (acceptance) of the service.

Claimed Benefits and Perceived Issues

The Aadhaar project on many occasions has been portrayed as a pro-poor initiative that would provide identity to the marginalized section of the population. It has been projected as a weapon for ensuring effective and efficient delivery of various social welfare schemes to those who were deprived from accessing these benefits due to lack of identity – a powerful means to bring in better access for the poor (Kelkar, 2010). Kelkar (2010, para. 2) states that “It (UID) can help address the causes that lie at the root of poverty and exclusion, and address the basic challenges surrounding what many of us refer to as the ‘last mile’”.

The only responsibility of UIDAI is to offer an online technology platform that can provide a yes/no answer to authenticate whether x is x, while the responsibility of ensuring effective and efficient delivery of the services have been left on the shoulders of the respective departments. Given the fact that the main cause of ineffective and inefficient delivery of social welfare schemes lies within the system and the respective departments, it would be interesting to see how realistic do the claims of UIDAI prove in delivering the goods on the ground. In this section, we have tried to evaluate each of such benefits that the Aadhaar scheme has claimed to deliver.

Financial Inclusion

One of the major benefits that UIDAI claims to provide through its Aadhaar scheme is to achieve financial inclusion by providing identity to the poor and the homeless. The unique ID number or the “Aadhaar” number is envisaged to act as a valid document for opening a bank account. Making the Aadhaar number an officially valid document to satisfy the Know Your Customer (KYC) norms for opening bank accounts is expected to promote financial inclusion in the country by making it possible for the financially excluded to easily establish their identity and open bank accounts. UIDAI claims to have partnered with various banks that would facilitate opening of bank accounts for the residents at the time of enrolment for Aadhaar (Pandit, 2010; PTI, 2010).

Now, the larger question that arises out of this claim of the UID acting as a facilitator of financial inclusion is whether financial exclusion is just due to lack of identity of the residents or is it a much larger systemic error? The nation has seen a series of initiatives from the Finance Ministry and the Reserve Bank of India (RBI) towards achieving financial inclusion. However, even the provision of “no-frills” account to the poor and linking of these accounts with schemes like the National Rural Employment Guarantee Act (NREGA) have not been able to achieve financial inclusion so far. Moreover, the objective of financial inclusion does not get achieved by ensuring that people open an account in a bank. For example, the article by (Kelekar 2011, para. 12) mentions that “around 1,400 people who had been given bank accounts in Nandurbar district in Maharashtra where the UID project was inaugurated, have zero deposits in their accounts and they have never operated their bank accounts”. This further raises doubts about the usefulness of such accounts and economic viability for banks in maintaining such accounts.

Given the complexity of interlinking factors including extreme poverty, illiteracy, and lack of awareness and trust, corruption at various levels of the system and lack of willingness among the banks are affecting the mission of financial inclusion. There are serious doubts whether providing an

UID would actually facilitate financial inclusion or will it become an additional requirement for people in order to open and access a bank account. Moreover, if we assume for a moment that UID would actually facilitate the mission of financial inclusion, does the authority have any measure by which they can estimate the impact of UID on financial inclusion? Is this the only alternative or the most cost-effective alternative that can help achieve the same amount of impact? These and many more such questions still remain unanswered.

Public Distribution System (PDS)

It is claimed that the Aadhaar scheme would help in cleaning the PDS by eliminating the “Bogus (ration cards belonging to fictitious families) and Shadow (genuine ration cards used by someone else) ration cards in the system” (UIDAI, n.d., p. 6). It is believed that this approach would resolve the problems relating to PDS leakages, “transparency and transportation as the leakages would become more difficult to hide” (UIDAI, n.d., p. 6). In the proposed scheme, the state government is expected to “create a high quality beneficiary database, preferably commencing from a house-to-house survey” (UIDAI, n.d., p. 8) and enroll the identified family members into the UID programme. UIDAI would then de-duplicate the details of the enrolled members and the state government would then be able to take appropriate action against the individuals appearing in multiple cards (UIDAI, 2010b, n.d.). According to an article by (PTI, 2011, para 5), “Puducherry was the first State to constitute an UIDAI empowered committee and the Aadhaar card here would be directly linked with PDS”.

UIDAI, in its document (UIDAI, 2010b), also encourages the state governments to implement authentication of transactions taking place throughout the PDS supply chain and also come up with a state-wide centralized Aadhaar-based MIS system that would allow the residents to collect ration from any shop of their choice. Allowing the beneficiaries to choose their fair price shop is also expected to induce competition among the fair price shop owners. The centralized MIS is also expected to resolve the issue of exclusion of the poor that happens due to denial of services both at the time of registration for the cards and purchase of goods. UIDAI also claims that the issue of exclusion would be further addressed for the residents who do not get a PDS card due to non-availability of proper documents. As UID would be distributed by various agencies (registrar organizations), the citizens are assumed to fetch their UID from some other agency and furnish the same to PDS for getting hold of a PDS card.

National Rural Employment Guarantee Scheme (NREGS)

According to a working paper on UID and NREGA (UIDAI, 2010c, page 1), “Launched in 2006, the National Rural Employment Guarantee Scheme (NREGS) is an attempt to transform the rural economy through legally guaranteed employment for up to 100 days per household. The scheme, run jointly by the Centre and the states, has a total budget allocation of Rs. 39,100 crore, which is 8.1 per cent of the total plan budget for the fiscal year 2008-2009”. UIDAI proposes to integrate the Aadhaar scheme with NREGS in order to ensure that the benefits of the scheme reach the poor by bringing in more transparency at various levels. According to the proposal, UID would be integrated within the job cards, muster rolls, and bank accounts of the beneficiaries. The UID is expected to be authenticated at various citizen touch points which would ensure tracking of activities at the grass-root level and thus allow greater transparency within the system (UIDAI, 2010c).

An article by (Overdorf, 2010, para. 13-15) states that

“...however, not everybody is on board yet. In a recent letter addressed to the Rural Development Minister, Jean Dreze and Aruna Roy, members of the National Advisory

Council and the Central Employment Guarantee Council, raised objections to the Ministry's decision to link the ID project to welfare programme job cards without consulting them. Dreze, a development economist, who helped design the government's 2005 National Rural Employment Guarantee Act, also told a local newspaper that he had fears about the UID's real purpose. "I am opposed to the UID project on grounds of civil liberties," Dreze told Business Standard. "Let us not be naive. This is not a social policy initiative — it is a national security project."

Another article (Bureau, 2011, para. 4-5) in The Economic Times states that

“an inclusive banking system, supported by a countrywide broadband network, connected to teller machines at post offices and point-of-sales terminals even in villages across the country would be needed. The third, and possibly the biggest hurdle, is institutional. A direct transfer mechanism for subsidies will upset many entrenched lobbies across the country. To minimize this resistance, the entire administrative mechanism, including the Centre, state governments, district and panchayat administrations needs to be taken into confidence, and mobilized to implement the transfer scheme. An overhaul of India’s vast and complex subsidy regime cannot just be a technocratic quick-fix; to succeed, it would need strong administrative and institutional legs and political will”.

In addition to the above-mentioned benefits, it is also claimed as mentioned in an article by The Economic Times (Shivapriya & Bureau, 2010, para. 1-2) that

“an estimated 3,50,000 new jobs will be created as a result of the UID project, according to a report analysing its impact. The mega project is estimated to result in a commercial opportunity of \$20 billion in the first five years, and from the sixth year onwards, \$10 billion annually, making it one of the largest projects not only in terms of scale, but also in revenue potential. Other than software and hardware providers, who stand to gain by providing systems and services to implement the project, telecom operators and banks will be big beneficiaries, according to the report by the brokerage firm, CLSA. Telcos stand to gain 60 million new subscribers, \$4.5 billion in mobile payments, and \$2 billion in ARPU (average revenue per user) and handset sales, while banks stand to gain in terms of 125 million new bank accounts from the existing figure of 240 million unique account holders”.

On the other hand, the Home Ministry is reported (CNN-IBN, 2010) to be worried about Bangladeshis getting Unique ID cards. The article (CNN-IBN, 2010, para. 2) further states that “that is because the Indo-Bangladesh border is porous. And, there are more chances of people crossing over”. Similar concerns were also raised in the Lok Sabha (Vijayan, 2010) where questions were raised on the measures taken by UIDAI in order to ensure that a Unique ID is not issued to any illegal immigrant. To this, the response (Vijayan, 2010, page 1) states that “no representations have been received in the Unique Identification Authority of India (UIDAI) to ensure that IDs are not given to illegal migrants. The Unique Identification number proposed to be given would prove only identity and not citizenship”

Similar concerns are raised by an Mail Today article (D. C. Sharma, 2010, para. 1-4) which states

“...this is because UIDAI, headed by Nandan Nilekani, is using data collected by the Census authorities to prepare the National Population Register (NPR) for creating the UIDs. The NPR

is not an exclusive database of Indian citizens. It contains data on all residents of the country, including foreigners. Therefore, issuing UIDs based on the data in the NPR would help illegal migrants get these IDs and would allow them access to government services and programmes. “They would be entitled to obtain Indian passport, register their names in the electoral rolls, obtain identity card issued by the Election Commission of India, get ration cards, and open bank accounts. All this would make them eligible to contest elections at all levels, and even enter the police and armed forces,” S P Sharma, the Former Deputy Registrar General (Census and Tabulations), said. Nationality of individuals is one of the variables being recorded during the enumeration for NPR. But the instruction to the Census personnel says: “Nationality of each person has to be asked from the respondent and recorded as declared by her/ him.” The officials have been asked to advise people “to give correct nationality” and that “she/he can be penalized for giving incorrect/false information”. According to Sharma, such advice may not work with illegal migrants. “They are unlikely to report their correct nationality and may get themselves listed as Indians,” he said”.

Critiques (TheHindu, 2011, para. 4-10) also point out that

““The Unique Identification Authority of India [UIDAI] says we only produce a number. They are not taking responsibility to answer the ‘how.’ What scrutiny has the UID gone through? How many phases does it have? There is no answer to whether it is a government project in a corporate form. If the government had to own the project, they would have to answer many questions that the UIDAI is not answering,” Ms. Ramanathan, researcher on jurisprudence, poverty and rights, said. In the absence of a cost-benefit analysis, “all manner of social and fiscal costs have not been accounted for,” she added, also raising concerns over the issue of consent and privacy. On the one hand, it was said that the UID was voluntary, but on the other hand, it was expected to be ubiquitous. “How will it be ubiquitous unless it is made compulsory?” she said, adding that the government was resorting to “coercion” by getting various agencies to seek the number, for instance, banks and ticket-booking facilities. “It’s a myth that voluntariness exists. It certainly doesn’t,” she said. Ms. Ramanathan criticized the argument that UID would become “self-sustaining.” “That means that it is going to be a profit-making model” riding piggy-back on public money and social sector schemes, she said”.

The article further states that “R. Ramakumar, Associate Professor at the Tata Institute of Social Sciences, said that UID cannot be compared to the social security number in the United States, which was “guided by extremely stringent privacy laws”” (TheHindu, 2011, para. 14 & 16)

Another article in Business Standard (Chatterji, 2011, para. 2-7) states that

“Nandan along with the Planning Commission Secretary, Sudha Pillai, had earlier appeared before Parliament’s Standing Committee where many members expressed their reservations. While some members even questioned the need for such a programme, others asked Nilekani why the scheme was not made mandatory for all residents. Nilekani has promised to give a detailed power-point presentation of Aadhaar in his next appearance before the panel, headed by the senior BJP leader, Yashwant Sinha. Sources in the Parliament said that the panel focused on the voluntary nature of the scheme, questioning its effectiveness. One member even dubbed the unique identity card as “another piece of identity card” and questioned how many more identity cards a person needed. Nilekani explained the benefits of the card and its wide scope in the future but many members of the panel remained skeptical. Nilekani and

Pillai were asked why the scheme had not been made mandatory. The Biju Janata Dal's Bhartruhari Mahtab pointed out that while the UID Act did not make it mandatory, the Planning Commission had issued circulars making unique numbers necessary for a number of projects, including the Mahatma Gandhi National Rural Employment Guarantee Scheme. Members also questioned why state governments would be allowed to decide if they would accept identity numbers for their schemes or carry on business without the cards. The BJP raised objections that the unique number would help illegal migrants residing in the country to be acknowledged by the government. Nilekani, however, made it clear that the UID authority was not giving any certificate of citizenship but only giving a unique number to each resident. CPI(M)'s Mainul Hassan questioned the very need of the scheme and ruled it out as "unnecessary". A Bahujan Samaj Party representative, echoed similar sentiments, as Mayawati's party doubted the usefulness of the programme".

Project Cost

There has been no clear evidence of claim either from the government or from UIDAI about the total cost of the project. Total expenditure in the financial year 2009-10 was Rs. 26.21 crore and there is no state wise allocation for the UID programme (Khan, 2010). While the initial amount budgeted was Rs.120 crores, meaning that UIDAI could only spend less than a fifth of the allocated budget pointing towards the fact that the project would have needed to be better planned. The strategy document (UIDAI, 2010d) put forward by UIDAI states only two components of enrollment cost. One that would be taken up by the enrolling agencies/Registrars for carrying out the enrolment process and the cost for the residents that they would need to incur for travelling to the enrolment centre (which would also include the amount of wage that the residents might need to forgo during the process). The document however does not mention any figure for any such cost. A guesstimate as reported by the *Frontline* magazine put the cost of the project without considering the recurring cost at around INR 15 lakh crores (US \$33.33 billion) to which the Chairman of UIDAI, Mr. Nandan Nilekani had responded claiming that the actual cost would be less by a factor of 10 (which would make it INR 1.5 lakh crores approximately). This was again a guess made by Mr. Nilekani (TheHindu, 2009) and so far there has been no clear estimates either from the government or from UIDAI on the total cost of the project and the components based on which the project cost can be calculated.

The Wall Street Journal article (A. Sharma, 2010, para. 17) observed that "the Indian government is expected to spend as much as \$250 billion over five years on programmes aimed at the poor, including subsidies for food, diesel, fertilizer, and jobs. But 40 per cent of the benefits, as the system now stands, will go to the wrong people or to "ghosts" with fake identification papers, according to a report by the brokerage firm, CLSA Asia-Pacific Markets". The article (A. Sharma, 2010, para. 19) further mentions that "the government has approved about approximately Rs. 3350 crores (approximate value as US \$670 million was mentioned actually. The amount mentioned is at an exchange rate of Rs.50 = 1US\$) for the project so far, and the entire cost will likely be "several billion dollars," says Mr. Nilekani".

However, there is discrepancy in the amount of approved total budget for the scheme for a span of five years. In response to one Rajya Sabha question, the amount is mentioned as Rs. 3,170.01 crore (Gnanadesikan, 2010), while in response to three other questions, the amount is mentioned as Rs. 3,170.32 crore (Agarwal, 2010; Karat, 2010; Kushwaha, 2010). In response to a similar question in the Lok Sabha, the budgeted amount for Phase I & II of the project was mentioned as Rs. 3,170.31 crore (Tewari & Singh, 2010).

In response to questions raised in the Rajyasabha as well as in the Lok Sabha (Kushwaha, 2010; Mitra, 2010), the breakup of expenditure for Phase I and II that would be incurred during a period of five years does not provide any clear indication about the components of the project cost. In answer to the question (Kushwaha, 2010) it is stated that – “...the estimated cost of the Phase-I and Phase-II of the project spread over five years is Rs.3170.32 crore. Of this amount, Rs.147.31 crore comprises the cost of Phase-I of the project and Rs.3023.01 crore is the estimated cost of Phase-II of the project. Of Rs.3023.01 crore, Rs.477.11 crore would be towards recurring establishment expenditure and Rs.2545.90 crore would be towards non-recurring project related expenditure. The estimated cost includes project components for issue of 10 crore UID numbers by March 2011 and recurring establishment costs for the entire project phase of five year ending March, 2014” (Kushwaha, 2010; Mitra, 2010, p. 1)

An article in Hindustan Times (HindustanTimes, 2010, para. 1) states that “it costs the UIDAI Rs. 100 to generate each "Aadhaar" number, which would help address the challenges of inclusion, the authority's chief, Nandan Nilekani, said.. It costs the authority Rs. 50 to enrol each individual for the Unique ID (UID) and another Rs 50 on back-end costs, he said”. It is also reported in an article (H. Singh & Bureau, 2010, para. 9) that “the government plans to pay the BPO for calls per minute. For each minute of inbound call, the government will give a specific amount (say Rs. 2-3/minute). For an SMS push, the government will pay the BPO 3 per cent of the per-minute call rate”.

The total cost of ownership of the project needs to be calculated after considering various components like setting up of the required infrastructure by UIDAI and its partners, on-boarding of the enrolling agencies, maintenance of the infrastructure, training and awareness campaigns, cost incurred by the residents during the process of enrollment, etc. Even after enrollment, the demographic and biometric information of the residents contained in the central database will have to be regularly updated (UIDAI, 2010d). According to an article in Times of India (M. K. Singh & TNN, 2011, para. 2), “official sources said that the Planning Commission has recommended only Rs 1,400 crore plan expenditure for the UID Authority against the demand for Rs 3,500 crore for 2011-12. The Finance Ministry will take a final call on the fund allocation”. The Global Post article (Overdorf, 2010, para. 8-9) states that

“the more reputable skeptics, including members of the influential National Advisory Council, boast a wealth of grassroots experience with the corruption-plagued "public distribution system." They have attacked the programme's potential efficacy in eliminating graft, questioned whether its benefits will justify its costs and even suggested that the programme's true aim is to identify and flush out illegal aliens. And the fringe? Well, an obscure Christian sect from the state of Mizoram has stood up and refused to be counted, claiming that the ID project is, in fact, the Number of the Beast”.

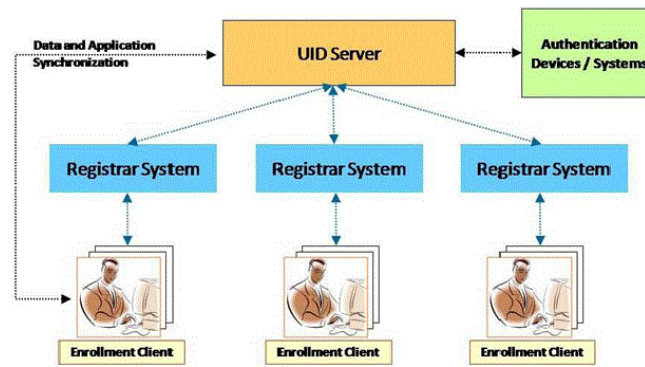
There is no indication of any cost benefit analysis being conducted by the government for the UID project. The only thing that has been mentioned in response to a question raised in the Lok Sabha (Tewari & Singh, 2010, page 2) about the same was that – “*the benefits accruing out of the project should far out- weigh the cost of the project*” . (p. 2)

Technology

As per the technology architecture suggested by (UIDAI, 2010a), a central server would be maintained for storing the Aadhaar database. The document (UIDAI, 2010a, para. 12) further states

that “enrolment of the residents would be computerized along with online authentication, and information exchange between Registrars and the CIDR would take place over a network. The Authority would also put systems in place for the security and safety of information”.

Figure 1: Application Architecture



Source: UIDAI website (UIDAI, 2010a)

According to the document (UIDAI, 2010a, para. 20), “the application hosted by CIDR is broadly categorized into core applications and supporting applications. The core category consists of the enrolment and authentication applications services, while the supporting category consists of the applications required for administration, analytics, reporting, and fraud detection interfaces with the logistics provider, contact centre, and the portal”

The architecture as suggested by UIDAI would be a massive project for implementation, but there are still many technological challenges in creating and managing the database of such a huge population. Around five megabytes of data will be required to store the compressed fingerprint images (of all the 10 fingers) of each individual, requiring the size of the entire database to be at least six petabytes (6,000 terabytes, or 6,000,000 gigabytes), making it among the world’s largest databases (Lakshman & Ranganathan, 2009). This even raises a question on the authenticity and security of the central repository considering the fact that UIDAI can authorize any person to maintain it. Another major concern which raises serious doubts is that this architecture would make available vast amount of personal data, integrated at a single place, to the government agencies with few restrictions. There is still no answer as to what steps the UIDAI will take to face these security challenges.

However, according to the article by (Ranganathan, 2009, para. 3-8)

“at an interaction with The Hindu, Mr. Nilekani talked about some technological challenges involved in the project, but stressed that as an IT superpower, India had the wherewithal to implement it successfully.

Volume: Creating and managing a database of 1.2 billion people spread over a huge area would involve immense work. Around five megabytes of data would be required to store the compressed fingerprint images (all 10 fingers) of each individual, meaning the size of the entire database will be at least six petabytes (6,000 terabytes, or 6,000,000 gigabytes), making it among the world’s largest databases.

Speed: Each new entry has to be validated against the existing entries to remove the possibility of duplication. Over the next few years, this would mean comparing each new application against, say, one billion entries in the database at a reasonable speed. Also, the UIDAI proposes online authentication through cell phones and using basic technology. While authentication is a simpler process, the proposed time of three to four seconds for the same makes it challenging.

Security: Dealing with sensitive information, it has to include security features that would ward off hackers. The robustness of the system under full operation, with possibly thousands of queries every second, will also have to be factored in.

Biometrics: A Biometrics Committee has been set up to look into the issue of the final set of biometrics used, but Mr. Nilekani has suggested that along with fingerprints, iris scan of the individuals also be stored. While this will increase the size of the database, there will also be problems relating to the equipment required for the iris scan.

Expressing confidence that all the targets were achievable, Mr. Nilekani added that he had received mails from professionals all over the world wanting to participate in the project because the “technology has never been tried before.” About his own experiences with the project, the former Infosys Chairman joked, “It is like another start-up, only with no IPO”.

Apart from this, the major challenges as far as the technological implementation is concerned are: system performance, functionality, reliability and precision including resolution of sampling, speed, accuracy, and error rates, capturing Biometric data for such a large population (with different environment, variable usability education, and biometric conditions (bad/missing finger, eye disease/blind)) in India and computing templates with score normalization, Biometric data transfer to Central Repository and safeguarding it with proper security, ubiquitous real time authentication service over unreliable ICT infrastructure, accurately probing and de-duplication measurements in multivendor environment, readiness demonstration test (on small live data) *v/s* large scale full system, performance evaluation framework for operational systems to assist in real time monitoring of devices, interoperability, and quality of acquired biometric data (FAR/FRR/FTA/FTE), guarding CIDR (Database) and authentication transactions, testing protocols for certification of devices, acquisition errors, false negative errors.

Moreover, the process of enrolment “... is slow going, taking anywhere from 15 to 30 minutes per person. Capturing iris with binocular-like devices is tricky and can take several minutes. Administrators had to hold one elderly man's eyelids open to get a good image. In addition to biometrics, residents provided an array of personal information, including their caste, religion, and cell phone number. State agencies and companies that register people can gather whatever information they deem appropriate”. (A. Sharma, 2010, para. 24-25)

The Hindu article (TheHindu, 2011, para. 17) had reported that “J. T. D'Souza, Managing Director of SPARC Systems Limited, demonstrated a fingerprint reader that accepts fake fingerprints”.

The Wall Street Journal (A. Sharma, 2010) further raises concern that

“ marketers will find ways to build profiles of people based on how they use their IDs – tracking where people bank, which hospitals they have checked into and who their cell phone

providers are, for example. "You will basically be creating these wonderful resources for people to mine," says Sudhir Krishnaswamy, a Law Professor at the National University of Juridical Sciences in Kolkata". (para. 27-28)

Other than the risk from technology failure (if that can be assumed for a moment to be synonymous to all issues and risks arising from issues like privacy, security, technology architecture etc.), one more risk that would need to be looked at is towards the risk of failure of the technology manufacturers and suppliers. Considering the number of suppliers of the biometric devices for capturing the biometrics of the citizens, although around 225 service providers have been empanelled for capturing the biometrics, there are only a handful of suppliers that have been enlisted for importing these biometric devices from foreign manufacturers. Interestingly, there are only a handful (some four or five odd) technology manufacturers (among which majority of the importers are dependant on one or two foreign exporter only) increases the risk of the project due to vendor lock in. In case these technology manufacturing organizations fail in the future for some reason beyond the control of India, it may act as a substantial blow to the whole project.

Adoption

Given the fact that UID has been proposed to be voluntary for the residents of India to possess, the sustainability of the UID scheme is solely dependent on the extent of adoption among the residents as well as the service providers. UIDAI claims that the scheme would be able to reach a critical mass of around 200 million enrolments within two to three years starting from February 2011 (UIDAI, 2010d). The authority also assumes that once the critical mass is reached, it would automatically generate a network effect that would drive demand and accelerate adoption among service providers and residents (UIDAI, 2010d). However, the mesh of factors affecting adoption of such a scheme is much more complex than that has been portrayed by the authority. A paragraph on page 25 of the UIDAI strategy document (UIDAI, 2010d, page 25) states that

“The speed of UID adoption in India depends on whether the number can help in eliminating poverty and marginalization, and in enabling greater transparency and efficiency in service delivery. If it succeeds in these goals, the number will become indispensable for residents in accessing services”.

while the subsequent paragraph of the same document states that:

“...UID can provide the strongest form of pre-verification and identity authentication in the country, it cannot ensure that targeted benefit programs reach intended beneficiaries. The pro-poor impact of the UID, consequently, will not gain traction unless there is a mechanism to link the UID process with actual service delivery”. (p. 25)

It becomes quite clear from these statements that the factors that UIDAI perceives to be the most critical for the viability and sustainability of the project is not under the control of the authority and is majorly dependent on the realized benefits by other stakeholders especially the service providers and the residents. Leaving aside the issues of extending social benefits to the poor and marginalized section of the population for a moment, we would evaluate the issues of adoption of the scheme from the end of service providers as well as the residents.

Service Providers

UIDAI (UIDAI, 2010d) accepts the fact that

“in order to accommodate this authentication, the agencies may need to re-engineer their business processes to become UID-enabled... Agencies will have to adhere to norms and procedures specified by the UIDAI for fingerprint capture and verification, and introduce a robust biometric authentication process at every point of sale”. (p. 25)

Incorporation of all these would take quite an effort from the end of the service providers, which would mean that the service providers should have realized a strong need for the scheme. Different organizations would have different set of needs both in terms of frequency and degree of details in identifying the citizens. For example, a bank branch would need a more stringent process of customer identification compared to a school or a fair price shop of Public Distribution System (PDS) during registration as well as during further transactions. This difference in need would arise because of the difference in functioning leading to different drivers and inhibitors for adoption of such a system at the organizational as well as individual levels within these organizations (Dass & Pal, 2009). In order to ensure adoption of UID scheme among the service providers, it first required to identify the drivers and inhibitors of adoption of such a system for the key service providers (if not all service providers).

Difference in the need for implementing a stringent identification system among various categories of service providers would lead to a much larger question on the interoperability and validity of UID across organizations belonging to different categories. Given the fact that UIDAI proposes to provide only the technology platform and process guidelines for enrollment, registrars (which can be any organization authorized by UIDAI) would be responsible for ensuring validity of the data of the enrolling resident for UID. Now, it would be interesting to see up to what extent an organization like bank would rely on UID that has been enrolled through PDS or a school acting as a registrar. This is a question of trust on the validity of the data provided by an individual during the process of enrollment. The authentication service extended by UIDAI may provide optimal efficiency and accuracy (which is another factor for technology evaluation) by matching the user details with the existing records using various biometric technologies, the issue of validity of the enrollment process remains out of scope for UIDAI as well as the organizations trying to avail the authentication service of UIDAI. As the challenges for ensuring the validity of data during enrolment is multifold, it would need a well laid off process that can genuinely validate the enrolled data. Failing to address this issue of ensuring data validity would further lead to the issue of accountability in case of any identity related fraud.

The existing documents and reports of UIDAI that has been published do not seem to address the issues of adoption of the UID scheme very clearly. Failure to address the issues of adoption related to any information infrastructure may lead to a further problem termed as “angry orphans” (Whitley & Hosein, 2010) which arises due to non-adoption of the infrastructure among some critical department(s)/organization(s). Whitley and Hosein (2010, page 114) states that “...they may not be able to use the new infrastructure until their own systems and processes have been updated, or may not feel the need to use the new infrastructure as their existing infrastructure is performing perfectly well for their requirements”.

Voices of concern against adoption of the Aadhaar scheme have already started to sound from some key entities like the National Rural Employment Guarantee Act (NREGA) (NDTV, 2010). (Whitley

and Hosein 2010, page 114) further states that “Angry orphans can disrupt the successful implementation of the infrastructure... as ...their decision not to take-up the system is likely to affect the adoption decisions of other departments as well, which might have a clearer case for their own use of the scheme but are worried because of the high-profile department’s decision”.

Residents

Given the fact that registering for an UID is voluntary for the residents, one of the major risks of the Aadhaar project is non-adoption of the scheme among the residents of the nation. UIDAI also realizes the need for generating “sufficient, early demand from residents for the UID number” (UIDAI, 2010d, p. 38). Demand for the UID number among the residents can be generated only if the residents can actually realize the benefits that they can accrue from the scheme. This would need efforts towards developing an ecosystem of service providers who can in turn generate the need for UID number among the residents by providing efficient and effective services. Moreover, the residents would also need to be made aware about the benefits of enrolling for an UID number. Considering the fact that the residents would need to incur some cost (either direct and/or indirect) for enrolling to the UIDAI system, the dimensions of benefits that can be availed through this scheme against the incurred cost should also be made clear to the residents.

People have also raised doubts about “Aadhaar” not being compulsory. According to an article (Dreze, 2010) in The Hindu:

“UIDAI's concept note stresses that “enrolment will not be mandated.” But there is a catch: “... benefits and services that are linked to the UID will ensure demand for the number.” This is like selling bottled water in a village after poisoning the well, and claiming that people are buying water voluntarily. The next sentence is also ominous: “This will not, however, preclude governments or Registrars from mandating enrolment.” That UID is, in effect, going to be compulsory is clear from many other documents. For instance, the Planning Commission's proposal for the National Food Security Act argues for “mandatory use of UID numbers which are expected to become operational by the end of 2010” (note the optimistic time-frame). No UID, no food. Similarly, UIDAI's concept note on the National Rural Employment Guarantee Scheme (NREGS) assumes that “each citizen needs to provide his UID before claiming employment.” Thus, Aadhaar will also be a condition for the right to work – so much for its voluntary nature”. (para. 6-7)

The article (Dreze, 2010) further states that

“Now, if the UID is compulsory, then everyone should have a right to free, convenient, and reliable enrolment. The enrolment process, however, is all set to be a hit-or-miss affair, with no guarantee of timely and hassle-free inclusion. UIDAI hopes to enroll 600 million people in the next four years. That is about half of India's population in the next four years. What about the other half? Nor is there any guarantee of reliability. Anyone familiar with the way things work in rural India would expect the UID database to be full of errors. There is a sobering lesson here from the Below Poverty Line (BPL) Census. A recent World Bank study found rampant anomalies in the BPL list: “A common problem was erroneous information entered for household members. In one district of Rajasthan, more than 50 per cent of the household members were listed as sisters-in-law.” Will the UID database be more reliable? Don't bet on it. And it is not clear how the errors will be corrected as and when they emerge”. (para. 8-10)

Through a response to a question raised in the Rajyasabha (Karat, 2010), it has been claimed that the Aadhaar scheme would provide “identity” to the residents. This however gives rise to a more serious social debate on whether any authority can claim to prove identity of the residents. What UIDAI is actually trying to do is to lay down a platform for various service providers to identify its users through the authentication mechanism. It seems that there has been a misinterpretation between the terms of providing “identity” and providing “a platform for identification”. In this case, UIDAI is definitely providing a platform for identification of the residents, and not an identity as the residents would need to prove their identity in some way (either through valid documents or through reference) during the process of enrolment. Hence, the responsibility of proving identity still lies on the shoulders of the residents and not on UIDAI.

The Hindu article (Dreze, 2010) states that

“under the proposed National Identification Authority of India Bill (“NIDAI Bill”), if someone finds that her “identity information” is wrong, she is supposed to “request the Authority” to correct it, upon which the Authority “may, if it is satisfied, make such alteration as may be required.” There is a legal obligation to alert the Authority, but no right to correction”. (para. 11)

The article (Dreze, 2010) further mentions that

“NREGA works or payments will come to a standstill where workers are waiting for their Aadhaar number. Others will be the victims of unreliable technology, inadequate information technology facilities, or data errors. And for what? Gradual, people-friendly introduction of innovative technologies would serve the NREGA better than the UID tamasha”. (para. 12)

The article (Dreze, 2010, para 14) also quotes the Wall Street Journal comments about the Rashtriya Swasthya Bima Yojana (which is a pioneering CCT project, for health insurance), “the plan presents a way for insurance companies to market themselves and develop brand awareness.”

Concerns have been expressed about an unprecedented degree of state surveillance (and potential control) of citizens (Dreze, 2010). The article (Dreze, 2010, para 15) questions “But can we take a chance in a country where state agencies have such an awful record of arbitrariness, brutality, and impunity?”

The article (Dreze, 2010) further states that

“There are equally troubling questions about the “NIDAI Bill,” starting with why it was drafted by UIDAI itself. Not surprisingly, the draft Bill gives enormous powers to UIDAI's successor, NIDAI — and with minimal safeguards. To illustrate, the Bill empowers NIDAI to decide the biometric and demographic information required for an Aadhaar number (Section 23); “specify the usage and applicability of the Aadhaar number for delivery of various benefits and services” (Section 23); authorize whoever it wishes to “maintain the Central Identities Data Repository” (Section 7) or even to exercise any of its own “powers and functions” (Section 51); and dictate all the relevant “regulations” (Section 54)”. (para. 17)

CONCLUSION

The UID project is a very critical initiative for India and in all possibilities, we would need to be careful that the project neither faces the same fate as similar other large scale exercises in the country nor like the national id initiatives of some other countries. Hence, it becomes critical to analyze the areas of concerns coming up from whatever has been done in this so far in this initiative.

The criticisms of the UID project can be categorized under four heads. An article in The Hindu (Ramakumar, 2010) states that

“first, the project would necessarily entail violation of privacy and civil liberties of people. Second, it remains unclear whether biometric technology – the cornerstone of the project – is capable of the gigantic task of de-duplication. The Unique Identification Authority of India's (UIDAI) “Biometrics Standards Committee” has noted that retaining biometric efficiency for a database of more than one billion persons “has not been adequately analysed” and the problem of fingerprint quality in India “has not been studied in depth”. Third, there has been no cost-benefit analysis or feasibility report for the project till now. Finally, the purported benefits of the project in the social sector, such as in the Public Distribution System (PDS), are largely illusive. The problem of duplicate ration cards is often hugely exaggerated. In fact some states have largely eliminated duplicate ration cards using “lower” technologies like hologram-enabled ration cards”. (para. 3)

The article (Ramakumar, 2010) further adds

“the parallels between the UPA's UID and the NDA's MNIC are too evident to be missed, even as the UPA sells UID as a purely “developmental” initiative. The former Chief of the Intelligence Bureau, A. K. Doval, almost gave it away recently, when he said that UID, originally, “was intended to wash out the aliens and unauthorized people. But the focus appears to be shifting. Now, it is being projected as more development-oriented, lest it ruffle any feathers”.” (para. 6)

UIDAI had claimed that 10 crore UIDs would be distributed by March 2011 and 600 million by March 2014. However, as of November 25, 2010, only 1,53,791 UIDs were generated (Balaganga, 2010; Khan, 2010; Kushwaha, 2010). This raises serious doubts on the plan for achieving the optimistic target of generating 10 crore UIDs by March 2011.

It is not that the ambition of providing unique identification to all the residents/citizens of India is unachievable. The overall exercise needs to be planned meticulously based on concrete evidences and the efforts and outcomes of the project clearly mapped. Also, the perceived benefits of such a scheme need to be well quantified in terms of its value and impact on the society as well as its capacity to generate revenue or save cost. The feasibility of the claimed benefits and their impact needs to be thoroughly evaluated in consultation with the respective stakeholders. From the existing reports, it seems that very little effort has been made towards estimating the total cost of the project and mapping the same with the perceived benefits. In fact there is no indication of any cost-benefit analysis being conducted by the government for the UID project. The only thing that has been mentioned in response to a question raised in the Lok Sabha (Tewari & Singh, 2010, p. 2) about the same was that – *“the benefits accruing out of the project should far out-weigh the cost of the project”*. Given the scale and complexity of the initiative, a much sincere effort needs to be made to estimate

the overall cost of the project taking into consideration various direct as well as indirect components of cost that would ultimately contribute towards the cost to citizens (including government expenditure). Further, a detailed cost-benefit analysis needs to be conducted by considering various alternatives for achieving the perceived benefits (or social objectives) in order to check whether the UID scheme is the best alternative for achieving the said benefits.

In view of the huge implications in terms of cost and effort, it becomes mandatory to put forward a detailed cost-benefit report in front of the people of the nation before initiating and executing such a mammoth task, given that there are other areas of priority. Following the cost-benefit analysis, the critical stakeholder groups would need to be consulted in order to understand their IT-readiness in adopting the UID scheme. This would also help in understanding the expectation gaps among the respective stakeholders and a plan can be designed to bridge such gaps. A concrete plan of execution of the project can be designed by clearly mapping the efforts and resources of the project with the intended benefits (considering the best alternative) and presented to the people of the nation. In light of the perceived cost, feasible benefits, and perceived risks, this should further be publicly debated in order to understand the readiness of the nation in taking such an initiative.

Moreover, substantial focus would still be needed in the areas of trust generation among various stakeholder groups by understanding their readiness, feasibility and ways to generate trust among these stakeholders in such a critical initiative. Thus, mapping drivers (and inhibitors) of adoption in considering socio-economic and cultural issues in the designated areas of roll out becomes absolute necessity. Most importantly perhaps, if the country has decided to have an Unique Identification for the citizens and creating an ecosystem of registrars and organizations (including various state governments), we would also ensure that this perceived ecosystem should also consider other stakeholders like that of technology manufacturers and manufacturing units of the biometric devices to be used in this exercise as well. That may, in fact, bring down the cost of capturing the biometrics of the citizens. Each of the stakeholder group should have clear ideas about their proposed end states and the end states of the ecosystem being considered, providing a pointers towards avoidance conflicts and mistrust. Ultimately, whether a Bank or a Telecom Operator would trust only on the biometrics being captured by a connected PDS in a remote village for providing an UID as a mobile unique identification to a migrant poor daily wage labor, would still remain to looked at.

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