INNOVATIONS FOR
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HAUSMAN: This is David Hausman and I'm here in Bangalore, India with Mr. Rajeev Chawla, the managing director of the Karnataka State Cooperative Marketing Federation. Mr. Chawla was also formerly the Revenue Secretary for the state of Karnataka and a member of the Indian Administrative Service (IAS). Mr. Chawla, have you agreed to be recorded for this interview?

CHAWLA: *(nods) I did my Btech in electrical engineering. This was from IIT Kanpur, long back in the year 1984. After that I was working in the private sector for a year—at that time, designing computers. Those were very old days when there were not many machines, not many projects in the market. I still remember that we used to have Intel's 8086 chip-set for which we would design the motherboards and the computers. Having worked there for about a year, I then joined IAS and for the last 22 to 23 years, I have been a member of this service, called the Indian Administrative Service.*

HAUSMAN: When did you become revenue secretary in Karnataka?

CHAWLA: *I was posted in the year 1998 as Joint Secretary of the Revenue Department. Now, when you graduate you tend to go to higher positions in the government. In that year, 1998, I was Joint Secretary of the Revenue Department. I was brought there especially for the purpose of computerization of land records. The state government and also the federal government felt that the land records computerization was a key aspect for reforms in the land sector area. The records were manual. They were opaque and there were lots of problems. Seeing my background, the government thought that I was the right choice for computerizing this sector.*

HAUSMAN: Who was it in the government who chose to hire you for this job?

CHAWLA: *We get posted to different departments such as revenue, for example, by the chief secretary. There is the chief secretary and there is the chief minister, of course. These are the two key people who decide the posting of IAS officers.*

HAUSMAN: Who was the chief secretary at that time?

CHAWLA: *At that time, the chief secretary was a gentleman called Mr. B.K. Bhaptacharya. He knew about me and got me posted in 1998. And with time, I stayed there. Normally over nine years you tended to get to different jobs very quickly, but fortunately for me, I worked there for a long time. Slowly, as time passed, I was promoted from Joint Secretary to Special Secretary of Bhoomi and Secretary of e-Governance to Commissioner of Survey, Settlement, and Land Records and Secretary of the Department. But I kept on doing my old work of reforming the land management sector.*

HAUSMAN: I wonder if you could say a little bit more about the problems with the manual record system at the beginning.

CHAWLA: *In this country land records everywhere were manual, and they still continue to be manual except in three or four states. Of course, Karnataka was the first of them. In Karnataka, for example, you had approximately 20 million records and these 20 million records belonged to about 7 million farmers. That means every farmer had about three pieces of land. The fragmentation of land progressed more and more—there was more pressure on the land and therefore it led to more and more fragments.*

Each of these 20 million records carried about 50 different fields like the name of the farmer, the father's name, the type of soil, what was the last time of exchange they did, what grows on the land, what are the trees on the land and things like that. That made it mind-boggling, with one billion data fields in 20 million records. These records used to be looked after by about 10,000 village officials spread over approximately 30,000 villages, which Karnataka has. The whole of India has about 600,000 villages, out of which 30,000 villages are in Karnataka.

The manual system was therefore opaque, because the records were held by the accountants. As I said, there were 10,000 accountants for 30,000 villages—that meant that we really never knew where they were. They were on the job, but most of the time, they were not available. 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. This problem is widespread in third-world countries where the pressure on land is great and illiteracy is high, ignorance is high. The bureaucracy tries to exploit the situation leading to lots of mismanagement of the records.

Many poor people, especially the tenants in those places, their names were there in the records. The government of India brought what is called the Tenancy Abolition Act that meant that tenants would no longer be tenants but would the land title would be conferred to them. The landlords, who were very big, had given their lands on tenancy to the people, but used their influence on the village accountants to have the records tampered with, to remove the names of the tenants. In spite of the fact that there was huge political will for the Tenancy Abolition Act giving rights to the tenants, it so happened that many of the tenants lost their rights because the petty village officials colluded with the big people and made fictitious entries, tampered with the records, or deleted records.

The federal government therefore had concluded, and as did the state government, that these records needed to be digitized so that they were in a safe domain—the public domain—so that people could not tamper with the record. In this country and in many countries, people really fear land transactions. They feel very uncomfortable because they are not sure how many years later a dispute can come—it can happen that they get into legal problems. Therefore, the economic growth gets stunted because everybody is bothered about the safety of the transaction. Government was also losing money because the economy was not growing as expected, and the farmers were always at the mercy of these village officials.

The government, therefore, felt very strongly that the records should be safe and updated. They should be in the public domain. Hence, this project called "Bhoomi" was conceptualized and the records were digitized. The digitized records were verified and then put online. Farmers were, of course, very happy and satisfied.

HAUSMAN: Can you describe how you came up with the idea of Bhoomi? Was there an effort to sit down and plan how the process would go forward?

CHAWLA: *When I took charge—incidentally, in this country you have what are called "centrally sponsored schemes" where the government of India gives a huge amount of money to each state to do some specified task. Some of the states may not want to do those tasks, in which case they'll not get that funding. There was special funding for computerizing the land records. This scheme of computerization of land records had been brought about in the year 1988, but for*

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many years people were not clear as to how to go about this problem. In fact, even now people are not clear in this country and today just three or four states have completed the work that was mandated about ten years back. It goes to show it was not a very easy job to do.

When I came, the program was already there. In fact, the mandate was that I ensure that this happened. So I only had to decide how to do it, and not whether to do it or not. This was an ongoing program that was to be implemented, but, of course, it was very loosely defined.

HAUSMAN: I know it had failed a couple of times before.

CHAWLA: *It had. Nobody knew what the computerization of land records meant, what were the components involved and how to go about it. What was the business model? What were the legal legislative changes we had to do? How to make it financially independent? How do farmers actually make use of it? There were many questions not even raised, because they were never thought about. Forget about answering those questions. So when we started, when we took up the project, we understood that there were many, many issues. How do you bring about a legislative mandate to ensure that only digitized records are accepted, that the manual records are invalidated? How do you bring about 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 on this mammoth project in the government? You can't really borrow manpower from the market, so how do you really pick up people, train them and change management successfully so that the project is successful?*

You also had to think about how to align the political masses so that they don't get in the way, but rather support this project. You also had to think about how the land records, now called Bhoomi, would integrate with other departments because land cuts across the departments. Every department needs it. So when they do something on a land-related area, how does the Bhoomi database react? How does it get updated?

So many questions were to be answered. While we had the bigger picture in mind, we started with the low hanging fruit. We were very clear that we couldn't achieve all of them. If you try to achieve all of them, you will not be able to do anything. I must say that we had large amount of wisdom, collective wisdom, of course, not just me. We were also very clear that we should not try to do all of them together.

The first task was how to digitize this data. I have one billion data fields. I have these records spread over 10,000 village officials. 30,000 books are there. It is a non-readable work; you can't even read that language. It is done in very colloquial language—lots of over-writing and lots of tampering had already happened. Who does the data entry? If you do the data entry yourself, do you have the manpower required? If you give it to outsiders, will they have the domain knowledge of the process? How will they understand the data when they don't know anything about what a land record is?

You had the problem of the devil and the deep sea. We finally decided what we'd do, while some others decided another way. Unfortunately, this is a good thirty years and the project is still not closed in many of the states, in fact, in most of the states. We decided in Karnataka at that time, that we would not do this job ourselves. This seems very natural today, but not so natural in those years. I

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mean, you are talking ten, twelve, fifteen years back––it was not very clear. There were not many government projects. The fact that Bhoomi got so many names––one reason was that it was a very ahead of its time. Even now, it has kept pace with the times. It has all of the processes that are required as of today, but at that time there was not a legacy of other systems towards which we could have seen and understood as what was good.

However, at that time we decided that we would not do this task ourselves and that we would outsource this to the private sector. The private sector itself was also not well trained in data entry work. If you recall, there was Windows '95 in 1995 and Windows '98 had just been introduced. There was something called Windows NT and the Windows NT operating system was introduced. So the knowledge about data entry, about computers, the availability of the PCs, wasn't there. I mean people just had no access to Windows-based computers. People used old DOS-based (disk operating system) computers. There were not many young people in the private sector that could have done this job, so one of the biggest tasks then was how to train these private sector boys.

HAUSMAN: Why did you decide to outsource it?

CHAWLA: *Ten thousand village officials whose whole job was to maintain the course. Number one, they would have raised their hands saying, "It's not our job to digitize the records." I'll show you a piece of mail as to how this government works––not only in our country, it works like this everywhere. This is a very, very exciting piece of mail, a photograph that shows how bad it is when you come to a government job. Look at this. This road is colored and the title is " Presenting this Year's Not My Job Award" and the winner is the National Highway Authority of India's Painting Division. When they were painting, they found a tree here and they said, "It's not my job to remove the tree." It goes to show the mentality of the public sector. We therefore thought that if we got stuck with our government employees, they would shirk their responsibility. They would say, "It is not our job. It's not our work to digitize the records." Then what do we do? Do we take punitive action against them or just bypass them? Anyway, it's a one-time data entry job. Some of them, even if they wanted to do this job, would not know how to work on the computer. It would be very difficult for us to control government employees and hence we thought we would work with the private sector because they are more pliable––they are doing it for money and hence it should be easy to work with them. Therefore, we decided to use the private sector. However, we understood that we also required public sector support. They were very cynical. In the past it had been tried, but nobody had known what "computerizing of the records" meant. They had failed, of course. There were lots of stories around the failure. In a way it was natural for them to be cynical because having failed in the past they said, "Why should we spend our energy?" After all, what were they getting by getting the work done for them? For me, the job was important; it was not important as to who does it, right? Therefore we chose the private sector. I must say that if I am given a chance to do a similar job again, I will still go the way I went that day for two reasons. Number one is that the public sector continues to be as inefficient as it was––the photograph is very, very new––and the second thing is that private sector has only grown with time. It has made more progress with time.*

To train private sector workers, we chose young men from the private sector. We trained them on what a land record meant. We only told them as much as required.

HAUSMAN: What company did you hire?

CHAWLA: *There were many companies. There were seven or eight companies that were chosen. They were all small companies. It was a really low-end job. We required a company that was local from the area, so there were many companies. We trained the senior people from each of the companies.*

              We told them what a land record looks like and the type of problems they'll face. How do they understand those problems? Who do they look for when the problem comes? We, of course, never told them too many details. What we also did was make village officials sit with them so that when the data entry was going on, the village officials could at least see what was being entered. And if there was any question that the data entry operator wanted answered, the village official could answer it.

              I think about 20,000 man-months were required for this data entry and 18 months was the time it took.

HAUSMAN: Do you remember about how many people were involved?

CHAWLA: *You can actually divide it, 20,000 man-months divided by 18 is approximately the number. It was about 1200 people, at any point in time, working on the data entry process during the 18 months. Then of course the data entry was done and printouts were made. Those printouts were given to the village officials and they had to verify whether they matched with the data that was there on the machine, and then they had to make corrections.*

              Meanwhile, we also knew that the records which are now being digitized are live records, that they would change with time because somebody will die, somebody will sell the land, somebody will divide the land from the house because of the partition of land. Therefore there needed to be processes in place to update the records. While the data entry was going on, on the other side, we were working on what we call a "mutation process," changing the property records.

              While the law of the land is clear about how mutation has to be done, the use of IT had brought new dimensions to the mutation. It was possible for you to be fairer to the people. There could have been more efficiency and hence those processes that were defined in the manual system were to be re-looked at in the context of using IT (Information Technology) and they were to be improved.

HAUSMAN: Before you go on with that let me ask you about something before—. You said that the printouts were taken and given to village officials to verify. How did you persuade the officials to go along with this? Did they resist that?

CHAWLA: *There are so many important questions. While the work was going on, thankfully at that time, there were many things that happened by luck. You can't design luck, I mean, luck is just a matter of chance. We had an IT-savvy person called Mr. S. M. (Somanahalli Mallaiah) Krishna who is now the external affairs minister. He wanted to use IT for betterment of services.*

              Mr. Krishna was very clear. He was able to see the use of computerizing the property records. We took his help to demonstrate to the village officials that political will was there, in place. "You guys will have to fall in line. 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.

I also think at that point of time there were no antibodies in the system, because it was the first project in the country. They were not very sure as to what the output would be. So the village officials did not resist thinking about what may come out of this. After all, in the past the project had failed. Coupled with the political will, they fell in line. They had no antibodies. They had never known that projects could bring so much change. The Bhoomi project would bring drastic change to their work, which was understood later but not at that point of time.

So the chief minister wrote letters to the collector for the district magistrates of the state districts. In each district here, we have an officer in the district magistrate's office who is called collector or who is called district magistrate or who is called deputy commissioner. So the chief minister wrote letters to all of them. Chief ministers very rarely write letters to these collectors. The fact that he wrote letters two or three times and reviewed the project sent very strong signals that he meant business. That led to a situation where all these petty officials got in line and started cooperating, of course unwillingly, many a time behaving in an indifferent manner. But our pressure of political will worked on them. So while political will ensured that there was no resistance, we worked hard to derive the work from these people.

Many a time, they did work unwillingly. Many a time, digitized records were checked by VAs (village accountants) but lots of errors were left in the data. We had expected that. You are talking about one billion data fields. You should not be surprised if you find 15-20% errors in the records that can be corrected over a period of time. I mean, what do you do? After all, these are the set of people you have. So that is the way we handled these people.

HAUSMAN: Can you describe a bit how you made decisions in your own department? How you decided, for example, to give the task of data entry to a private firm? Was that a decision that you personally were able to make or did you make it with a team decision?

CHAWLA: *There was no team at that point of time. I was the single person looking after the project. There were no definitions of how to do the work. Everything was new. If you now look at this project as it was back then, you can think of so many possibilities. There was no formal structure for doing these things; this was decided at my level. Agencies were not chosen in a centralized manner. There were 27-28 districts at that time. The collectors of the districts were told how to choose an agency. They called for the vendors and chose the people—they chose the agencies locally.*

HAUSMAN: I wonder if you could say a little bit about how you got the money for this and how you got the legislation through?

CHAWLA: *The money came from the federal government. There was an ongoing program.*

HAUSMAN: Was it entirely funded by that?

CHAWLA: *It was supposed to be entirely funded. What happened, however, was that the government of India had actually not thought about what would be the definitive components of the project. When I started the project, there were at least two or three major components that were not there as part of the funding process,*

which, of course, finally found its way into the funding process. Because we were the leaders we decided, for example, the front-end part, what we called the kiosk at the time, where the citizens could come and get services or submit their requests for mutation—there was no concept of that. The kiosk would mean that you had to prepare a site. There had to be somebody, an operator, sitting there. There have to be computers there and all those electrical connections and things like that. It meant money.

This money, thankfully, was given by the state government. I was able to get money for all the required components. Of course, with the passage of time the government of India, the federal government, brought those components into the project and the money came to us subsequently, which we used for further improving the project.

I must say that approximately 75% of the funding came from government of India. Without the 25% critical money, it would have been difficult for me to take up the project. Our total expenditure was very minimal; it was just 200 million rupees, which is a pittance, it was nothing. If you ask me today, we have approximately one billion rupees now. That is the type of amount we have. We have a huge amount collected through user charges, as against such a small expenditure of 200 million rupees. You have ten times the money with you in your kitty after taking care of the operating expenditure required to run the project.

The fact remains that it was a question of the chicken and the egg. If you did not have that money, you would not have made this much money anyway. So the state government also funded some of the critical components.

HAUSMAN: You were describing earlier how the data entry worked. What happened next?

CHAWLA: *When the data entry was done and the printouts were taken, there were guidelines about how the records would be verified. It was not just village officials who had to verify. There was a hierarchy of who would verify these records. In fact, the number of circulars that we issued was compiled in book form. I have compiled these into about six or seven volumes and these volumes are used all across the country when people conceptualize this project. This documentation that I developed over a period of the last ten years goes a long way toward understanding the project. Almost every state and many countries have visited— Mr. Bill Gates spoke about this project, the World Bank and other organizations came here. They were all delighted by the wonderful documentation that was there. So this documentation helped people copy the project.*

Coming back to the data entry. We had issued a circular on the hierarchy, how the hierarchy would be involved in the government to verify the records. Then finally for two, three years after the project was put in place, we distributed free copies to the farmers once a year and said, "Please find out whether you have any errors in the records and we will correct it through a "shortcut mechanism." The shortcut mechanism is now no longer available, because a shortcut would mean that the integrity of the data goes away. The first two or three years we had shortcuts to correct data. Some special software was there, and by receiving applications we could correct the data.

So the involvement of the farmers, who were one of the stakeholders and then, of course, the village officials and the hierarchy of the department made sure that there were minimal errors in the records. But I must confess that errors still

remained in the records. Slowly they were filtered out as time progressed. Now I think the records have reached a stage where the records are good, fair, clean, and correct.

HAUSMAN: So there was this initial data entry phase. What was the next step?

CHAWLA: *We thought we should we do the data entry in all the Taluks (sub-districts) together, but we decided against it. We said that if we did data entry everywhere together, then the records would have the data as on a particular date. The day on which the data entry finishes, you should operationalize the system and ensure that the subsequent updates take place. People will keep on dying every day, people will keep on buying the land every day and people will keep on partitioning the land every day. If you don't update, the data will become bad.*

Hence, we thought that the key to success was those pieces of the software and the trained men, who would actually update these records as a process. Therefore, we did just five sub-districts. We had 177 sub-districts at that time. We did five sub-districts in the first phase, because we wanted to try those software pieces that we had written and see what issues we would get from the implementation. What are the bottlenecks, which would come during implementation, and how to overcome them before it was time to expand the project?

HAUSMAN: What year did the pilot phase happen?

CHAWLA: *If I remember correctly it was 2001, also a little in 2002—that was the period.*

HAUSMAN: What were the things that you learned from it?

CHAWLA: *We learned a lot of things. For example, we were able to fine-tune our software. There were lots of issues with the data collection, so we wrote a small but very effective piece of software on how to correct records. We also learned from the psyche of the people that we should ensure the queue is not long, and we should have generators everywhere to ensure that when the power supply is not there we will be able to serve people. We understood how peak loads come, because sometimes peak loads will come. There will be a season when the crop has to be sown so bank loans will be needed and the farmers will be applying in very large numbers. How to take care of those peaks, we understood.*

We understood after working on this pilot project what legislative changes we required. We also checked our business model. We had kept 15 rupees as a user charge at that time, which is one-third of a dollar. So we wondered whether that would be acceptable to the citizens because in the earlier system this used to be given for 2 rupees a copy. Of course, there was a huge bribe. You have read the report card. But at least formally there were no fees and now we were charging 15 rupees. You were seeing the peak load. You were seeing how your mutation software copes and then how your village officials, who were actually working in those centers, how they behaved with the people. All of these were tested in the pilot.

So we did a pilot in five places, then we did one more in every district. It was also important that the pilot taluks were picked up by deputy commissioners of those districts, as they are in charge of those districts. Are the officers comfortable? Do they understand it is not something being imposed from the top that this actually works because the best way of learning is doing? Right? If you do the work and

you implement it yourself in one place in your district, then you are confident that it is not something that is pushed from the top. Yes, it makes sense to me and citizens will be happy. So for five pilot districts we did this under our full control. It was a highly regulated environment because we knew we were going into a virgin area that had not been done before and we needed to be careful. But once we did five, for the next 27 we relaxed a little. We gave controls to the deputy commissioners, involved them. We had a lot of training sessions for them. Once those 27 were successful, then we pushed all of the remaining, approximately 140-150 of them, afterwards.

HAUSMAN: Can you say a little more about the behavior of the village officials, what you noticed and what things you tried to change?

CHAWLA: *We understood one thing: there were 10,000 people and their typical age was 53, 54, or 55. They were petty officials. They were afraid of the government. They were incompetent—incompetent from the point of view of working on the computerized system. They also had a low IQ. So you had a concern there. We picked up these "compassionate appointments." When these people die in the government after they had been in the service, if they had a child—a son or a daughter—he is appointed on a compassionate basis by the government. So what we used to do was pick up these children who would be 19 years or 18 years and 20 years, and we used to train them comprehensively. They, of course, had no idea how the land records worked, but that was not very important because the mutation software would guide you through the process. All you had to teach them was how computers worked and how the software worked. They would pick it up. Anyway, there were the conventional village accountants who would be there to tell them but because the software would go in a prescribed manner only, even if there were gaps in understanding, there would be little damage caused to the system. In the beginning, and I'm sure even now, those village accountants who were appointed were in their thirties. They were young and they were held in high esteem. They were given a lot of value when they used to come here. They had not seen corruption. We called them before they could taste corruption, and we trained them well. They were very courteous to the people. The report card also brings that out, that they were very courteous to the people.*

                 They had a sense of pride that they were doing work that their seniors were not able to do. These young people 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. The older people would come sit with them and whatever mutation process had to be done, these guys would initiate it. I think their value system, their pride in the work they were doing, of course, coupled with the huge training that we used to do and the classes that I used to give for them—I used to personally go every day. I used to be there with them for about 1-1/2 hours, 45 minutes in the morning and 45 minutes in the evening with every batch, every day. It continued for about 56 or 57 weeks. That means every day I used to spend about 1-1/2 to 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.

                 So there was a lot of belongingness. I used to care a lot for them. They were given very good food. Accommodation for them was much higher than what they actually were entitled to. We arranged for special buses that would move them from their hostel. We had hired the hostels at the training place. It doesn't happen in government. You call them for training but you never care as to how

they are coming. But all this we did to inculcate in them a sense of desiredness, that they were a desired object and that the project leaders cared for them. Then of course, they really performed.

We also had another round of training for them that we called hardware training. In rural areas, by now, we have things like facility management processes where the whole facility is maintained by one organization—cartridges, printers, servers, machines, air conditioners, UPS—but at that time, this country did not have such special maintenance people. Therefore, I had trained some, two from every district, about 55 or 60 people on hardware. They were given a three-month training course. They could open machines. They could repair the machines. That, of course, meant taking out the card and putting a new card, or the SMPS (switched-mode power supply) if the power supply has gone and putting in a new power supply. All these things they could do. From this, there was a huge sense of developing: "We feel so good that we have learned a lot, that we are such an ignorant people, but we are learning."

Because they were learning, the senior officers in the department who were still computer ignorant, used to look at these people for guidance. This was wonderful, that the young person who had just joined the service, the seniors are looking at him for understanding about how to do something—how to do a mutation in Bhoomi, for example. Or if a machine goes bad, how to repair it. This really gave pride to these people and they felt very good because of this.

HAUSMAN: Could you say a little more about what actually happened in the training of the new village accountants or the new recruits?

CHAWLA: *I remember that we used to start by telling them background and outlining, because it used to be a seven-day training. Every day, I remember, they used to be there at 8:30 sharp in the morning and would work up to 7 or 7:30 at night, which meant ten to eleven hours a day. On the seventh day, we used to close at 2 o'clock. This was huge training. It was about 70 to 75 hours of training. We used to start with an introduction of the objectives.*

Incidentally, we had made their learning books and course curriculum because we had to train a lot of people. We had exercise books, the exercises they had to do in the lab. We used to have the dummy database on Bhoomi on which they could do transactions. There were lots of people who were there to guide them. So the first day we used to give them an introduction. After that we used to teach them how to do data entry, how to work on the keyboards, especially in the local language. As you know, in every nation there are lots of local languages. Now with Unicode coming, it has become easy, but at that time there was nothing like Unicode so data entry still was a challenge. If there used to be an accountant who earlier had never worked on the machine, he learned how to work on the machine, keyboard, etcetera, especially in Kannada, the local language.

Then every day there used to be people from NIC, National Informatics Center, who wrote the software for us—they talked about the modules. After the philosophy of the module, the software module used to be shown on our slides. After that they used to do the labs. It was mix and match. The village officials had never gone to the field so it was very difficult for them to ask questions about what happens in the field. What we told them theoretically is what they understood, whatever was written in the books. Of course, there were refresher trainings after that where they used to come after six months and tell us about the problems they were facing. In fact, they were the people who used to guide

us on what improvements could be brought. They were the people who were working in the field. It was a new system, which I developed. These village officials were our eyes and ears because they were working in the system. For every sub-district, there were four and five people working, so about 1000 people were there who were our people in a sense, the youth, and they were all self-motivated. They would tell us what were the issues. All of them had my contact number. They would ring my house to let me know what were the issues. As I said, there was a huge motivation for me—that these young people think that the project belongs to them.

HAUSMAN: Were they paid at the same rate as the other village accountants?

CHAWLA: *Of course. But then they were objects of desire because all the others used to look at them, since for the others, a computer was just a black box. But for them, it was demystified. They knew what they were doing. You derive powers at various levels, but it is not just the money power. You have a power of knowing more than others, which is equally exciting. That is perhaps what excited these people.*

HAUSMAN: About how many of them took part in each of the weeklong trainings?

CHAWLA: *For the 54 weeks we were there, we trained about 1000 people. So no more than 26 or 27 people were in every batch. Everybody used to have one machine with them. You know, you can't have a bigger team and then give individual attention. But imagine for one year, 55 weeks of training. It was actually a very excruciating, very, very difficult task for us. It was very painful work for us because you spend a lot of energy on this, but then it was worth it because we knew that the training was the key to success. The more you empower your people with knowledge, the easier your job is going to be. And I found that these village officials actually carried the whole load on their shoulders and I was free to do more innovation. I was not really involved in day-to-day problem handling. There were other people who could do that.*

HAUSMAN: Was there training also for existing officials, the existing village accountants?

CHAWLA: *There was no training but there were seminars for them. We told them what we do but the exact steps, etcetera, we never told them because there were a set of people trained, the people who would work on the machine and these guys can learn from them as to what is happening. We, however, told them our philosophy so that we could win them over, but we never actually tried to teach them how to work with a computer system. But as I said, whenever we used to go to the district to review, we'd call all of them and listen to them. And if you today ask any one of them, they all know about how—although many of them may not know how exactly the software works, but that's not a botheration.*

HAUSMAN: Did the seminars actually persuade them to support it?

CHAWLA: *Yes. The seminars were important when we were designing the data entry forms. Unfortunately, the land records were somewhat different in different places because all of these districts belonged to different states before the British had left and the country got independence. So they had different land record systems. Therefore, these seminars were also organized before the data entry form was done, to understand what were the reasonable variations in maintenance of the record. This also served a dual purpose. On the one hand, 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 that was being imposed from the top. On the other hand, their inputs were very useful to us in designing. I became the first Secretary (e-Governance) of Karnataka. Nowhere in the country had this post existed. After that I was Secretary of e-Governance, electronic governance. I realized that what I learned in Bhoomi was critical and that was the importance in investing in the men. Training them more and more was critical. So whichever project I took, and I took lots of them, I would treat my people with lots of affection and love and spend a lot of energy training them, because that was so important. That's the buy in. The buy in comes because you have done well for them.

HAUSMAN: Can you describe how the actual process of getting a certificate or an RTC (Rights, Tenancy, Cultivation Record) worked for a farmer, a small farmer?

CHAWLA: *Very, very simple as far as they're concerned. They just go and tell which village they belonged to. They will either tell their property number or they will tell their name in case they don't know the property number. We then run a search using their name and find out all properties which are starting with their name because you should appreciate that there can be duplicate names in the village. If the names are the same then we ask for additional attributes like we ask how much is the area and things like that or the father's name. If you know his name and the father's name then we can just do a printout and give it to them. We don't ask their identity who they are or what they do. It is very difficult question to answer. If we ask who you are, then to prove his identity he will have to spend money. Anyway, the records are in public domain so why should I ask who you are.*

In the rural area where there is no exploitation of people killing you for land, unlike in the urban areas, what was more important was openness and transparency, instead of privacy. I mean privacy is equally important but in rural areas we said land records are in public domain, anybody can get anybody's records. So let people see whether there are any wrong records in the rural areas. When you go to the kiosk all you do is to ask for a record. It was a new paradigm that we were not asking questions while giving you a copy of a record, and huge harassment was avoided. There used to be a huge amount of harassment because of this.

HAUSMAN: Were there other measures that you put in place to prevent corruption?

CHAWLA: *As far as the distribution of records, there were two ways that corruption could take place. One, the distribution of records was a major problem. It was small money but it was in every transaction. So you had millions of transactions and for every transaction, village officials used to take money. The second was mutation—when you buy a property, when you sell a property. The first one was very effectively taken care of because the records were in public domain. They were also on the Internet. For the last three years, they have been available from the telecenters. There are 800 telecenters, which I have set up. So anybody can go to these telecenters and get the copies.*

The more difficult question was how to ensure that there is no corruption in the mutation process, when the property is changing hands. At that time they could demand money. So after about two or three years of operations, I actually brought the concept of FIFO, first in, first out. In fact, I knew LIFO (last in, first out). I had worked as a computer engineer. I knew how the stack works in a computer—last in, first out—and that's the way government also used to work.

So we brought the concept of first in, first out. The man who comes first will be served first.

HAUSMAN: Where did you get that idea?

CHAWLA: *I got the idea from the way the stack in a computer works. I was very strong in my computer science. I used to always wonder about last in, first out. I also used to wonder when government used to work—. So the FIFO name kicked in from there. I mean, I just gave it FIFO because it was so natural for fair justice to happen. The person who comes first should be served first. This FIFO, of course, there is no trademark on that name or the process. Almost all of the e-Governance projects in the country use the FIFO process. When we implemented it in 2003, nobody had even thought of these processes. FIFO takes away huge discretion from people. There is no way he can avoid first, second, third, fourth. If you are fifth in the queue and you want your work to be done faster, maybe by paying a bribe or maybe by political pull, but in any case, the first four people will get their transaction done automatically. It is social justice. Even if you pay a bribe because you are fifth, in a way you are compensating for the other four because they are not paying; and why should they pay, they're at the beginning of the queue. Why should they pay? It certainly controlled corruption.*

I am sure there is still a lot of corruption in this area. That's something that I think people will have to become aware of that they have the right not to pay for a bribe. In the distribution of records there is no bribe, just very simple, but in mutation, in spite of people, in spite of lots of checks, I'm sure people still demand money although it may be on a decreased scale.

HAUSMAN: In terms of the distribution of records in the first place, how was it that corruption was eliminated? Was it mostly the technology or partly the new training?

CHAWLA: *It was quite simple. You have a single queue. You have no business to ask any questions. You go, pay 15 rupees and take the record. There is a single queue. You are not doing this in a corner of a village where they're taking money. You are sitting in an office and there are many people in the queue. How the hell are you going to demand money? On what basis will you demand money? You just cannot demand, there are so many people there. You have to just take a printout and view. So it has been brought out in various studies that Bhoomi has reduced to zero the fees as far as copies of the records are concerned. Now, in mutation, in spite of FIFO, I don't why studies say there is no corruption; I'm sure there is some corruption. You would not be able to wipe it out. After all, IT systems cannot take away the crookedness of the mind of some people. Only when people believe in sincerity and they become honest can you control corruption. I am sure it is on a very low scale.*

HAUSMAN: This was brought out in all 177 subdistricts in 2002, is that right? Then after that, what has been happening?

CHAWLA: *After 2003 when the project was fully rolled out, there was a lot of training. There were lots of improvements. Number one, training was ongoing and that was very important. Lots of improvements in the software were made. There were limitations in what the software could do. Could it handle, for example, multiple mutations on the same property? If I have five units of land can I sell one unit to one person, two units to another person and handle all of them together?*

More sophistication came in the software processes. In the coming years the property records were cleaner. That was the second thing we did because there were errors in the records. Some were there by transcribing. In the manual records themselves, there were problems. Because of the MIS (Management Information System) reports, which we were able to evolve thanks to the computerization, we were able to clean records. We were able to find errors in the records and then, of course, we asked people to fix those errors.

We also made a lot of innovations from an IT point of view. We centralized the database. Earlier these databases were in 177 places, so we centralized the database. While we have data at 177 locations, we now have a central database in Bangalore. We also brought telecenters. We did pilots on telecenters and brought telecenters in 2006.

HAUSMAN: Are these the Nemmadi kiosks?

CHAWLA: *Yes. I was Secretary e-Governance when I did this and these telecenters came then. Apart from that, we introduced what is called "public key infrastructure." It is what is called a public/private key—digital signatures compliant with the IT Act, the Information Technology Act 2000 of this country. Then we introduced hand-held devices for collecting crop details.*

HAUSMAN: Are these the Simputers?

CHAWLA: *Simputers—and then after that we used mobile devices so that we could connect any java-compliant mobile device to a central database to download records and update the crop information. It used to be updated three seasons each year.*

HAUSMAN: How was that done before it was done with the mobile devices?

CHAWLA: *With the Simputer, but it was very early, because in the year 2004 you did not have GPRS (General Packet Radio Service) connectivity. Mobile devices were very costly and the Simputers were not very costly. But the problem with the Simputer was that it was a bulky device. The screen was very big. It was based on Linux, that's fine, but you had to connect it to your physical computer on a serial port or a parallel port to transfer the data. Now this means that the village accountant had to come all the way from the village to upload the crop data.*

HAUSMAN: You were describing how updating of the crop data worked with Simputers. How did it work before the Simputers?

CHAWLA: *Very good question. You update records in Karnataka because of two reasons. The way the record is, the lower portion of the RTC is for crop details. RTC— Record of right, R is for right, T is for tenancy, and C is for cultivation. Now for cultivation there are three cropping seasons here depending upon which area you are. You either grow crops once a year or twice a year and sometimes even thrice a year depending on irrigation facilities, the rains and things like that.*

Therefore, what village officials used to do was to visit every field, at least theoretically they were supposed to visit, and write it on a sheet of paper. We used to give them pre-printed stationary.

HAUSMAN: These were the village accountants?

CHAWLA: That's right, the traditional village accountant. We'd give them a pre-printed sheet on which all of the survey numbers were written. The owner's name would be written and he had to write only the crop data. These data sheets were brought back and we used to engage data entry agencies whose job was to key in this bulk data. This was the traditional method. This of course was leading to delays. You had to choose data entry agencies, collect data in the field, and come here. By the time crop data was available, there used to be a delay. I must confess that we are still on this process. It is very unfortunate.

We tried Simputer where we said we'd give the crop data on the Simputer to update it in the field itself. That meant that every village official had to learn how to work on a Simputer. Now you had a bigger problem at hand. Ten thousand people had to learn it. We worked with 200 Simputers and we did some improvisation, but then the developments in the field of IT were so drastic that the Simputers became useless because the mobile devices became very cheap. The GPRS connectivity came and became so ubiquitous that there was no point using a Simputer. So we then tried mobile devices and we said with using mobile devices we would have GPRS connectivity in the villages so the village accountant need not come to the center. He could upload the data from the village itself. That was very exciting. The next day the farmer can get the record. He can also challenge the authenticity of the data because while the crop is being grown in the field he can actually get a copy of his record, and if there is anything wrong he can correct it.

We worked with mobile devices and that pilot is still on. To train 10,000 village officials and maintain their mobile devices was a Herculean task, so I think technology will have to evolve a little bit more where you will have a rugged system. The issue of maintenance of the devices is a very huge task. How do you maintain 10,000 devices? I mean, I know these devices are much simpler to maintain but software has to be loaded and the software will change with time. The 10,000 village officials will have to learn how to work on the mobile devices, but that is the process that we are still on.

HAUSMAN: I know that touch screens were piloted for mutations originally in about twenty of the sub-districts. Was that ever expanded to others?

CHAWLA: This is one thing that I left to the local collectors of the district. If it was up to me––it was giving value to the citizens, if they can put their finger on the screen and see the data. It was more for popularizing the scheme. It was not essential, so I left it to the collectors who used to get money from other sources. I think nearly in all locations they've now put this in, but I never funded this part. After all, what is a touch screen? It is a computer with a screen and of course in a big box, it is there. So the collectors got the money from a member of parliament and depending upon how enterprising they were, most of them took it. It is maintained locally. Maintained means I did not fund the capital expenditure. I only gave the software. So they are now being used.

Now the point is that many farmers still need the assistance. I was wondering whether we could have a touch screen with a minimal face so that this is an assisted operation in this country. You need an assisted operation because illiteracy is high in rural areas and some citizens cannot operate the device on their own. We could have assisted operation where a physically handicapped person could sit and charge, let's say, three or four rupees for a transaction and make his livelihood. At the same time, the farmer who comes is not bogged down

by how to operate this machine. That is something that I thought would make more sense. But anyway, there are touch screens everywhere now.

HAUSMAN: Can you say a little more about how the telecenters are helping with the Bhoomi process?

CHAWLA: _There was a lot of criticism of the Bhoomi project when it came. I had to really face lots of flack every day. You had 10,000 points and you had reduced it to 200 points. How do you answer this question? The farmer had to travel all the way from his village; he had to travel 50-60 km. He travels, he comes to the center, he stands there in the queue wasting his day's money because he can't earn it while there. If he is a laborer somewhere, he doesn't get the money. He has to spend money on the bus, public transport. He has to spend money. So people were saying, "What have you done? You have created such a centralized system." What they did not understand was that I can't create 10,000 retail points. Who would operate them? Who would maintain them? But then I don't think it was their ability to understand; it was a designer problem. You created a solution with the first problem. You find a solution. I think they were right._

Here was an opportunity for me to bring telecenters to Karnataka and I must tell you that if you go across this country the only place where telecenters have been successful is Karnataka. I say this with a lot of pride. Go anywhere in this country and it's very simple to understand. You have some backbone application that would make the telecenters vital. Why should a person go to a telecenter? What are you giving them? I mean what is there so exciting that a citizen goes again and again? He cannot be seeing a movie. I mean citizens will not pay you money for seeing a movie. Citizens will not go there for playing games. Citizens will go if they find those requirements there that are important for their livelihood. As you are aware, under the name of the project, I designed 42 other services along with Bhoomi.

Bhoomi became the core application. Surrounding Bhoomi I wove in 42 other applications. All of these 42 applications put together brought as much revenue as Bhoomi was getting. So the Bhoomi was the killer application that came along. From around the side, came these other 42 applications. All of a sudden public-private participation was possible. The private sector was willing to do the retailing job. I then put in 800 telecenters. But I must tell you, it was a case of necessity being the mother of invention.

I was facing problems; I was being questioned by politicians. I also understood that I couldn't run the telecenters myself. I can't maintain connectivity, I can't maintain operators, and I can't maintain machines in rural areas. Thanks to this killer application along with the other applications, the private sector was ready to come and invest huge money. It was not small money. It was approximately 350 million rupees to 400 million rupees that they invested setting up these 800 telecenters. Today the 800 telecenters are so important for providing e-governance services to the citizens in Karnataka.

I did this when I was Secretary of e-Governance. I moved out of that role in the year 2007 and after that, I went to other organizations where I did the spatial part of Bhoomi and I also attempted urban property records. About three months back, after being there for about two years, I moved on. I was Secretary of e-Governance. So as e-governance secretary, I put telecenters in rural areas. I did something called Bangalore One. In urban areas you can get all your services under one roof, it is called an integrated service center. I did that in 2005 and it's

very popular with citizens. These are all urban transactions. You can pay your mobile bill there, you can pay your electricity bill, you can apply for new connection, you can pay your telephone bill, you can pay for your passport, you can get your passport application there and apply for passport, you can make a bus reservation—anything that can be done electronically. Picture tickets, railway tickets, and aircraft reservations can be done. So these were in the urban areas like the telecenters in rural areas. These were the integrated service centers in the urban areas.

HAUSMAN: And land records could also be updated there, urban land records?

CHAWLA: *Land records—because in urban areas the land records are not there. These land records were for rural services. In my new job, I started on a project called UPOR, Urban Property Ownership Records. UPOR is now under implementation.*

HAUSMAN: One thing that I've been told is that revenue from RTCs decreased after the initial wave when everyone went to get their new RTC. Is that true?

CHAWLA: *No. The demand for RTCs has been highly inelastic. It doesn't really change with the years. The reason is the cost is so low. You pay just 15 rupees. People don't mind, as it's a kind of mental confidence that everything is right. That's number one. Number two is the fact that since you record crops three times a year, it makes this record dynamic. Every year, year after year for the last ten to twelve years, if you see the revenue transactions, it was approximately 18 to 20 million records that are transacted or sold. Even after the telecenters came, the number of records being picked up has not increased. You'd think that because telecenters are closer to you that people would find it easy and they'd make more copies. That also did not happen, which goes to show that people who wanted the records were taking records. Therefore, my belief is that there is ever lasting demand. If anything, the demand will only increase because of proximity to a distribution center and because of the simple fact that a copy costs you just 15 rupees. Property rights are so important. It is always a good idea to have a recent copy.*

HAUSMAN: Let me now ask you a little more about the initial digitization and data entry process. I was told that there was a kind of verification stage before that happened. Is that right, and how was that managed?

CHAWLA: *Verification after the data entry was done?*

HAUSMAN: One person I interviewed told me that at the verification level, village accountants went out and actually checked physically each—.

CHAWLA: *Even the senior officers.*

HAUSMAN: Before the data was entered or was this after?

CHAWLA: *After the data. However, some data preparation was done. I mean, while the records were there some coding was required to be done. For example, male or female was to be entered. We wanted this additional information so that we have data about the gender capability of holding land. Similarly there were three or four other types of codes that were to be entered for which we had to do some preparation. A small amount of preparatory work was done but there was nothing*

called verification. It was more the preparation of the auxiliary data, that was not written on the manual RTC.

HAUSMAN: So the large-scale verification happened afterwards. How did you manage that since it was asking for so much work from people who already had jobs to do?

CHAWLA: _Since we did five or six sub-districts in the first phase, 27 sub-districts in the second phase, the success then guaranteed that others would also follow, that was number one. Number two was pressure. You remember, the Chief Minister and I put extreme pressure on them. I mean I used to talk to them every day in the morning, every day in the afternoon. That was the only job I was doing. I knew that the data verification was very critical. They had to sign every record. The printout was to be signed by everybody as per the percentages allocated. Those signed records are, even today, kept in those Taluk offices (where all land data is stored) as the initial records. Because when you made the transition from a paper record to a computerized record or a manual record to a computerized record, the initial set of computerized records, which are verified in a sense, become the transition point in the future. Whenever you have to go back you go and see those signed records. The fact that everybody had to sign, they were very much believed._

HAUSMAN: And how long did that verification process take?

CHAWLA: _You have 10,000 village officials and you have 20 million records. So every village official has just 2000 records. If you see 2000 records, verification is not a great job. It should not take more than ten days. What is there? Two hundred records you have to see and you have to match. And what is so great about it? It is not as if a sheet is full of numbers. There were just fifty fields. You can just keep this copy and keep that copy and keep on seeing. And very easily you can see about 200 records in a day. Let us say 200 records would mean, if you work for ten hours, 20 records every hour._

HAUSMAN: Did they go and physically look at the land?

CHAWLA: _No. They already had the manual records. You cannot see the land. Land will show you nothing. Who is the owner? Land will never talk and say he is the owner. So you had to look at the record._

HAUSMAN: I think there may have been some confusion between crop updating and verification.

CHAWLA: _Yes._

HAUSMAN: Because the crop updating actually happens where the village accountants go and visit the land, right?

CHAWLA: _Yes._

HAUSMAN: And that happens three times a year?

CHAWLA: _Three times a year where they go to the field to see what is grown and use either the hand-held devices or they write it on a sheet of paper. Then it is uploaded._

HAUSMAN: Another question I had is what the retention rate has been for the new village accountants that you hired, the kiosk operators?

CHAWLA: *There are two distribution channels now. One, run by the government, those are the Taluk offices. Those village accountants are government servants. They would never resign because a government job is traditionally a job, although it may be low paying, that guarantees you perpetuity. So therefore these people have not left. They have been promoted. Some of them have moved out to different posts within the government, within the revenue department.*

HAUSMAN: I was told that there was a ban put on the transfer of Bhoomi employees. Can you say more about that?

CHAWLA: *When I trained the 1000 people, many of them would have liked to work in the field because of generally being able to seek different roles and things like this, unlike the computer centers where you just do data entry. I had therefore anticipated that for various reasons, hence, these people would either be thrown out or they would like to go out and therefore I had put a ban on their transfers. I said that without government permission, you may not shift anybody outside Bhoomi. I think this ban was very effective because to a very large extent in the formative years, six or seven years, those thousand people we had trained remained there.*

Slowly what happened was that it got broad-based. Some other people also learned and all of them had a large number of people who could do this job. Some of them, of course, managed to get out of the system. They are doing traditional work. But we have large number of trained people who are doing this work still.

HAUSMAN: And is the ban still in effect?

CHAWLA: *Yes, the ban is still in effect but many times it is violated. We are also not really worried after ten to twelve years of the program, and a lot of learning by us. The ban made sense in the first five or six years, but now slowly, I guess there will be a large number of people who tend to learn and they'll cross-train. Even if you replace one person by another person, the other person would learn then and continue doing the work. I don't really see a problem.*

HAUSMAN: When were you in which position?

CHAWLA: *From 1998 to 2003, I was doing only this work as Joint Secretary of Revenue. From 2003 to 2007, I was Special Secretary of Bhoomi. I was also holding the Secretary of e-Governance charge. I did that for about four and a half years. Plus I was doing work on Bhoomi also. So in effect, I was working on this project up to 2007. After that I went as Commissioner of Service, Settlement and Land Records. There from 2008 to 2010, I was again looking after Bhoomi and survey matters. So you can say from 1998 to 2010, except for about four months in the middle, I was looking after this.*

HAUSMAN: You mentioned that the village accountants were compassionate appointments. Many of them were children of other village accountants, for example. Was hiring them partly an attempt to prevent resentment on the part of the village accountants?

CHAWLA: *No. You have what is called a compassionate appointment scheme of the government. Whenever anybody dies, not just the village accountant, any official dying at the district level from any department—it can be horticulture, it can be agriculture, it can be the public works department, it can be irrigation—the District Collector or the Deputy Commissioner of the district makes the compassionate appointment. I told him that whenever he gets such young people who are energetic, because he is coordinating the program, he should give those people to me. So that's the way we got those thousand people.*

HAUSMAN: And there were enough opportunities to get a thousand people in a year that way?

CHAWLA: *It was not a problem. You have 500,000 employees in the government. If you have, let us say 1% of them dying every year, that's a normal thing, you have 5000 people.*

HAUSMAN: Five hundred thousand employees in the Karnataka government?

CHAWLA: *Yes. So 1% if you take as the death rate as 5,000 people. So you had to manage just 1000 of them and that in a period of about 1-1/2 years. It was not at all difficult, not at all.*

HAUSMAN: When exactly in the process did the workshops for the old village accountants take place?

CHAWLA: *Before the data entry started. Of course, workshops continued thereafter. But it was very important to conduct the workshops in the building itself because of two reasons. Number one, understanding the variations in the record system which were there and number two, to let them know what we were doing so that they wouldn't consider this as merely a black box without knowing what is the intention of the government, why the government is pushing this program and why they should not be cynical anymore. The projects had failed in the past, will it fail this time? What was the aspiration level of the government? All these comfort levels were so important for these village officials. Therefore these workshops were held even before the data entry started.*

HAUSMAN: In terms of the modification of the legislation, was that a difficult political issue?

CHAWLA: *You have legislation supported by what is called the subordinate rule forming the power of the executive. You have three wings of the government; one is the executive, one is the legislature, one is the judiciary. There is what is called subordinate legislative powers that are with the government, the executive. Now we were lucky that we were not required to change the law. It was enough for us to have a subordinate legislative process to change the rules that were there under the law. That only required the approval of the law ministry and then from the concerned minister. So I did not find that difficult. It took about six months but that was not really a problem.*

In the case of electronic procurement, a platform that I implemented in e-governance, is in the Act also. We went to the legislature and even there, there was no problem. The fact that you would require a change in legislation was not really a problem, except that it takes time.

HAUSMAN: So then the other larger question I have is about the mutation process—exactly
               how did it work step-by-step before and how it works now? Would you be willing
               to walk me through it? It hasn't been quite clear.

CHAWLA: *Fine. It is a very simple thing. You are trying to change a record. This record is as
               good as a title record. I mean it is a title record except this record can be
               reverted. It is a presumptive record. The RTC is a presumptive record and the
               presumption is that this record is correct and right until it is proved to be wrong.
               So it is a title record in many ways.*

               *If you have to change this title record then there are two or three ways it can
               change. It can change either because somebody has purchased and sold the
               land or because somebody has died, or because there is some old order, some
               judicial court order. In either of these cases, there has to be what is called either
               an application taken from the citizen—for example, in case of death, partition
               within a family or if it is a sale—then from the registration system we get
               electronic data saying that we have connected the two systems, the system of
               RTC maintenance and the system of registration, where the sale deed
               registration takes place. The sale registration system then sends us electronic
               data in which case we start an automatic mutation process.*

               *In other cases, like partition and death, we take a request from the citizen. Once
               this happens we generate a notice. The notice is important because it is a law of
               natural justice. We need to talk to everybody. You need to find out whether
               anybody has objections. If nobody has an objection—.*

HAUSMAN: And the village accountant puts up this notice in the village?

CHAWLA: *That's right. He puts up a notice in the village and then he also serves it to the
               people because the people are living in the same village. If you're not living in the
               same village then it is not his liability to give the record, to pass the notice to
               those people, because the addresses would not even be known.*

               *Once this is done, the village accountant gives a recommendation and the next
               cadre officer, the revenue inspector, passes the mutation order. The mutation
               order is then scanned on the machine and also typed on the machine. It is
               scanned because I didn't want to change the system where the inspector starts
               feeling uncomfortable that there is no paper record, that he feels that there is a
               lot of change in the culture of working. I said, "Fine, if they feel more comfortable,
               let them write on a sheet of paper and then we'll scan it instead of they're writing
               directly on a machine." But strictly speaking, this paper is redundant. It is not
               really required.*

               *After this is scanned and typed, the same content is signed. He stamps his
               fingerprint. Thereafter the next officer who is senior to him, is called as a witness
               to that. He puts his finger just to say that whatever data entry has been done is
               per what the revenue inspector has passed out. Once this happens the mutation
               is approved and the new name comes.*

               *If somebody raises an objection—and they can give objection at the telecenter—
               if an objection is raised then this mutation is closed there without any further
               action and a judicial process takes place, a quasi-judicial process where the
               subordinate to the tahsildar (revenue administrative officer), hears the parties
               about what objections others have and then they pass a judicial order.*

To summarize therefore, the revenue inspector will pass orders in the case where there are no disputes and if there are disputes, it goes to the shirastedar (a government account manager). In addition, there is a process of FIFO, which means that you cannot pick up––you can't choose any case, it has to be first in line, first out.

HAUSMAN: How did it work before?

CHAWLA: *It was exactly the same way before; however, there were very subtle differences. There was no FIFO. There was no accountability. If you paid a bribe and you gave me the record today to change, I would antedate it. I would put a thirty-day back date and I would do it in half an hour. That is no longer possible. It would take thirty days. After you served the notice, we never had any account of whether notice had been served or not. But now the notices that are served are also scanned on the computer so that in future if a dispute comes, we can prove to those people, "Look, we were given the notice and you decided not to refer any dispute at that time." So the very subtle differences were the following: Notices are served and done on a first in, first out basis, and it now takes 30 days.*

HAUSMAN: There weren't notices served before?

CHAWLA: *They were supposed to be served. I don't really know, but I'm sure 20, 30, 40% or more than that. We never knew. I mean the records were with the revenue inspectors. The books were with the revenue inspector. There was no centralized database. We had no access to these records. Now in the last ten years, whatever mutations have taken place––and about 5 million mutations would have taken place by now, or even more than that––all of those records are now there in the database. I can find out who has signed and I can make a printout. I can prove in a court of law that this person had been served with a notice and things like that.*

HAUSMAN: In terms of first in, first out, just thinking about it, it seems that there probably are still areas where the village accountants or the revenue inspector can manipulate the process. So if you think about the stage where the village accountant gives his recommendations to the revenue inspector, he can do that earlier or later. Does he have to do that in the order in which it comes? I mean is there any way to supervise that?

CHAWLA: *It's like this: If a village accountant gives you ten recommendations, the recommendations are not given on the (computer) system, they're given manually. So the village accountant does not have any role on the computer. The revenue inspector can pass order on the books in any manner he wants, but if they go to the Bhoomi database––only when you follow the queue. So, therefore, while the village accountant and revenue inspector can interact in any manner–– signing the mutation, approving the mutation––it will not be effective in the Bhoomi system because Bhoomi will take only the senior case first.*

HAUSMAN: Because the case gets entered the very first time that the farmer applies for it?

CHAWLA: *Right, there is seniority from there, the first time when it was entered.*

HAUSMAN: What about the opportunity to manipulate it at the end where, say, you process them all in order, but then you just keep a few of them and you only give them to the farmer in exchange for a bribe, for example?

CHAWLA: _You process the mutation on Bhoomi._

HAUSMAN: Yes, but suppose you then print the certificate and you just keep the certificate here and you only give it to the person—.

CHAWLA: _He doesn't have to get the certificate from the Taluk office. He can go to the telecenter and take the certificate from there because it has already been updated on the central database. You can pick up a copy from anywhere. It is available globally. Now with telecenters coming up you can go to any of the telecenters. You don't have to come back to the revenue inspector who will "keep the copy." There is no copy to be kept; it is there in the database. As soon as he approves it, you can go to any telecenter and pick up the copy from there._

HAUSMAN: Does that then use digital signatures?

CHAWLA: _Now, digital signatures are being implemented._

HAUSMAN: But those aren't necessary for you to pick up your copy?

CHAWLA: _No. That's not an issue._

HAUSMAN: If I'm a farmer, how do I know that you finished?

CHAWLA: _There are three ways in which you can know. First of all, you can ask somebody. You can go to the taluk office, that's the first way. The second, you can go to the telecenter and see the status on the machine itself. Or third, you can see it in any of the public centers. You can go to any of the computer café centers, go to the Bhoomi website, give the mutation number and the machine will show you. The relevant question is: are farmers aware of this? I'm sure, as the time passes, all of them will understand the new processes. It's a matter of change._

                 The fact is that those who are intelligent, they know that there are these systems in place. You have to teach farmers and their educational level will then decide what are their powers, where village accountants have been now—you know their discretion has been decreased. They can't really exploit you any more. All of those things are a matter of time.

HAUSMAN: I think you said last time that it probably hasn't been possible to root out all corruption in the mutation process. So where does that corruption happen then if it hasn't been possible?

CHAWLA: _The first thing about the corruption is if a farmer is unaware that they can't take money. That's the biggest challenge. You do not know, or even if you know, you don't have the confidence and, therefore, "Let me give the money." That's the first level of corruption. You go to a restaurant to have dinner and you give a tip. You give a tip because that fellow is looking at you. You say, "Fine, I ate some food there. Let me give a tip." It is an informal arrangement but this arrangement, for example in France, is very established. They expect money from you when you are leaving the restaurant._

                 Now similarly here, if you don't have that confidence or if the village accountant puts up some type of objection, which is not easy to do, I can tell you that, but this psyche works on the mind of those people. "Fine, I'm transferring my land. I have spent 10 hundred thousand rupees, why should I not pay 5000 rupees to this person?" So that's the problem. The fact that I have a queue now and the

fact that if you have to reject a mutation there has to be a very strong reason, the farmer can feel very sure. The number of mutations rejected is barely 5%, so 95% get approved.

Now, a revenue inspector also can't do it on whimsical grounds. He used to make money by not doing a case, not by rejecting a mutation. For example, if you are the seller and I am the purchaser, on what grounds will you reject? But the fact that he may not do anything was only possible on the manual system. It is not possible on a computerized FIFO system. There is no reason for him to fear. That all depends on the way a human mind works. What do you do?

HAUSMAN: Another thing I've been told is that although the time has become more reliable, it actually takes a little bit longer now to get a mutation, is that right?

CHAWLA: *Yes.*

HAUSMAN: Forty-five days instead of thirty?

CHAWLA: *Up to fifty days. But there is certainty. I think that is what is more important. I don't mind spending 50 days provided I know that it will happen after 50 days. Earlier you paid money to get it done on the same day, right? And if you were not paying money, it wouldn't get done even after ten years. The fact that my request has gone into the machine means that it is a matter of time before it will come out of the machine and my case will be approved. So I think the certainty is more important, if you ask me, than whether it happens in thirty days or whether it happens in forty days.*

HAUSMAN: The other question I had was about the people you worked with. Was there a kind of team working on this?

CHAWLA: *Yes. In NIC (National Information Center) there were about seven people who were working. There is a team, as far as writing the software was concerned. But I must say that on the implementation part, I was nearly alone. I just had two or three people at a very low level and actually, most of the time I was alone in the revenue department.*

HAUSMAN: Who were the people helping you?

CHAWLA: *There was one young man and there were two ladies who used to work with me who were my stenos, who used to type for me. But all the thinking that went into the project, because unfortunately there were new things happening in the country, I actually did work alone. Now there are three or four more people in the Bhoomi Monitoring Cell. So I have about seven or eight people there who are at a very low level, who maintain the system and do administrative work like answering letters coming from the field and things like that.*

HAUSMAN: I wonder if you could explain what's happening with the digital signatures and how they will change the process when they're fully implemented?

CHAWLA: *One thing is that the Information Technology Act of this country, enacted in the year 2000, mandates that any record that has to be kept in the system has to be digitally signed. Now what is happening is that we have data encoding that is in the form of a database. It is a Microsoft SQL server. We generate the RTC on the fly. Whenever anybody wants a copy we pick up those fields from the database and reproduce it on a sheet of paper called the RTC. The Information*

Technology Act does not recognize this method. They want us to create a record that is an RTC, in an external format, and get this signed digitally from the competent authority, which is the village accountant.

This is the way the system should be because the Act requires it. There is a reason behind this. The fact that it is now there in the database, any village accountant can tomorrow claim or make an excuse that he didn't know or never approved something that was wrong. He could have changed data at the back end in the database itself, by directly fiddling with the database—not through the Bhoomi application, but with the database, at the database layer itself.

Now the digital signature, when creating external documents, extended meta-language documents, will be signed by the village accountants. This will make these compliant to ITA 2000 and therefore you will be safe from the judicial side. You will be safe because people will not be able to make the excuse that somebody has fiddled with the data at the back end. It will be a very good thing to happen.

The third thing is that because it is digitally signed you will not, perhaps, be required to get a physical signature on the document any more—the advantage of the barcode that you have seen. You will not require any physical signature in Bhoomi and that is a very good thing to happen.

To summarize, on one side you require it for the law because the law requires it. On the other side there are other advantages, which will accrue out of this.

HAUSMAN: So, at the moment, when you go get an RTC from the Nemmadi telecenter for example, you then need to chase down your village accountant to get it signed?

CHAWLA: *Right. I issued directions that the village accountant must come to a telecenter once a day to sign whichever records are pending there for signature. Now there are 10,000 village accountants, we only have 800 centers. It's not really difficult. That is what is being followed. There may be breaches at many places where village accountants may not come. Then the telecenter operator has to chase them. At most of the places, the village accountants will come in each day and they will sign the records that are lying there. The printout has been taken from the computer and they will sign and give it to the person. After the digital signatures are in place, we will not require all these things.*

HAUSMAN: Whereas at the telecenters with the Bhoomi kiosks, the new village accountants can sign them immediately? It brings me to my next questions that are about Nemmadi. The first question is which revenue department documents you can actually get at a Nemmadi kiosk now?

CHAWLA: *I'm sure that one can get about 39 to 40 services.*

HAUSMAN: Are those all available at a Nemmadi kiosk now?

CHAWLA: *I don't think they're always available. In their defense, in the case of Bhoomi you already had the data of 20 million records—7 million farmers and all you had to take out was a copy of that. Now when you talk about these services, unfortunately we don't have a database. We don't know which human being belongs to which caste, what is his income and the different types of certificates––domicile certificate and things like this. So when he gives a request at the telecenter, that request reaches the Taluk center on the electronic system. Then*

at the back end, the physical work has to be done: verifying who that person is, how much his income, and what is his request. Then, the certificate is issued.

So unlike Bhoomi where you already have the data, in Nemmadi, you don't have the data for other services. You have to do it through a virtual process; you have to do field work. However, if anybody wants a re-issue of those records, they can be issued from the telecenters directly. If they have already been issued, they are there in electronic form. They are already there in a digital signature form. They can be issued off the shelf or off the counter directly.

HAUSMAN: Would some of those be what the village accountant signs when he comes every day to the telecenter?

CHAWLA: *No the digital signatures for these 39 services, most of the time, are done by the shirastedar government official because they're only empowered under the Act. So these signatures happen in a routine manner in the Taluk office where all of the shirastedars have their digital signatures.*

HAUSMAN: All shirastedars have digital signature cards already?

CHAWLA: *All of them.*

HAUSMAN: Can you describe how you changed the processes for all these 39 revenue documents in order to make it work when you put in your request at the telecenter?

CHAWLA: *The process really remains the same. In a manual system, what you would see happen is that the citizen would run after the village accountant or he would even go to the Taluk office—most of the time, go to the Taluk office to give the request. A letter would be sent to the village accountant—that this man would take to the village accountant to make his recommendations. Then, when the revenue inspector writes his recommendation, he would bring it back to the Taluk office and to get the certificate issued.*

Now he gives the request at the telecenter itself, and from there the request reaches the Taluk office where a printout of the request is prepared. Then it is given to the village official who then fills in the data and then gives it back to the Taluk office. So the process of field verification still remains the same; however, the citizen has now been de-linked from the process of certification. He doesn't have to run after the officials to get the certificate that he requires.

HAUSMAN: How does the citizen actually get the record in the end? Is it from the accountant?

CHAWLA: *It is at the telecenter, because they still sign.*

HAUSMAN: So he goes once to the telecenter and then he goes again. How does he know when it is ready?

CHAWLA: *As I said, the telecenters are now in villages. There is an uncertainty on when this record will be available. It may three days, or it may take four days. It is not like Bhoomi where you know after fifty days it will happen in FIFO. I was still not able to implement FIFO in Nemmadi because the system was still nascent; it was only two or three years old. I wish that after four, five, three years, we had put FIFO there so that if a request comes first it should be served first. The answer*

today is that anybody can see the web site, and that is the why the telecenter operator also looks at it when the citizen goes there and asks whether his record is ready or not. But there is no other way and there is no FIFO––that means that some records can remain pending for a long time.

HAUSMAN: I guess with Nemmadi you no longer have to chase down your village accountant. What other advantages are there for citizens?

CHAWLA: *It is a big service. Forty-two services put together is equal to one more Bhoomi. Bhoomi serves as a single service––what forty-two services put together do. That means that for their day-to-day work, citizens don't have to go to the Nemmadi centers. It is their virtual office. Nemmadi centers are like virtual offices of the government. They are the extended arm of the government. If the Nemmadi center works well, the government is working well. Now citizens just go to the center for all their services, for example, their old age pension. The physically handicapped, the can apply there on line for their pensions instead of going to a physical office. So there is a huge advantage.*

Now the Nemmadi centers are not just to be used for revenue department services. They can be used for all the departments' services. The problem is you have to put the back-end system in place. Unfortunately, that is not what is happening. I set up Nemmadi when I was secretary of e-governance. I had done these 39 services. Unfortunately after that, it has not grown; it has stopped there.

HAUSMAN: Is it fair to say then that for these services, Nemmadi has replaced the village accountant as kind of the "port of call" for these services? Now you just go to the telecenter instead of going to the village accountant, is that the main difference?

CHAWLA: *That's a critical difference. It is a critical difference. Because you have an electronic system, you have all the records in the system. Earlier when you used to issue manual certificates, you never knew how many certificates were issued and you could not hold a person responsible. All of those certificates are in the digital repository, which means that you can find out the history of any record and you can nail people who have made mistakes.*

The second thing, which is very critical, is that you can now issue the same certificates off-the-counter. For example, if you have a caste, the caste doesn't change with time so the second time I have to issue, I can issue it immediately. In a manual system I could never keep track of what I had issued. Many a time I was not consistent and I ended up issuing two different certificates to the same person. Now hopefully that mistake doesn't get done because I can search his name, I can find out what record was issued to him earlier and issue the same record now directly from the database.

HAUSMAN: Before the data was centralized on the Internet, if you needed some local land records here in the central office did you have to actually go to the Taluk office to get them?

CHAWLA: *Yes. But that was in 2003. After 2004, I think, the satellite base system came in place and we had a central database. But for one year, I think after that, although we had the central database the public did not have the advantage because there were no telecenters. So to answer your question, after 2003, we had access to the central data. It was also for disaster recovery. It was to ensure that even if the primary centers go down, you have a copy of the database. It was*

also helpful because you could run your MIS reports on the central database. It was not helping citizens then, but it started helping citizens since 2007.

HAUSMAN: Just to be clear, once more on the mutation process, it now happens in the same way everywhere? Is that right?

CHAWLA: *Everywhere. One of the advantages of bringing an electronic system is that now you have uniformity across the state; you don't have different systems anywhere.*

HAUSMAN: OK, that's all of my questions.

CHAWLA: *Good.*