INNOVATIONS FOR SUCCESSFUL SOCIETIES

REDUCING DISCRETION, IMPROVING SERVICE: COMPUTERIZING LAND RECORDS IN KARNATAKA, INDIA, 1998-2003

SYNOPSIS

Between 1998 and 2003, Rajeev Chawla, the joint secretary of the Revenue Department in India's Karnataka state, led a drive to computerize the state's land records. Before computerization, farmers were at the mercy of local village accountants, who often charged informal fees in exchange for land records, which they issued slowly nonetheless. Chawla, benefiting from strong political support and national funding, replaced the manual system with a digital one, speeding up the process and reducing village accountants' ability to solicit bribes. Working with a small team of colleagues, but backed by national funding and strong state-level political support, he hired private companies to digitize the state's 20 million land records, set up a new kiosk process for issuing land records, and trained 1,000 recent secondary-school graduates to staff the kiosks. Corruption decreased and customer service improved. Still, critics noted that the reforms were most helpful to wealthier farmers who could afford to visit one of the state's 177 kiosks or 800 telecenters, which, distributed over a land area slightly larger than Cambodia, often required a day's travel from a rural village.

David Hausman drafted this policy note on the basis of interviews conducted in Karnataka, India, in June 2010.

INTRODUCTION

As of 2010, more than 70% of India's population lived in rural areas, depending directly or indirectly on farming for a living. For farmers who owned their land, proof of ownership meant basic material security: the ability to apply for a small loan during the planting season and the assurance of compensation if the state annexed property.

In the late 1990s in southern India's Karnataka state, before the beginning of India's first successful computerization project for land records, many farmers lacked this security, or paid heavily for it in bribes. Land ownership was recorded manually, and village accountants were in charge of issuing land records to farmers. When ownership changed through sale or inheritance, the village accountant was called

upon to change the state register and to issue a new Record of Rights, Tenancy and Cultivation to the owner.

Obtaining and changing land records was time-consuming and expensive for farmers, and the state government had no easy, centralized access to the records. However, the Indian central government had allocated funding to the states specifically for the computerization of land records. Karnataka, whose capital city of Bangalore had become India's technology hub, was relatively well positioned to use the funding. (No Indian state to that time had successfully computerized its land records.) In 1998, Rajeev Chawla, an experienced civil servant with a background in computer science, was appointed joint secretary at the Revenue Department in Karnataka. His task: the computerization of 20 million land records for the state's 55 million inhabitants.

Chawla formed a small team at the Revenue Department, which was responsible for land records, and worked, together with the Bangalore office of the National Informatics Center, an Indian national government agency responsible for e-governance—the use of computer technology for service delivery. Chawla and his team set about digitizing all land data, changing the law to invalidate manual records, setting up kiosks for the printing of the new digital records, and hiring new employees to staff them. He called the project *Bhoomi*, which means "earth" in Kannada, Karnataka's local language. By the time the project was fully rolled out in 2003, it had drastically reduced corruption and improved customer service, although it continued to be criticized for helping richer farmers more than poorer ones.

THE CHALLENGE

In the late 1990s, before the beginning of the Bhoomi project, the process for obtaining and changing land records was slow and unreliable, and often required farmers to pay informal fees. The process also hurt the state, which had no easy way to access the information kept in land records held separately by revenue inspectors, who occupied a level of government between the sub-district (*taluk*) and village level.

In Karnataka, farmers needed village accountants for two types of land transactions. First, they often needed a simple copy of the state record certifying their ownership of land, which was especially important for obtaining bank loans. (Karnataka officials called the records RTCs, short for Records of Rights, Tenancy and Cultivation.) Second, when land was bought, sold or inherited, or otherwise changed hands, the state's records needed to be modified, and the farmer needed a new land record. These changes were known as mutations.

When no change was necessary, village accountants could simply issue land records on their own authority. In the case of the transfer of property, however, village accountants were required to post a notice of the change in ownership, give local citizens a chance to object, and then get the approval of both the revenue inspector and the second-in-command at the sub-district office. Each of the officials involved in the process had the ability to quicken or slow the process, antedating or otherwise modifying certificates to cover their tracks. Many farmers were illiterate and had little recourse against corrupt officials. (According to India's 2001 census, about two-thirds of Karnataka's citizens were literate.)[1]

Karnataka had 27 districts, 177 *taluks* (sub-districts) and 30,000 villages. Each of Karnataka's 10,000 village accountants was therefore responsible for three villages. It often took several days for a farmer to locate a village accountant, who then had the discretion to delay the farmer's request. Chawla said the village accountants' movements also made central supervision difficult. "We really never knew where they were," he said. "They could have been in any of the three villages or not be there at all. They could easily

manipulate the records; they could change the ownership of the property."

Changes of ownership (mutations) were so difficult that farmers were often reluctant to buy or sell land, Chawla said. "In this country and many countries, people really fear to do land transactions," he said. "Economic growth gets stunted because everybody is bothered about the safety of the transaction. Hence, government was also losing money because the economy was not growing as it was expected to be, and the farmers were always at the mercy of these village officials."

The corruption and related delays were documented by a 2002 "report card" survey conducted by the Public Affairs Centre, a non-profit organization in Bangalore. Completed during the pilot phase of the project, the survey compared areas where Bhoomi had and had not been implemented. Where the manual system was still in use, 95% of citizens had to see their village accountant more than once to obtain their land record. Two-thirds reported paying a bribe. None rated staff behavior as 'good.' Citizens paid a weighted average of more than 150 rupees (between US$3 and $4) in bribes per transaction, a significant sum for a poor farmer.[2]

In addition to the shortfalls of the manual system, Chawla and his team faced the challenge of being the first officials in India to computerize land records. "Nobody knew what was the meaning of computerization of land records," Chawla said. "How do you bring legislative mandate to ensure that only digitized records are accepted, that the manual records are invalidated? How do you bring a business model where the project is self-sufficient after it is initially implemented? How do you ensure that you have sufficient manpower to take up this project in the government, for taking of this mammoth project? … How do you really pick up people, train them and do the change management successfully, so that the project is successful?"

FRAMING A RESPONSE

As Chawla and his team tackled these challenges—legislation, funding, recruitment and training—he had the advantage of working at a moment in which funding and political support were available.

To implement the changes, Chawla adopted an incremental, step-by-step strategy. "While we had the bigger picture in mind, we started with low-hanging fruits," he said. "We were very clear that all of that cannot be obtained, all of them cannot be achieved. If you try to achieve all of them, you will not be able to do anything." By demonstrating success with the first steps—changing the law and digitizing the existing land records—Chawla hoped to gather enough momentum to complete the rest of the project.

National funding gave the program its first leg up. "In this country you have what is called centrally sponsored schemes, where the government of India gives a huge amount of money to each state to do some specified task," Chawla said. "There was special funding for computerizing of land records."

Chawla also benefited from extraordinary state-level political support, which helped him pay for things the national funding did not cover. "While the work was going on, thankfully, at that time, there were many things which happened by luck," Chawla said. During the late 1990s, Bangalore, Karnataka's capital city, was rapidly becoming India's technology hub, and the state's chief minister hoped to extend some of the private sector's achievements to the public sector.

"You can't design luck; I mean, luck is just a matter of chance," Chawla said. "We had an IT-savvy person, S.M. (Somanahalli Mallaiah) Krishna, who is now the external affairs minister. He wanted to use IT for betterment of services."

Chawla designed the new system to be self-sustaining: by charging a fee of 15 rupees—approximately one tenth the average bribe paid

under the old system—the kiosks would recoup the original investment quickly. Nonetheless, both national and state money were necessary. It was, Chawla said, a "chicken-and-egg issue. If you did not have that money, you would not have made this much money."

With the funding in place—about three quarters from the national government and the rest from the state—the next challenge was obtaining the cooperation of local officials, who would lose discretion and influence with the successful implementation of the program. Chawla and his team organized seminars with local officials, to describe the program and to learn the details of local variations in record keeping before embarking on the data entry. "On one side, we told them what we were doing. It was very important that they should know, they should not take this as a black box and something which was being imposed from the top," Chawla said. "On the other side, their inputs were very useful to us in designing." K.S. Prabhakara, who was a district collector (the top district official) at the time and later became the secretary to government of Karnataka's revenue department, said personal persuasion was useful as well. "We slowly cajoled them," he said. N.R. Samartharam, a scientist at the National Informatics Center who worked on Chawla's Bhoomi team, said there were occasions when patient hearing was given to *shanbogs*, officials who maintained land records before 1964 and could explain local idiosyncrasies.

According to Samartharam, who worked on both development and implementation, Chawla also got better information this way. "Chawla was accessible across implementation teams," Samartharam said. In case of obstruction or hassles, "everyone could call him and say, 'This fellow is doing this.'"

Although the seminars may have helped persuade low-level officials to support the project, those officials had little choice in any case. The chief minister's support allowed Chawla to threaten officials with firing if they stepped out of line. "Mr. Krishna was very clear," Chawla said. "He was able to see the use of computerizing the property records. We took his help to demonstrate to the village officials that there is a political will." The chief minister made his commitment clear by sending letters to all district revenue officials exhorting them to cooperate with the project. "Chief ministers very rarely write letters to these collectors," Chawla said. "The fact that he wrote two or three times the letter and reviewed sent very strong signals that he meant business. That of course led to a situation where all these petty officials came on line, came on the track and they started cooperating, of course unwillingly, many a time behaving in an indifferent manner."

The message was unmistakable. "'You guys will have to fall in line,'" Chawla said he told the officials, if not in so many words. "'You will have to validate these records. Of course you will lose power, but then if you don't do this you will lose your job and therefore the power also.' So they fell in line very easily."

Chawla also thought some officials complied partly because they did not believe the project would succeed. "They had never known that projects could bring so much change. All of a sudden they'll find tremendous change in working. It will be a very major change for them. This they only understood of late, not at that point of time."

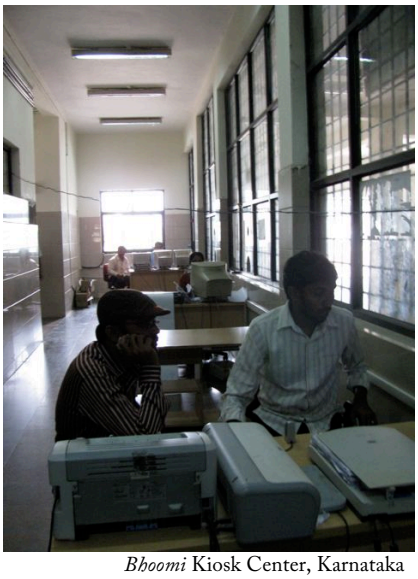
The project required a distinct sequence of steps. First, the law needed to be changed; second, the existing land records had to be digitized; third, new village accountants needed to be hired and trained to man the new kiosks; fourth, the mutation process needed reengineering to reduce the scope for corruption; and finally, several technical fixes were needed to make the process practical.

GETTING DOWN TO WORK

The first item on the agenda was the change of law, and Chawla decided that the surest way to make new digital records catch on was to make the manual ones invalid. He discovered that the relevant regulation could be changed without action by the state legislature; the law minister and revenue minister could simply change the rules. With the backing of the chief minister, the change was quick and easy.

The next step was the digitization of the existing records. Because it was easily outsourced, digitization was one of the low-hanging fruits that Chawla targeted first, even though it involved adding approximately one billion entries into a database (about 50 data points for each of 20 million land records). The task eventually involved approximately 150 employees working for 18 months, Chawla said.

Digitization had to be completed before the new process was put in place, because each transaction in the new system would depend on digital data. The process had two parts. One was the mammoth but relatively simple data-entry process, in which typists put manual land records in digital form. The second part was the verification of those digital records by village accountants.



Bhoomi Kiosk Center, Karnataka
(David Hausman)

For the data entry, Chawla and his team hired several small private companies and gave them very quick, basic training. Such companies were plentiful in Karnataka partly because of Bangalore's status as a technology hub. Asked why he decided to outsource the data-entry work, Chawla said that the task fell well outside the job description of village accountants, who were often unfamiliar with computers. Instead, he would use the accountants where they were necessary, in the verification of the digitized records.

Because the private employees were familiar with computers, they needed little training. "We told them how does a land record look like, what are the type of problems they'll face," Chawla said. "What we also did was we made village officials sit with them while the data entry was going on, so that when the data entry was going on the village officials can at least see what is being entered, and if there is any question which the data entry operator wants, the village official can answer it."

The next step was the verification of the records. All 20 million records were printed and given to village accountants, each of whom participated in a one-day training session on verification of the digital records. Prabhakara, the former district collector, said verification was a painstaking process. "It was a tough task," he said, with hundreds of thousands of records to be checked. Village accountants held the manual records up directly next to their printed digital counterparts to make sure they were correct. Prabhakara said the checking took nearly a year, during which manual records continued to be valid. Verification duties were in addition to the usual tasks of district and sub-district offices. Here again, the strong backing of the chief minister and of Chawla was crucial in insuring that the program did not stall. During this time, Chawla said he called local officials every morning to urge them on.

After the digitization was complete, a round of hiring was necessary to find employees who could issue and sign land records at the kiosks. Because this function required a government official's signature, it could not be contracted out.

In order to find committed and honest kiosk operators, Chawla looked for students directly out of secondary school—young people who had never worked in the public service and were not accustomed to its informal norms of corruption. He found a ready source of such young people in so-called "compassionate hires." In Karnataka, when a civil servant dies, his or her son or daughter often receives preference in hiring for a new position. Most of the kiosk operators were compassionate hires; Chawla was looking for honest employees, not necessarily well-educated ones. He was able to train them quickly.

"What we used to do was to pick up these children, who would be 19 years or 18 years and 20 years, and we used to train them comprehensively," he said. "They of course had no idea of how the land records worked, but that was not very important because the mutation software anyway would guide you on the process. All you had to teach them was how computers worked and how the Bhoomi software works."

The new employees received a week of training in Bangalore. A batch of approximately 25 new recruits arrived each week for over a year, and Chawla did his best to make them feel well taken care of. "Every day I used to be there with them for about one and a half hours—45 minutes in the morning, 45 minutes in the evening—with every batch, every day," Chawla said. "That means every day I used to spend about one and a half, two hours, including Sundays, because it was important that if they were working on Sundays and learning, that they should have a feeling that their boss is also there with them on Sundays." Other details were important, too. "They were given very good food," Chawla said. "Accommodation for them was much higher than what they actually were entitled to. We arranged for special buses they would move from their hostel."

Perhaps most importantly, Chawla gave each of the village accountants his personal mobile phone number. In India, where the national civil service enjoys great prestige, the gesture made clear that Chawla considered the kiosk operators important. According to V.S. Samartharam, a scientist at the National Informatics Center who worked on the Bhoomi implementation team, Chawla also got better information this way. "Chawla ignored the hierarchy," Samartharam said. In case of obstruction or corruption, "everyone could call him and say, 'This fellow is doing this.'"

Chawla hired the kiosk operators at the same salary scale as village accountants, and they became known as the new village accountants. Although they were paid the same salary, the new village accountants gained special status from their association with the project. "They had a sense of pride that they were doing work which their seniors were not able to do," Chawla said. "These young children found a lot of importance in that everything was revolving around them. Any change in the record could be done only through this process, and that gave them a lot of value." In order to maintain the program's momentum, Chawla decided to ban for several years the transfer of the new kiosk operators to other parts of the state civil service.

After digitization, hiring and training, the kiosk operators were ready to issue land records. The process was simple: A citizen visited one of the state's 177 taluk centers, gave his or her name, paid 15 rupees, and the kiosk operator printed and signed the record immediately. The software for the kiosks had been designed for ease of use, and operators logged in with fingerprint verification rather than passwords in order to keep the system secure.

The process for handling transfers of ownership, or mutations, was more complicated. It involved several officials, and the posting of notices could not simply be digitized. Chawla responded by keeping the process mostly the same but requiring digital time stamps at several key points. After the village accountant posted the notice of mutation in the village, the revenue

inspector scanned the notice and typed up the data. The sub-district second-in-command then used his fingerprint to verify and approve the application. With that approval, a new land record could be printed at the kiosk.

The series of digital time stamps allowed Chawla to limit officials' discretion by introducing the concept of "first in, first out." The computer software would not allow officials to finish applications out of the order in which they had been submitted. They therefore had less leeway to seek bribes in exchange for quick service. A computer scientist by training, Chawla said he got the idea from the way a computer sequences tasks. Although a computer uses the opposite system—last in, first out—Chawla took his inspiration from a computer's strict sequencing of tasks.

Nemmadi Telecenter, Bidadi, Karnataka *(David Hausman)*

As Chawla began to gain recognition for the project, he received consistent political support, even after a change of government in Karnataka in 2003. He remained in charge of the project for eight years, an unusual length of time for Indian Administrative Service officers, who usually change positions every three years. (Chawla did move from the Revenue Department to head Karnataka's new E-Governance Secretariat in 2003, but he remained in charge of the Bhoomi project.)

OVERCOMING OBSTACLES

In 2003, when the Bhoomi kiosks were in place, the system still had notable flaws. First, although taluk offices now stored and updated land data digitally, the data were kept in each taluk office, with no way for Karnataka's central government to access the information without visiting the taluk. The solution to this was a relatively straightforward technical one: The kiosks were connected to a central network. Because land records were public information, the project posted all the data online. When farmers sought a loan, banks could now verify their land records immediately, speeding up the process.

Chawla also found that the system needed to account for inconsistent power and breakdowns. He put in place generators to keep kiosks operational when power went out, and hired employees to travel the state and repair broken kiosk equipment.

Other problems were more difficult to solve with technology. Although the kiosk system reduced corruption and lowered the cost of obtaining a land record, it cost poor farmers significant sums of money to travel to their taluk office, as they often missed a day's work in the process. Chawla, who in 2003 had been appointed Karnataka's first-ever principal secretary for e-governance, began to consider how he could bring land records closer to farmers and ease the process.

His solution was to create 800 so-called *nemmadi* ("peace of mind" in Kannada) telecenters and enable those centers to issue more documents. He found that 42 documents issued by the Revenue Department, including birth and death certificates, could be reissued electronically at telecenters. Because it was possible to turn a small profit by printing land records at 15 rupees each, Chawla could attract a private company to build the computer centers. Because private employees could not sign the records, Chawla required village accountants to visit the telecenters each morning or afternoon to sign documents. Having more centers available for issuing records meant

that citizens had a choice of kiosks and telecenters, further reducing the opportunities for operators to demand bribes.

Anirban Mukerji, a consultant who worked with Chawla to design the tender process for the telecenters, said the terms of the tender determined in detail the quality of service the vendor needed to provide to both the government and the citizens; the competition was therefore based on the proportion of the revenue that the company could keep. Because land records remained central to daily life in rural areas, Bhoomi records continued to account for about half of the revenue at the centers.

ASSESSING RESULTS

The Bhoomi kiosks sharply reduced corruption and improved customer service, according to the report card survey conducted by the Public Affairs Centre in Bangalore. Under the manual system, two-thirds of users reported paying bribes; with Bhoomi, only 3% reported bribes. Eighty-five percent of Bhoomi users reported that staff behavior was good, compared to none of the manual system's users. Eighty percent of Bhoomi users rated the system "very simple," compared with 44% of users under the manual system.

Chawla attributed reduced corruption to the public nature of the Bhoomi record printing process. "You are sitting in front of an office and there are so many people who are in the queue," he said. "How the hell are you going to demand money?" The improvement in staff behavior, meanwhile, also depended on the special recruitment and training of kiosk operators and their reduced discretion.

Despite the successes, shortcomings remained. Nearly all observers, including Chawla himself, agreed that some corruption persisted in the mutation process after Bhoomi. Although the first in, first out requirement reduced officials' ability to expedite particular applications, they could still claim falsely that they had that ability. And farmers, often unaware of the regulations, were unable to assert their rights.

Even where Bhoomi unambiguously reduced corruption, its effects were unequal. Academic studies have found that the new system mostly benefited farmers who were already relatively better off. Rahul De, a professor at the Indian Institute of Management Bangalore, found that dominant-caste and wealthier farmers were better informed about the new system and better able to travel to the kiosks. They had also been more likely to pay high bribes under the old system, because village accountants, who knew their villages well, knew which farmers could afford to pay.

REFLECTIONS

Bhoomi, India's first successful land-records computerization project, was a remarkable logistical achievement. The clearest gains, however, were in simple processes. Because only one official was involved, and the transaction occurred in public, the project was able to reduce corruption and improve service. In the basic issuing of records, the simplicity and public nature of the process made corruption difficult.

Because the process involving ownership transfers, or mutations, was more complex, computerization had less of an impact. The mutation process also involved officials who had not been specially recruited, and who were steeped in the norms of Karnataka's local administration, in which informal fees were an accepted way of doing business.

Chawla's recruitment of new graduates helped keep the basic record-issuing process free of corruption. Chawla's success with recent graduates matches the experience of other reformers who sought to change public-service norms in the Solomon Islands and Rwanda.

By hiring new officials and reducing the discretion of those who remained, Chawla solved some basic problems of supervision. Although Karnataka's landowners continued to encounter some harassment and corruption in June 2010, there was little doubt that the process had improved during the preceding decade.

[1] See http://www.nlm.nic.in/literacy01.htm

[2] Balakrishnan, Suresh and Albert Lobo. "Report Card on Service of Bhoomi Kiosks: An assessment of benefits by users of the computerized land records system in Karnataka." Public Affairs Centre, Bangalore. November 2002. p. ii

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