



21st Century Digital India

Executive Summary

In May 2014, Narendra Modi took office as Indian prime minister with a bold mandate to put the country on a new and sustainable development path. A key element of his plan was a collection of measures that together came to be known as the “Digital India” campaign, built on the idea that by creating unique digital ID’s for all of India’s 1.25 billion citizens, the country could take a development leap, leverage the knowledge of its IT industry and achieve a new level of prosperity.

This case traces the history of the UID/Aadhaar program from its launch in 2009 to its “rebranding” and redirection under the Modi administration in 2014-2015. It explores the challenges of creating and rolling out the UID/Aadhaar initiative, the programs it aimed to support, and the arguments of its critics and detractors. It includes interviews with Principal Secretary for IT of Maharashtra State Presanth Singh; HCL Global Operations Director Arup Vithal; Country Business Manager for Citibank India Kartik Kaushik; and Columbia University faculty experts Professors Jagdish Bhagwati and Vishakha Desai.

The case includes the following elements;

- . a) Video Intro and Discussions – Available Online
- . b) Written Case Study (This Document)
- . c) Annex A – Original Documents
- . d) Annex B – Interviewee Bios and Interview Transcripts (Not Needed for Core Case, Presented for Research Purposes)

This case written by Ted Smalley Bowen and Adam Stepan for the Picker Center for Executive Education at Columbia’s School of International and Public Affairs (SIPA). Additional case research by Nora Johnson, Renu Pokharna and Sharmistha Maheshwari. The faculty sponsors were Professor William B. Eimicke and Professor Jagdish Bhagwati of SIPA.

Copyright © 2015 The Trustees of Columbia University in the City of New York. No part of this publication may be reproduced, revised, translated, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without the written permission of the Case Consortium.

Introduction

As India prepared in August 2014 to celebrate its 68th year of independence from the British Empire, the national mood was one of cautious optimism. The recent election of a new prime minister promised changes from a history of inward looking development and generally low growth rates, while a flashy new “Digital India” campaign seemed to promise a new start.

India’s economic reforms of the 1990s had yielded strong growth, but the benefits were uneven and impoverished communities continued to suffer from poor health, nutrition, and education. Even though India hit its 2015 United Nations poverty reduction target, the number of poor was roughly equivalent to the entire population of the United States. By some estimates, 90 percent of Indians worked outside the formal economy, which meant lower wages and fewer worker protections, depressing both productivity and living standards.

Prime Minister Narendra Modi’s Hindu nationalist Bharatiya Janata Party (BJP) swept into power in mid-2014, pledging to jumpstart growth through business-friendly reforms and to improve conditions for the country’s poorest residents through a wide range of infrastructure improvements and programs. Digital infrastructure was an essential piece of the puzzle, and the BJP-led government planned to expand existing public-private initiatives to broaden public access to government services, finance, education, and healthcare. A so-called “Digital India” initiative was intended to leapfrog the inefficient paper-based bureaucratic system, mired in corruption and fraud, and establish a reliable digital ecosystem.

Integral to this was the Unique Identification (UID) scheme, also referred to as Aadhaar (Hindi for “foundation”). The previous government in 2008 created the UID Authority of India (UIDAI) to manage Aadhaar, which launched in 2009. At the time, government officials estimated that almost seven in 10 Indians lacked an official ID, hampering their ability to work, bank and seek government services and benefits. The UID project aimed to assign all 1.25 billion Indians 12-digit ID numbers linked to biometric data. It would be the world’s largest digital register and biometric database. Proponents argued that Aadhaar would usher millions into the formal sector, where they could participate in the mainstream economy and qualify for public benefits. For a country with 22 languages, multiple religions and an established caste system, this was a lofty goal.

UIDAI drew heavily on the private sector, contracting with hundreds of IT suppliers and consultants and thousands of private businesses, schools, NGOs, hospitals, local government offices and other entities to collect photographs, fingerprints and iris scans, and handle enrollment and verification. By May 2015, UIDAI had registered more than 850 million people and Aadhaar served as ID for scores of transactions, from securing subsidized food and cooking gas to passport applications, bank accounts and employment programs. UIDAI officials touted the program’s benefits: it reduced “leakage” (pilfering) and lowered administrative costs. The use of biometric data meant that legitimate beneficiaries were less likely to be excluded, intermediaries were less apt to skim off benefits or commodities, and fraudulent applicants could more easily be identified.

But as UIDAI moved closer to its goal of universal enrollment, questions lingered. From the start, it had been hindered by legal uncertainty, inconsistent political support, and a host of practical challenges. Did Aadhaar threaten civil liberties and privacy? Who owned the information

it generated? The Supreme Court had ruled that registration could not be made mandatory. How then could it be universal? Finally, there were questions about the reliability of its biometric data; some medical conditions precluded fingerprints and iris scans.¹ As UIDAI worked to authenticate and enroll the remaining 30+ percent of the population, it still had to persuade vocal skeptics that Aadhaar—while imperfect—was a valuable tool.

Limits of Growth

For the vast majority of Indians, British rule had meant economic stagnation and deprivation; the economy achieved anemic growth in the decades leading to independence in 1947.² Postcolonial economic policy emphasized central planning, although widespread nationalization didn't emerge until the late 1960s under Prime Minister Indira Gandhi.³ Governments focused on industrialization and protectionist trade policies, promoting domestic producers and presiding over an ever-expanding, corruption-prone system of regulation, licensing and permits (the "license raj").

Whether the state should promote growth or invest in social welfare programs was the subject of global public policy debates, reflecting wider trends in development economics. Which was most effective in combatting poverty: a state-led economy or a "pro-growth," anti-regulatory approach? During the post-independence era, India played an important role in this debate. Indian economists such as Jhagdish Bhagwati and Amartya Sen led an international conversation, while India itself often served as a laboratory for state-led economic initiatives. India at the time sought to distance itself from the influence of the UK and other Western powers. It led the international non-aligned movement, and looked to incorporate what it saw as successful elements from Soviet central planning into its own economy.

The economic results of the first 30 years of these policies were generally not impressive. India's GDP grew around 3.5 percent annually from independence through the 1970s (when Indian economist Raj Krishna coined the term "Hindu growth rate" to mean anemic), and jumped to around 5 percent in the 1980s.⁴ Economist Bhagwati argues that without a plan to increase growth by embracing international investment and trade, the government could have no real impact on poverty. He says:

¹ Manual labor, injury and aging could affect fingerprints, and research suggested that irises changed over time. (Duncan Graham-Rowe, "Ageing eyes hinder biometric scans," *Nature*, May 25, 2012.)

² GDP grew at less than one percent between 1900 and independence, according to Jean Dreze and Amartya Sen in *An Uncertain Glory: India and its Contradictions*, Princeton University Press, Princeton, NJ, 2013, (p. 4).

³ India's first post-independence prime minister, Jawaharlal Nehru, was more in synch with private business interests than suggested by later characterizations. Economic planning in his governments hewed close to *A Plan of Economic Development for India* or the "Bombay Plan," issued in 1944 by prominent industrialists. It advocated state intervention and monopolies in energy, infrastructure and transportation. (Ramachandra Guha, *India After Gandhi: The History of the World's Largest Democracy*, HarperCollins, New York, 2008, p.213.)

⁴ Shantanu Bhagwat, blog, "The nonsense about the Hindu rate of growth," *Times of India*, February 8, 2013. See: <http://blogs.timesofindia.indiatimes.com/reclaiming-india/the-nonsense-about-the-hindu-rate-of-growth/>

If you don't grow, you cannot make an impact on poverty.[...] You can expand trade, you can have foreign investment, and it's all to advantage of the state.[...] What many of us had been arguing was that, if you got a higher growth rate, then you'd be able to make an impact on poverty.[...] Once the growth rate accelerated, the government could finally do the things it wanted to do all along, which was to increase social spending. You get a double impact, first by pulling people up directly into gainful employment.⁵

A fiscal crisis in the early 1990s forced a dramatic change in posture, and an external debt crisis in the early 2000s opened the way for widespread reforms. The government of P.V. Narasimha Rao cut onerous tariffs, encouraged foreign direct investment, eliminated most license and permit requirements, and opened the services sector to competition from the private sector. Following India's market liberalization, growth rose dramatically, spiking to more than 9 percent in the mid- and late 2000s. In the wake of the global financial crisis, GDP dropped to between 5 and 6 percent, but by 2014 it had recovered to 7.5 percent.

Compared to the earliest days of independence, 21st-century India was much better off. Life expectancy had more than doubled, from 32 years in 1951 to 66 years in 2011. Infant mortality and literacy rates improved dramatically.⁶ But while some post-1991 economic benefits reached the lowest income brackets, the bulk of gains went to middle- and upper income groups.⁷ In terms of per capita income, India still ranked near the bottom globally.

Tradition of Transfers

A key component of Indian domestic policy since post-colonial times had been direct or conditional cash transfers to the needy. Originally set up as part of Nehru's post-independence plan for India, these policies were expanded in the 60s and 70s to include over 1,000 different programs administered through myriad government ministries. The most prominent were the Public Distribution System (PDS), the Mahatma Gandhi National Rural Employment Guaranteed Act (MGNREGA), the Indira Awaas Yojana (IAY) rural housing program, and the Indira Gandhi National Old Age Pension Scheme (IGNOAPS). The central government also distributed funds to the states through its Additional Central Assistance program.

As economic growth expanded in the 1990s, the government augmented these programs as part of an attempt to counterbalance the uneven pattern of growth. Rural Indians especially were targeted by programs such as MGNREGA, which guaranteed rural inhabitants 100 days yearly of employment in manual labor. This focus on rural development reflected Gandhi and Nehru's vision of rural India as a depository of traditional values and culture. By 2011, India was spending 2

⁵ Adam Stepan's interview with Prof. Jhagdish Bhagwati on March 10, 2015. All further quotes from Bhagwati, unless otherwise attributed, are from this interview.

⁶ Dreze and Sen, *An Uncertain Glory: India and its Contradictions*, Princeton University Press, Princeton, NJ, 2013, p.6.

⁷ The country had developed a large middle class, though its size and purchasing power were debated.

percent of GDP, the equivalent of US\$37.6 billion, on these programs. But most observers felt that the majority of the monies were missing their mark. The culprit: diversion of funds.

Leakage. The term “leakage” was adopted to describe the combination of double benefits (multiple enrollments by the same recipient), stealing and out-and-out corruption that resulted in the diversion of as much as 70 or 80 percent of appropriated welfare funds before they reached their targets.⁸ Unfortunately, the public was accustomed to officials on the take, from routine bribes at the lowest outpost to spectacular fraud and mismanagement of major public works projects at the highest levels of government. The cumulative cost of everyday corruption rivaled that of high-profile cases. Studies showed that Indians spent almost \$3.5 billion each year to gain access to government services that technically were free.⁹

In another example, grain subsidies distributed through PDS, which nominally covered a quarter of all households, largely failed to reach the poor. “Leakage” was estimated at upwards of half and as much as 90 percent in some states. Likewise, research on graft in the MGNREGA rural employment program suggested that a significant portion of wages was diverted. The massive employment scheme, for which the government budgeted almost \$9 billion in 2010-2011, was federally funded. States determined the wage scale, while local authorities administered the public works projects. Officials gamed the system by underpaying workers, over-reporting the amount of work done, or both.¹⁰

Better ID?

In 2006, under the Manmohan Singh administration, the Indian Planning Commission began to study ways to bring efficiency to India’s many complex transfer programs. It formed task teams and, as part of India’s IBSA (India, Brazil, South Africa) cooperation treaty with Brazil and South Africa, studied innovations in delivery and organization. Brazil’s successful “conditional” transfer schemes, such as the widely noted “Bolsa Familia” and “Bolsa Escola” programs which made payments dependent on recipient behavior, were of particular interest. Teams soon concluded, however, that without a better and more reliable way to track India’s population and to eliminate the many “ghost” recipients and double counting, no progress in this area could be made.

Tracking and counting all India’s 1.25 billion citizens was a daunting proposition. The country had been described as “a continent masquerading as a country.” There were 22 officially recognized languages in 29 states and seven union territories. Roughly 80 percent of the population was Hindu and 15 percent Muslim (about 190 million, the third largest Muslim population in the world, behind Indonesia and Pakistan), with sizeable minorities of Christians, Sikhs, Buddhists, and Jains. Along with religious fault lines, caste and class defined and divided Indians.

⁸ World Bank press release, “India’s Poor Yet to Reap Full Benefits of Its Anti-Poverty Programs, Says World Bank Report,” May 18, 2011.

⁹ Sandip Sukhtankar and Milan Vaishnav, “Corruption in India: Bridging Research Evidence and Policy Options,” April 27, 2015.

¹⁰ Paul Niehaus and Sandip Sukhtankar, “The Marginal Rate of Corruption in Public Programs: Evidence from India,” *Journal of Public Economics*, Vol. 104, August 2013, pp. 52-64.

Proof of identity had always been a complicated matter in India, particularly for the nation's poorest residents, many of whom lacked the necessary documents to transact formal business and access public services. Existing IDs were generally tied to a specific function or benefit, whether a voter ID card, passport, driver's license, pension card, ration card, MGNREGA card, or taxpayer ID. Citizens also used these IDs to set up bank accounts and utility service, change money, buy or sell real estate, buy a car and other common transactions. Some forms of ID were recognized nationwide—passports and tax ID (Permanent Account Number) cards, for example—but relatively few Indians carried them.

Increased urban migration heightened the need for a single, national ID. According to the Indian National Sample Survey Office's (NSSO) data for 2007 and 2008, internal migrants constituted 28.5 percent of India's population—roughly 326 million.¹¹ The vast majority—an estimated 70 to 80 percent—were female.

Aadhaar-UID. In 2006, Prime Minister Singh's government (his National Congress Party led the United Progressive Alliance government after the 2004 general election) tackled the problem head-on. That year, the Indian Planning Commission proposed Aadhaar as a "Unique ID for Below Poverty Line (BPL) families." The new ID would take advantage of advances in biometric science to record each citizen's personal traits, from fingerprints to iris scans. Such a document could improve the delivery of welfare services and, not incidentally, provide a way to monitor a variety of government programs. Aadhaar would combine universal coverage with biometric authentication.

Rather than passing a law, the Department of Information Technology approved the initiative by executive order. Unhappily, UID/Aadhaar soon came into conflict with a similar ID project managed by the Registrar General of India—the creation of a National Population Register and distribution of "multi-purpose national identity cards" to Indian citizens.

UIDAI. To resolve the overlap, the government in December 2006 set about merging the programs and, in 2008, created the UID Authority of India. To make it easier for the new entity to work with multiple agencies, UIDAI was set up under the Planning Department. The assignment: to enroll all citizens in a biometric ID system and create a nationwide system of verification. At first, UIDAI elected to contract with a single, private sector IT firm.

But the task proved too much. The organizational requirements were beyond the scope of any single government department and setting up an entirely new bureaucratic entity wasn't feasible, according to Ajay Bhushan Pandey, deputy director general of UIDAI and head of the Aadhaar regional office in Mumbai. Staffing and training requirements alone would have delayed the start of the project for years. Pandey explains:

We had some discussions internally. Aadhaar was not going to be a monopoly of one department. Enrolling 1.2 billion people is not an easy task. It requires a couple of thousand people. How do you recruit, what

¹¹ Kar Suparna Majumdar and Dasgupta Pritha, "Migration in India: Questions of Social Exclusion," *International Research Journal of Social Sciences*, April 2015. See: <http://www.isca.in/IJSS/Archive/v4/i4/12.ISCA-IRJSS-2015-018.pdf>

will be the terms and conditions, where do you get these people? What will happen with these people after you are done? Instead of doing your job, which is to enroll people, you get caught in the logistics.¹²

So in 2009, UIDAI started afresh. The government appointed billionaire technology entrepreneur Nandan Nilekani chair.¹³ He opted to collaborate with private partners across all aspects of the project, from central management through village-level enrollment.¹⁴ To enroll millions of residents required an “ecosystem” of 70,000 enrollment contractors, a market for software programs based on UIDAI standards, and a high-volume supply chain of biometric scanning equipment.¹⁵

For biometric scanning and data storage, UIDAI contracted with three vendors.¹⁶ It teamed up with state governments and made heavy use of majority-public banks and insurance companies as registrars. The core UIDAI management group was itself a hybrid, pairing career civil servants with private sector experts from high-tech, management consulting and related fields; some took sabbatical and others donated their labor.

HCL. Among the leading IT firms involved in developing the backend software was Hindustani Computing Technologies (HCL), which from its offices in Noida outside New Delhi managed what one executive called a nation-building project of unprecedented scale. In 2012, the \$6 billion computer systems management and outsourcing giant won a seven-year, \$400 million contract to manage the IT infrastructure—hardware, networking and software—for Aadhaar.¹⁷ The firm would build the Central ID Repository to store the billion-plus Aadhaar numbers and biometric data, and handle related systems from enrollment to database management, operations support, Aadhaar verification services, security, maintenance and helpdesk functions.

HCL not only had to make the Aadhaar systems work, it had to make them interoperable with an assortment of existing government systems, newer Internet and mobile applications, and the computer systems used in myriad public and private transactions, from banking to agricultural

¹² Ted Bowen’s interview with Ajay Bhushan Pandey in Mumbai on December 9, 2014. All further quotes from Pandey, unless otherwise attributed, are from this interview.

¹³ Nilekani was credited with the original concept of a universal ID for India. His appointment to the cabinet-level position of UIDAI chairman was welcomed by many as an infusion of business savvy and creativity but received with skepticism by others, who raised concerns about private uses of personal data and potential lack of accountability. He resigned in March 2014 to run for office.

¹⁴ UIDAI was initially authorized to enroll 200 million people. In 2012, this was expanded to the entire population.

¹⁵ Shweta Punj, “A number of changes,” *Business Today*, March 4, 2012.

¹⁶ From authors’ Skype/telephone interview with Ram Savak Sharma on March 27, 2015. UIDAI’s Central Identities Data Repository comprised three Automated Biometric Identity Subsystems running in parallel, which increased accuracy and freed UIDAI from depending on a single vendor.

¹⁷ Harsimran Julka, *The Times of India*, “HCL Infosystems bags Rs 2200 cr UID contract,” August 10, 2012. (Contract value based on August 2012 exchange rate of 55 Rupees per dollar.) HCL beat out rival bids from Accenture, Wipro and others; IBM and Hewlett-Packard reportedly dropped out of the running before the final round.

and legal. The company's experience with government extended to the US where, among many similar projects, the company designed and operated a worker's compensation insurance system for North Dakota. While North Dakota's 75,000 population was just 1/33rd New Delhi's 25 million, Arup Vithal, HCL practice director for business and IT services, notes:

The work they are doing, especially the workers' [records] part of it, if you just calibrate it on a bigger scale, that's being done by the government over here and that's what we are helping them deliver.¹⁸

The UID project was seen by many as the most visible example of India's vaunted technology sector, which had so successfully met the West's outsourcing needs, putting its expertise to work for the benefit of the country. Vithal argues:

The Indian IT industry has evolved by learning from global companies. Things which were delivered for companies in the US and Europe are now being leveraged by Indian organizations, by the Indian government, and, as citizens, we all are benefitting. Most of the ways in which we interact with the government are online or mobile, and a lot of accountability has come into the whole Indian system.¹⁹

By December 2014, when UIDAI had enrolled roughly 700 million residents, HCL was getting a sense of where and how the Aadhaar ID was being used. According to Vithal, use was highest in India's largest cities, home to 100-150 million Indians. There, the unique number typically served as ID for financial transactions and in education. In third-tier cities, which accounted for almost half the country's population, use was much lower as a result of poor infrastructure, including unreliable power supply and relatively low levels of Internet access. One of HCL's biggest challenges, given India's linguistic and cultural diversity, had been coordinating with the many local Aadhaar offices.

UIDAI Rollout, 2009-2013

UIDAI's technology and equipment requirements were enormous. The system had to be available continuously, capable of handling a high volume of transactions, and able to safeguard data. Enrollment centers and temporary enrollment "camps" were given laptop computers running UIDAI-standard enrollment software, a fingerprint scanner, and an iris scanner.

UIDAI also created an infrastructure to verify identities. That meant a sometimes cumbersome enrollment process. Besides biometric data, UIDAI asked for name, age, gender, date of birth, address, phone and email. Applicants had to present proof of identity (those with no formal ID or documents had to be vouched for by a UIDAI-approved "introducer"). Parents could

¹⁸ Ted Bowen's interview with Arup Vithal in Noida, India on December 3, 2014. All further quotes from Vithal, unless otherwise stated, are from this interview.

¹⁹ Billy Shebar's interview with Arup Vithal in Noida, India on December 3, 2014.

vouch for children under 15 and hospitals acted as registrars for newborns.²⁰ While biometric scanning was fairly straightforward, applicants often scrambled to present documents acceptable to enrollment officials.

UIDAI was anxious to avoid duplicate registrations. That called for powerful data management tools. Each new applicant was checked against the entire database of fingerprints, photographs and iris scans before an Aadhaar number was assigned. Recalls Deputy Director Pandey:

When we started this program in 2010, we were not really sure whether the current level of technological advancement would support this kind of matching. Once we had crossed 200 million, we were pretty much confident that it would work, with perhaps any number.

It was hoped that Aadhaar registrants would use the ID for a wide range of transactions. But that meant finding a way to protect biometric data during each authentication transaction. One strategy was to ring-fence the Aadhaar database by posing “yes” or “no” questions. Pandey illustrates:

With a smart phone, you enter your UID number, and take a picture of your iris, and give your fingerprint, and then you are authenticated. Our server will answer “yes” or “no,” whether this UID number and biometrics match or not.

Anti-corruption. UDI would also, its designers hoped, reduce the opportunity for corruption in accessing government services. For example, Aadhaar promised to make muster rolls (the lists of workers, number of days worked, work accomplished, wages earned, etc.) more accurate. Adding UID numbers to individuals’ work cards would make it harder to counterfeit job cards or doctor muster rolls, and biometric verification would ensure that workers were paid appropriately. Indeed, field trials found biometrically authenticated IDs and direct cash transfers, by circumventing local officials, did reduce leakage and sped delivery of social security and MGNREGA payments.²¹

New Programs to Drive Enrollment

In 2012 and 2013, as UID enrollment expanded, the Indian federal and state governments began to roll out programs designed to encourage Indians to use their new cards. The program was by law voluntary, so these new programs had to find a way of offering additional benefits to card owners, while stopping short of making the card obligatory. India benefited from biometric ID experiences in the UK, Australia, France, Argentina, Kenya and elsewhere. But unlike these

²⁰ For more information on UIDAI, see: <https://uidai.gov.in>

²¹ Karthik Muralidharan, Paul Niehaus, and Sandip Sukhtankar, “Building State Capacity: Evidence from Biometric Smartcards in India,” National Bureau of Economic Research Working Paper w19999, October 2014.

countries, where the ID was used for border control, internal security or voting, in India the focus was—in official campaigns at least—on new benefits and transfers.

In November 2012, the central government announced the first Aadhaar-linked direct cash transfers to recipients of food, cooking gas and fertilizer subsidies. The plan began with 51 administrative districts in January 2013, expanded to 18 states in April and went nationwide in 2014. Direct cash transfers had the advantage of reducing the opportunity for pilferage and, if properly set up, could be more effective than providing the commodities themselves. In their book, *Why Growth Matters: How Economic Growth in India Reduced Poverty and the Lessons for Other Developing Countries*, economists Bhagwati and Arvind Panagariya argued:

Significant gains in efficiency can be achieved by replacing the public distribution system by cash transfers. The argument against such transfers—that the beneficiaries might spend the money on something other than grains—is spurious... Such an outcome is also readily achievable under in-kind transfers by selling the grain in the open market. The advantage of cash transfers is that they would greatly minimize the leakage along the distribution chain and also eliminate the huge waste that characterizes the public distribution system.²²

Simultaneously, the federal government phased in direct cash transfers for other benefits, such as pensions, scholarships, and MGNREGA wages, and used Aadhaar to verify the identity of recipients. By January 2013, the government had scaled back its pilot project to 43 administrative districts, involving 34 social welfare programs. However, by year's end, the pilot was expanded to more than 75 districts.

In mid-2013, the Minister of Petroleum & Natural Gas inaugurated the first cash- for-commodity transfer: it provided a cash subsidy for liquid propane cooking gas (LPG) in 20 districts with high levels of Aadhaar enrollment. Instead of providing propane itself, the subsidy for cooking gas cylinders was credited directly to consumers' Aadhaar-linked bank accounts in advance of each delivery, up to nine cylinders yearly.²³

UIDAI—Policy Orphan?

By late 2013 UIDAI, after almost four years of steady if not spectacular enrollment, had reached almost half the Indian population, and early programs designed to drive enrollment had enjoyed some success.²⁴ But as 2014 began, many doubted whether the UID could actually become a central part of all Indians' lives. With a national election on the horizon, early reports were that

²² Jhagdish Bhagwati and Arvind Panagariya, *Why Growth Matters: How Economic Growth in India Reduced Poverty and the Lessons for Other Developing Countries* (New York: PublicAffairs), 2013.

²³ Press Trust of India, "LPG DBT rollout in 269 districts, cash subsidy for Delhi consumers by January 1: Chidambaram," August 30, 2013.

²⁴ Rohin Dharmakumar, Seema Singh and N.S. Ramnath, "How Nandan Nilekani took Aadhaar Past the Tipping Point," *Forbes*, October 8, 2013. See: <http://forbesindia.com/article/big-bet/how-nandan-nilekani-took-aadhaar-past-the-tipping-point/36259/0>

frontrunner Modi's party, the BJP, might consider scrapping the scheme, in part because it was so closely aligned with the Congress Party and its 35+ years of rule.

But as the campaign developed, it became clear that in candidate Modi, the UID program might find a new champion. A successful governor in his home state of Gujarat, Modi had built a reputation as an efficient administrator and had, as part of a tour of the Indian diaspora in the UK and the US, made a point of connecting with India's IT leaders. As governor, Modi had found IT a valuable tool. For example, as part of an anti-corruption push, he made land records and bids for government contracts more transparent by putting them online.²⁵ Modi saw in UID/Aadhaar the basis for a radical transformation of the Indian economy, and began developing a story of digital transformation that would become a central narrative of his campaign. As if to illustrate IT's potential, during rural campaign rallies his staff digitally "beamed" the candidate in using 3D holograms.

Digital India. The BJP won the election with an absolute majority of parliamentary seats, and Modi took office on May 26, 2014. Following his first 100 days in office, Modi at August 15 Independence Day celebrations delivered a national address in which he spelled out the details of his vision for India. He called it "Digital India," and said he aimed to use the UID database for a wide range of new services, including new bank accounts for rural Indians, telemedicine, and the "digitization" of the Indian countryside. He couched the initiative in terms of poverty reduction and good government. Extending broadband connections to the masses would provide much-needed distance learning, telemedicine and government services.

On the campaign trail, Modi had committed to bring broadband to 250,000 villages by 2019. Now his Department of Telecommunications made a sweeping promise to bring high-speed connections to all Indian households by 2017.²⁶ Another priority was to use the UID infrastructure to help citizens open 130 million new bank accounts. With Modi's support, UID/Aadhaar entered a new phase. The prime minister led the way, announcing in October 2014 that the biometric UID cards would be compulsory for federal government employees to clock in to their workspaces.

Digital Locker. In February 2015, the Modi government unveiled a test version of another high profile program. The "digital locker" provided online storage for citizens' official documents. Aadhaar made possible this online repository, the digital equivalent of a locked attaché case.²⁷ Ram Sewak Sharma, secretary of India's Department of Electronics and Information Technology and former UIDIA director, explains:

Digital locker... works on the principle of Aadhaar authentication on the back end. You are able to store your document, digitally sign it and save it.

²⁵ "Playing leapfrog: The wonders of smart systems," *The Economist*, May 23, 2015.

²⁶ Aman Shah and Nivedita Bhattacharjee, *Reuters*, "After wifi at the Taj, Modi revives campaign for 'digital India'," July 1, 2015.

²⁷ Neha Alawadhi, "Digital India programme: Government rolls out beta version of 'digital locker,'" *The Economic Times*, February 12, 2015.

These kinds of infrastructure we are able to build on top of Aadhaar. That's actually now more and more the value of this foundation.²⁸

Banking On It

Perhaps the most prominent and public connection between UID, Modi's "Digital India" campaign and common Indians' lives was the new banking initiative. As in many other parts of the UID to Digital India transition, Modi's digital banking campaign built on the foundation of earlier programs. Even before Aadhaar, Indian banks had started expanding into the countryside, where poor infrastructure necessitated the use of bank correspondents—agents who reached villages on motorcycle and carried mobile ATMs with biometric (fingerprint) scanners. Electronic bank transfers, biometric smart cards, mobile point-of-sale devices and ATM kiosks introduced in the mid-2000s helped extend the reach of banking by reducing transaction costs and eliminating the need for bank branches in rural areas.

Moreover, the central Reserve Bank of India in 2006 opened the way for banks to hire "business correspondents" and "business facilitators" to represent them in underserved areas. Facilitators could originate loans, market bank products, and advise customers and local self-help groups. They could be NGOs, micro-finance businesses, or any of a range of village-level organizations, including post offices, insurance agents, and Panchayats (local government). Correspondents could perform the same functions, plus disburse credit, collect loan payments, sell insurance and mutual funds, and handle remittances and other transactions.²⁹ But one problem with the bank correspondent approach was its lack of anonymity and privacy. It also ran the risk of technical failure.

Aadhaar improved on those measures. Its ID included the proof of address required by Indian banks and other regulated businesses, plus biometric authentication for each transaction. The Aadhaar infrastructure also lowered the cost for private banks to reach low-margin, high-volume customers. Notes Kartik Kaushik, CitiBank's India country business manager:

What we're trying to do is to use the Aadhaar biometric capability to capture all the [data], reducing the documentation needed. And we are allowing the customer to get a one-time password [OTP] sent to their registered mobile numbers that are linked to their Aadhaar ID. To validate, all they have to do is enter their OTP and we will [access] their Aadhaar credentials directly.

According to Kaushik, "unbanked" urban Indians were more likely to use the formal banking system to save and borrow for education or medical emergencies, whereas those in the countryside were more likely to seek credit for farming. In both settings, the transition from an all-

²⁸ Authors' Skype/telephone interview with Ram Savak Sharma on March 27, 2015. All further quotes from Sharma, unless otherwise attributed, are from this interview.

²⁹ Reserve Bank of India notice, "Financial Inclusion by Extension of Banking Services—Use of Business Facilitators and Correspondents," January 25, 2006.

cash economy to one of credit and electronic funds transfers increased financial options and control.³⁰

People's Wealth. Another related program, also announced in Modi's August 2014 address, was Jan Dhan Yojana, or the "people's wealth program." Jan Dhan Yojana benefits included life and accident insurance, and overdraft protection. The previous government had launched a similar initiative in 2011, reaching 74,000 of India's roughly 600,000 villages. But a 2012 World Bank study found that fewer than 10 percent of holders used their accounts for more than three transactions a month, while the Reserve Bank of India reported that 75 percent of basic accounts for low-income residents went unused altogether.

Jan Dhan Yojana helped advance Aadhaar's use. The program accepted Aadhaar as a legitimate form of ID for opening an account, and account holders qualified for direct deposit of benefit payments, as well as for ATM/debit cards. Together with mobile phone numbers, Jan Dhan Yojana and Aadhaar comprised what became known as the "JAM trinity."³¹ India had an estimated 600 million cellphone users (and over 900 million mobile accounts). The JAM combination would, officials hoped, extend banking, communications, and commercial activities to previously excluded populations.³² By April 2015, citizens had responded by opening more than 150 million new accounts (although as with the 2011 effort, most of these were dormant).³³

Obstacles, Pushback and Privacy

Even as Aadhaar expanded, confusion lingered among policymakers, business elites and the public over just what the ID would be used for and how it would be administered. The program had raised civil liberties and privacy questions and by early 2015 still faced logistical problems—the ranks of the un-enrolled included some of the hardest-to-reach segments of the population, including an estimated tens of millions of homeless.³⁴

Conundrum. An executive order had created UID, so it lacked the force of legislative mandate. Though Aadhaar enrollment was officially voluntary, both the Congress and BJP governments and a number of states had sought to mandate the ID for some services and programs. But since 2009, several Supreme Court rulings in suits brought by public interest groups had held that the ID could not be made compulsory. Beyond formal edicts, there had been

³⁰ Billy Shebar's interview with Kartik Kaushik on December 10, 2014 in Mumbai, India. All further quotes from Kaushik, unless otherwise stated, are from this interview.

³¹ JAM stood for Jan Dhan Yojana, Aadhaar, Mobile.

³² Staff writer, "How government hopes to get subsidies to poor: Jan Dhan Yojana, Aadhaar and mobile numbers," *First Post*, February 27, 2015.

³³ The effort netted the government a world record for the 15 million accounts set up on August 28, 2014. By May 2015, the one-year goal of 75 million had been doubled. Also see: Mayank Jain, "75% of accounts opened under Modi's Jan Dhan Yojana have zero balance," *Scroll.in*, November 13, 2014 and Richa Maheshwari, "Mobile payment startups and banks use technology to tap rural India," *Economic Times*, Jan 1, 2015.

³⁴ A 2001 census puts the number at 78 million, while the government's 2011 figure is under 20 million. Advocates for the homeless dispute the lower number.

problems: some bureaucracies and institutions required Aadhaar for benefits and services that didn't officially call for it, inconveniencing and in some cases harming populations the ID was supposed to help.³⁵

There were also doubts about the reliability of the UID's biometric data. The elderly, manual laborers and people with some medical conditions had compromised fingerprints; there was also some question as to how the iris changes over time. Critics of the UID program pointed to negative experiences with biometric IDs in the UK, Australia, France, Argentina, Kenya and elsewhere. While the combination of fingerprints and iris scans could increase the accuracy of an ID, it wasn't perfect. Former UIDIA Director Sharma explains: "[Experts] said 10 fingerprints and two eyes could get accuracy levels of 99.99 percent. Unfortunately, point 01 percent off from 1.2 billion is 102,000."

By early 2015, UIDAI still had to enroll a remaining 30+ percent of the population. Fortunately, it was not an all-or-nothing proposition, says former UIDAI Director Sharma. He notes:

A very substantive part of the population has Aadhaar. They will be able to access benefits from anywhere in the country and their identities are genuine. From a public policy perspective, even in the current situation where Aadhaar is voluntary, where a large [segment of the] population has Aadhaar, I am left with a much smaller subset to monitor.

Courts. Aadhaar's potential uses continued to mount, but so did its complications. UIDAI had long protested attempts by law enforcement agencies to use Aadhaar data. The Supreme Court had agreed, ruling in March 2014 against sharing UIDAI data with other government agencies without individuals' consent.³⁶ But in early 2015, a court in Delhi—in response to a rise in hit-and-run incidents—ordered that Aadhaar be used to identify accident victims.³⁷

The courts in fact ruled on UID frequently. In addition to how far authorities could go in forcing Aadhaar's adoption, the program raised civil liberties and privacy worries. In November 2013, a three-judge Supreme Court panel heard public interest litigation (PIL) suits filed by several anti-Aadhaar groups claiming that it violated basic rights and raised serious privacy concerns. Senior attorney for the plaintiffs Shyam Divan told the court:

The project is arbitrary and illegal, as it allows private dominion over biometrics without governmental control, thereby compromising personal security and national security.³⁸

³⁵ For example, a pensioner might be cut off if he refused to sign up for a UID.

³⁶ Neha Pandey Deoras, "Endgame Aadhaar? The SC's latest order may put paid to the 'one identity number for all transactions' vision for the card," *Business Standard*, March 24, 2014. That ruling had also reiterated that the ID could not be mandated.

³⁷ Akanksha Jain, "Use Aadhar to identify accident victims," *The Hindu*, May 10, 2015.

³⁸ Staff report, "Supreme Court notice to govts as PILs term Aadhaar dangerous," *The Economic Times*, November 26, 2013.

Civil liberties and online privacy advocates raised concerns of potential abuses of Aadhaar data in connection with India's Central Monitoring System, a mass surveillance scheme, which allowed Indian security and income tax authorities to tap into the country's telecommunications network.³⁹ UIDAI policy on law enforcement seemed to preclude this by requiring ID holders' consent before releasing their data for any purpose. But 2013 revelations of pervasive, indiscriminate monitoring by the US National Security Agency (NSA) and others left civil society groups unpersuaded. Former UIDAI Director Sharma notes:

We have a vibrant democracy. It's a democratic process, so we have gone through all of those discussions from a policy perspective. The mandate we got was that this is an extremely important project and we should not violate any of the basic principles of transparency, accountability, cost effectiveness and other basic principles.

Many concerns about Aadhaar were practical, technocratic and legal. Economist Drèze's critique centered on whether Aadhaar as administered at federal and state levels was truly voluntary. He argued that by requiring Aadhaar for social programs and necessary documents like drivers' licenses, the government and UIDIA were compelling enrollment and circumventing the Supreme Court's rulings. He asserts:

Providing Indian residents with a convenient way of identifying themselves would certainly be doing a great service to millions of people who lack adequate identity documents. But imposing Aadhaar as an all-purpose identity proof is a very different idea.

Drèze warned of a potential abuse of state power, a lack of legally defined rights of enrollees, the chance that weaknesses in the power grid and internet could deny essential services and benefits, and the confusion and inefficiency that would result if Aadhaar fell short of universal adoption.⁴⁰

Security. Finally, Aadhaar raised security questions. In 2013, the Maharashtra UIDAI office lost the personal data of 300,000 applicants; that alarmed the public and inconvenienced the applicants, who were forced to reapply.⁴¹ UIDAI had strict policies and gave broad assurances about data security, but a project of this scale was vulnerable.⁴² UIDAI Deputy Director General Pandey admits:

People will find ways to commit fraud with Aadhaar. Nothing's foolproof. There's always some ingenuity, where somebody figures out how to game

³⁹ Nikhil Pahwa, 'India's IT Min of State Milind Deora's Thinks The CMS (India's PRISM) Is "A Good Tool,"' *Medianama*, June 11, 2013.

⁴⁰ Jean Drèze, "Unique identity dilemma," *The Indian Express*, March 19, 2015. Drèze had advised the previous government on MGNEGRA and the public distribution system.

⁴¹ Clara Lewis, "Maharashtra loses data of 3 lakh UID cards," *The Times of India*, April 23, 2013.

⁴² See: <https://uidai.gov.in/faq.html?catid=21>

it. But we have given Aadhaar to more than 850 million people and we haven't come across any significant number of cases where people have been able to beat the system.

In response to these critics, the Modi administration and other Aadhaar advocates argued that the scheme was simply infrastructure—public and private entities would determine its use and oversight. Nonetheless, it had from the start been positioned as a vehicle for greater inclusion. As they considered the program's broader societal impact and its legal fate, policymakers were confronted with the question of whether a biometric ID would really promote equality and opportunity if there were no political will to tackle related systemic problems.

Meanwhile, the Modi government kept up pressure to use Aadhaar. In the six months December 2014 to May 2015, UIDAI had registered an additional 125 million Indians. In May 2015, the government instructed public sector businesses like Air India and state steel and oil companies to require employees to register for the ID, and to use it in their attendance, payroll, social security and insurance systems.⁴³ Modi seemed on track to make his self-imposed deadline of 1.25 billion by 2017.

⁴³ Dheeraj Tiwar, "Government asks central public sector enterprises to enroll employees under Aadhaar," *The Economic Times*, May 5, 2015.