Revenue and Disaster Management Department

3.6 Information Technology Audit on Computerisation of Land Record Project (Bhulekh)

Highlights

The primary objective of Computerisation of Land Record Project to ensure systematic maintenance and retrieval of land records, thereby providing prompt service to the general public was only partially fulfilled. The software "BHULEKH" suffered from deficiencies like inadequate system design and inadequate input, validation and security controls. The presence of duplicate and blank records for tenants and case numbers rendered the data incomplete and unreliable and the inconsistent dates made the audit trail deficient. Deficient system design necessitated manual interventions which in turn created scope for human errors and even manipulations.

Even after 20 years of taking up pilot implementation and 10 years of project implementation, deficiencies still exist in the system. As a result, the intended objectives have not been achieved to the extent envisaged and benefits were not commensurate with the expenditure of Rs 31.60 crore incurred as of July 2008.

❖ ***The Project BHULEKH, suffered from inordinate delays in the implementation and non-completion of digitisation of cadastral map and up linking project.***

(Paragraph 3.6.6.2)

❖ ***Deficient system design led to manual interventions leading to presence of incorrect rent and cess, deficient utilisation of the system planned and incorrect and irregular correction of land records.***

(Paragraphs 3.6.8.)

❖ ***Absence of input and validation controls led to presence of inconsistent and unreliable data like presence of records without tenant names, duplicate plots, inconsistent dates and even negative land area.***

(Paragraphs 3.6.9)

❖ ***Lack of security controls made BHULEKH unreliable.***

(Paragraph 3.6.10)

❖ ***To sum up not only the utility of BHULEKH was limited, its reliability to generate authentic ROR or other certificates was also low.***

3.6.1 Introductory

Computerisation of Land Records (CLR), a centrally sponsored project with cent percent assistance from Ministry of Rural Development, Government of India (GOI), was implemented in the State since 1988-89 with the objectives

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* Abbreviations used in this performance review have been expanded in Glossary of abbreviations at pages 234 to 238

of overcoming the systemic problem of inadequate and weak maintenance of land records, better implementation of rural development programmes, revenue administration by conferring legal status to the land record related documents, implementation of land reform policies, ensuring security to the land holders, redistribution of ceiling/surplus land, consolidation of holdings and updation of land records and issue of different certificates to the public through tehsils. The CLR with the development of a database of land records was intended to provide quicker storing, processing and retrieval of information. The Board of Revenue, Orissa (BOR) was the State implementing authority. As envisaged in the GOI's guidelines a State Level Steering Committee (SLSC) headed by the Member, BOR was formed for monitoring the progress of the project regularly during the period of implementation of the project. The CLR project consists of three major components (i) computerisation of record of rights (RORs), (ii) digitisation of cadastral maps and (iii) up-linking. The GOI released Rs 36.54 crore during 1988-2007 out of which Rs 31.60 crore was spent as of July 2008.

3.6.2 Organisational set up

Revenue and Disaster Management Department has a three tier system with the Department at the State Secretariat level as the hub, the Board of Revenue (BOR) headed by the Member assisted by the Director, Land Records and Survey (DLRS) and three Revenue Divisional Commissioners controlling almost all the matters relating to collection of revenue and disposal of revenue cases. The District Collectors and Tehsildars being the custodians of the record-of-rights (ROR) and cadastral maps were responsible for updation, preservation and maintenance of the same and were vested with the powers to initiate and dispose of mutation proceedings on land related matters.

3.6.3 Scope of audit

The scope of review included test check of records of the BOR, Cuttack, 22[1] out of 30 district collectors and 51[2] out of 171 tehsils from 2007 to May 2008 on implementation of the CLR project in the State (1988-2008).

3.6.4 Audit Methodology

Audit methodology included examination of different modules of Land Record Application Software (BHULEKH) designed by NIC with the help of MS-SQL Query Analyser. Records relating to the implementation of the project were also examined. The audit objectives and methodology adopted were discussed in an entry conference held (October 2007) with the BOR.

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[1]   Angul, Cuttack, Sambalpur, Jharsuguda, Jajpur, Mayurbhanj, Gajapati, Nuapada, Bolangir, Sundargarh, Keonjhar, Puri, Sonepur, Khurda, Dhenkanal, Ganjam, Nayagarh, Koraput, Kalahandi, Nawarangpur, Rayagada and Boudh

[2]   Cuttack, Narasinghpur, Salipur, Kishorenagar, Angul, Talcher, Sambalpur, Rairakhol, Jharsuguda, Lakhanpur, Jajpur, Sukinda, Baripada, Betnati, Gajapati, Nuapada, Bolangir, Sundargarh, Keonjhar, Kendrapara, Rajnagar, Daringibadi, Bhanjanagar, Buguda, Puri, Satyabadi, Sonepur, Binika, Khurda, Jatni, Bhubaneswar, Begunia, Bolagarh, Tangi, Dhenkanal, Kamakhyanagar, Chhatrapur, Khallikote, Aska, Nayagarh, Daspalla, Koraput, Kalahandi, Kesinga, Dharmgarh, Jaipatna, Nawarangpur, Rayagada, Boudh, Soro and Simulia.

3.6.5   Audit objectives

Audit objectives were to examine:

(i)   planning before taking up the project;

(ii)   economic and effective utilisation of funds received from the GOI and conformity of the same with the GOI guidelines and financial rules**;**

(iii)   application controls built into the application system;

(iv)   completeness, correctness and reliability of the data captured in the system;

(v)   security of the application and data;

(vi)   system of monitoring and evaluation of the implementation of the project and

(vii)   whether benefits predicted from the project have been achieved.

Audit findings

3.6.6   Project Management

3.6.6.1   Project Proposal

As per the GOI's CLR guidelines, a project proposal was to be formulated for approval of GOI before implementation of the project. No such approved proposal was available with the State implementing agency. Only a budget plan for the project was available with the DLRS.

3.6.6.2   Implementation of the project

It was seen that though the pilot on the entire project was started in March 1989 by the DLRS, there was a delay in not only the completion of the pilot project but also the CLR project itself. The pilot project in the district of Mayurbhanj, where the implementing authority was the Orissa Computer Application Center (OCAC), could only be completed in February 2007 (over 17 years of delay) involving an additional expenditure to the tune of Rs 49.67 lakh, negating the possibility of any benefit accruing from the pilot project to the CLR, which itself was rolled out by 2004 in four phases.

Similarly, Computerisation of Record of Rights (RORs) at tehsil level included, procurement of hardware/software for tehsils, site preparation, imparting training to the tehsil staff, development of application software and computerisation/ entry of initial ROR data. The GOI's guidelines stipulated completion of the project within three years of release of first installment by the GOI and the project was to be made operational within one year of release of funds by State Government.

Test check of records of 51 tehsils revealed

(a)   delay in release of funds of Rs 12.95 crore ranging from nine to 48 months for site preparation, procurement of software and hardwares,

(b) delay in completion of initial data entry by private firms from 10 to 72 months which was to be completed within 90 days from the date of work orders and

(c) development of 'BHULEKH' application software by the NIC by July 2003 instead of August 2000 resulting in postponing of actual operationalisation of BHULEKH in tehsils to July 2003.

Further, it was seen that the absence/ non-posting and frequent transfer of Assistant Settlement Officer and trained manpower attributed to accumulation of backlog of mutation cases in the tehsils for data entry. Thus, in 25 out of 51 test checked tehsils, ROR record correction and issue of ROR certified copies (CC) through the application were made possible only from 2005-06, even though, an additional sum of Rs 1.79 crore was released by the GOI to clear the backlog of data entry and start work online.

(i) The GOI's guideline required the Land Record Application Software (BHULEKH / e-BHULEKH) system to be developed with process reengineering and to achieve automation of entire process of land record transactions.

Incomplete automation resulting in continued dependency on manual system

In seven Tehsils[3], where the online-BHULEKH version was in operation, the case numbers were generated through computers only for mutation cases. In one tehsil (Dhenkanal) traditional manual procedure was still being followed even after online module was installed. Other cases (ROR and ROR certified copies) were being numbered manually.

In BHULEKH, the role of mutation module is in the form of correction of land records and issue of ROR (Patta) after the case was finalised manually on paper in the traditional manner. The information was fed into the computer when the case records were received by the Additional Settlement Officer/Additional Tehsildar in charge of computer cell along with the final order for record correction. This led to parallel operation of the land management system at tehsil level with the manual system in 39 out of 46 test checked tehsils where the online BHULEKH was not implemented.

(ii) The miscellaneous certificate module had the provisions to generate only caste certificates and residential certificates and did not have provision for generating other certificates like the ones for socially and educationally backward class (SEBC), legal heir, income, insolvency and certificate cases as provided in the Orissa Miscellaneous Certificate Rules, 1984 since Modules for the same were not developed.

(iii) Even though provision of issue of caste and residential certificate existed in BHULEKH, the same were issued manually typed through MS Word application in 39 tehsils because the module did not have link with the land record database.

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[3] Angul, Chhatrapur, Cuttack, Dhenkanal, Kamakhyanagar, Keonjhar and Talcher

The DLRS while admitting above deficiencies in the miscellaneous certificate module stated (June 2008) that suitable software was being developed and supplied to the tehsils.

(iv)   Uplinking was intended to build an extensive land information network by linking tehsils with Sub-divisions, district and State headquarter for proper monitoring of the CLR project.

Insufficient release of funds prevented completion of uplinking

On a test check of 22 districts, it was noticed that the work remained incomplete in six[4] districts and the same was yet to commence (July 2008) in three other districts (Puri, Jajpur and Nuapada). Further, hardware and software for the purpose was not procured and installed in district/sub-division data centres (July 2008) even though fund to the tune of Rs 4.19 crore released from the GOI were available.

(v)   The digitization of cadastral maps involved the processes of digitization of map sheets through specific software developed for the purpose and its integration with the land record data base (BHULEKH data base) to generate digitized sketch maps as and when ROR transaction incorporated in the land record database. GOI sanctioned Rs.1.21 crore (1998-2000) to take up digitization of cadastral map in four tehsils (Koraput, Rayagada, Salepur and Narsinghpur) on pilot basis and as per the GOI guidelines, the work was to be completed by the end of 2000. The project of the computerisation of cadastral map was commenced between August 1999 and March 2002.

It was seen that in all the four tehsils digitization of cadastral maps remained incomplete as of July 2008 due to delay in entrusting the work to the firms by DLRS, non-capturing of updated maps as the maps supplied to firms were not updated at tehsils, failure in establishing link of digitized maps supplied by the firms with the database (BHULEKH database), lack of supervision and monitoring by the departmental officials.

3.6.6.3   *Initial data entry*

(i)   It was noticed that in 7[5] test checked tehsils even initial data entry for 755 villages was not completed (July 2008) due to reasons like non-entrustment of work to the firm, over sight, damaged khatiyans, non-entry of data by the firms even though khatiyans were provided to them and lack of supervision by the concerned Tehsildars. As of now, the RORs relating to the above villages were being issued to the tenants manually.

(ii)   On verification of RORs in Bhubaneswar Tehsil, it was noticed that the tenant names in 71 RORs were not readable and the data entry operator had entered junk entries for the tenant names during initial data entry from June 1999 to August 2001. However, no effort was made to correct/validate such data either at the initial stage itself or even over the years.

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4   Sambalpur, Bolangir, Kalahandi, Rayagada, Nawarangpur and Koraput
5   Gajapati(570 villages), Sukinda(40 villages), Buguda(1), Khurda(46), Rayagada(64), Sonepur(31), and Soro (3)

(iii)   Test check of records of 51 tehsils showed that initial data entry was made in respect of 539 villages during the time of the settlement/consolidation operation as against the instructions of Government of Orissa. This necessitated re-data entry after final publication of RORs after the settlement resulting in wasteful expenditure of Rs.16.84 lakh.

3.6.6.4   Working environment

The GOI sanctioned Rs.1.50 lakh per tehsil for creation of tehsil computer cell (civil construction: Rs 70,000; air condition: Rs 30,000; electrical fittings: Rs 20,000; furniture and fittings: Rs 30,000). Visits to computer cells of 51 test checked tehsils revealed that 14 tehsil computer cells were functioning in poor working environment such as dilapidated buildings with cracks in the walls, water seepage from the roof, non-supply of three-phased electricity connection, absence of fire extinguisher and inadequate furniture. Due to these reasons, the systems often remained non-functional and in three Tehsils[6] there were accumulation of backlog of 62332 cases as of July 2008. Further, the existing systems in all the tehsils were not equipped with anti-virus software necessary to ensure security of land record data.

3.6.7   Manpower management

Mismatch in deployment of staff

As a measure to maintain continuity of the CLR project without any disruption, the State Government instructed (September 2000) all the district collectors that the trained staff in the tehsils engaged in the CLR project were not to be transferred or if transferred it was to be inter-tehsil. Further, as per the decision (December 2003) of the State Government, one Additional Tehsildar / Assistant Settlement Officer (ASO) was to be posted in each tehsil for holding overall charge of the computer cell and oversee the CLR project in respective tehsils.

In the test checked tehsils, there were instances of the computer trained senior clerks / junior clerks having been transferred to offices other than the tehsils. In 13 out of 51 test checked tehsils, the computer cells were functioning without computer trained staff, in four tehsils no ASO/Additional Tehsildar were posted. As a result, in ten tehsils there was accumulation of backlog and non-achievement of the objective of making CLR database online (July 2008). Further, it was seen that an amount of Rs 14 lakh was diverted from training cost for data entry and construction of training centre which could have been utilised towards imparting training to more tehsil staff so as to avoid the deficiency of trained personnel in computer cell of the tehsils.

3.6.8   System design

The GOI guideline stipulated development of land record application system with four important modules - (i) ROR certified copy module for generating certified copies of ROR, (ii) mutation module for correction of ROR and generation of ROR, (iii) miscellaneous certificate module for generating

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6   Soro (25142), Nayagarh(34875) and Daringibadi (2315)

miscellaneous certificates like residential certificate, caste certificate etc. and (iv) query module for retrieving various information as per requirement.

A test check was carried out in 51 tehsils. In 46 tehsils the database was made available to audit and in the remaining five the data could not be obtained due to power failure or absence of concerned staff at the time of audit. The results of the test check are as follows:

3.6.8.1   Rent and Cess calculations

BHULEKH did not have provision for calculation of rent and cess.

(i)   The calculation of rent is dependent on area of land and rate of tax. Analysis of database revealed that there was no master data relating to region-wise rate of tax. So while finalising mutation cases on sale or purchase of a plot, such rent calculation was done manually and then keyed in to the system from the case records prepared by the clerk for mutation.

(a)   It was seen that in 28 tehsils that there were mistakes in the total rent due to the incorrect initial data entry for total rent in 28385 number of cases. Further, in the absence of proper validation during data migration from dbase to SQL server the errors still existed in the database.

(b)   It was also seen that during subsequent transaction of these lands, when a portion of plot was transferred to a new khatiyan, rent was to be input manually in both old and new khatiyans. Due to inadequate system design for rent distribution between the old khatiyan and new khatiyans(s) 48178 errors crept in to the database as the DEO did not rectify the rent of the old khatiyan by oversight.

(c)   In respect of cess calculation, the system calculated it at the rate of 50 *per cent* instead of 75 *per cent*.

The above led to non reliance on the system for calculation of the rent and cess which was, therefore, being calculated and collected based on the manually maintained RORs. The wrong calculation and wrong cess as per the system, though, was exhibited to the public through the internet http://ori.nic.in/bhulekh.

3.6.8.2   Utilisation of system

As provided in the Mutation Manual, the history of the transactions was preserved by correcting the RORs using red ink. However, in the computerised environment, though the history of ownership of any land is available in the log files, no facility had been provided in the software to retrieve the history of land transactions. Further, it was observed that the software did not have any provision to view the details of 'Chhut Khata' as well. Thus, the Tehsildars could not use the computerised data in issuing the final ordeòr on mutation and had to refer to the manual records even though the data was available in the system.

3.6.8.3　　　*Land Record Corrections*

For making minor correction of the already updated records, record corrections were made using dummy case numbers/ blank case numbers/ existing case numbers etc. However, any correction to the vital land record data was to follow the process defined in the Mutation Manual by instituting a fresh regular case. This was not provided in the application.

3.6.9　　　*Input control and Validation control*

Input control ensures that the data received for processing are genuine, complete, not previously processed, accurate and properly authorised and data are entered accurately and without duplication.

IT applications may have further in-built controls which automatically check that data input is valid. Validation may also be achieved by manual procedures such as double checking input documents or review by a supervisor.

3.6.9.1　　　*RORs without tenant names*

Analysis of database of the 46 tehsils revealed that in 10 tehsils[7] there were 328 cases where tenant name did not appear in the ROR data containing plots of 269.633 acres of land. In the initial data these types of errors were in only 43 cases. As the BHULEKH software accepted blank tenant names due to absence of input control, these errors subsequently crept into the database.

3.6.9.2　　　*Allotment of duplicate plots*

Duplicate entries noticed due to data entry errors

Check of database of the 46 test checked tehsils revealed that there were 92662 duplicate plots in the same village. These included 2313 duplicate plots in the same Khatiyan (ROR). As per SRS, the plot No. was to be unique for each village. To an audit query the Tehsildars stated that some duplication was present in the source khatiyans from which data was initially entered and some due to double updation of the same transaction. The first type of error was made by the writer of the Khatiyans i.e. Amins and the second was a data entry and data updation error.

Further, during subsequent mutations after the settlement of land, the Tehsildars were to allot new plot numbers serially from the previous plot number of the series to the tenants. Analysis revealed that there were 23715 duplicate entries of such plots. On verification it was found that the software did not have any input control to check this kind of error. The duplicate entries of plots done manually by bench clerk were simply entered in BHULEKH and the wrong ROR was generated.

Thus, the deficient input control led to presence of duplicate plot numbers.

7　　　　Angul, Aska,Bolangir,Buguda, Cuttack, Koraput, Nawarangpur, Narsinghpur(255 - 246.6200),Salepur, Satyabadi

3.6.9.3   *Incorrect and inconsistent dates*

Analysis of the downloaded data of the test checked 46 tehsils revealed the following inconsistencies in dates like date of institution of cases and order dates. Due to lack of input control the vital date fields like case institution dates and dates when orders for correction were passed were blank in the database in 276270 and 366479 records respectively. Further, due to lack of validation incongruent dates like date of passing order before institution of cases were also allowed into the system in 2566 cases and case institution date were same as the date of passing order in 5408 cases. This led to presence of unreliable data in the system.

3.6.9.4   *Existence of negative land area*

Appropriate processing control with correct input ensures output accuracy. Check of database revealed that the land area after transaction had been stored with negative values in respect of 29 cases in nine tehsils[8] out of 51 test checked tehsils. On this the Tehsildars replied that these were initial data entry errors. The reply was not acceptable as the transactions happened during subsequent updations after computerisation. It was further seen that this happened where the plot was divided and the various transactions on the plot were carried out for an area aggregating to more than the total plot size. The system generated a negative plot to compensate for the excess area transacted for. The system should have, instead, had a validation to prevent entry for transaction in excess of the total plot area, which was absent.

3.6.9.5   *Duplicate and irrelevant case numbers*

As per the system requirement specification prepared by NIC and approved by BOR, the case number would be numeric and unique for a year. Analysis of database of the 46 out of 51 test checked tehsils showed that there were 27302 junk case numbers (Non-numeric) and 26641 duplicate case numbers in the database which indicated absence of input controls.

3.6.10   *Security*

Maintaining effective security in an IS environment is a continuous process. Maintenance of logs and audit trails coupled with the physical and logical access controls support a robust IS security system.

3.6.10.1   *Record correction*

It was seen in BHULEKH that there was no control over the input of the dates for record correction/ updation and it was totally dependent on the system date of the client machines and their regional setting where the data was entered. When there was computer battery (CMOS) failure of the server or any client, the system date changed to default date of the computer system and the data entered / record correction made in that system during that period had illogical

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8   Bhawanipatna(14), Bhubaneswar(2), Cuttack(2), Kamakhyanagar(1), Nayagarh(4), Nuapada(1), Rayagada(1),Sambalpur(3),Talcher(1)

dates. There was also no system of date synchronisation between the server and client.

As per SRS, record correction/updation by the Assistant Settlement Officer (ASO) was authenticated by the date and time stamp of the record correction field. There was no other log available in the system to identify the ASO who made the correction. An analysis of database revealed that in 116069 cases no dates were stored in the system even after corrections were made. Further, incongruent dates were also found in the system like dates prior to 1 June 1998 (before even initial data entry) in 15206 cases, dates before institution of mutation cases in 168 cases and dates before final order for corrections in 506 cases.

In the above situations, in case of transfer of ASOs, accountability of the actual record correction authority could not be ensured.

3.6.10.2 *Inadequate logical access*

Corrections to vital land record data was ensured by providing finger print scanners at tehsil level and the tehsils were provided with two such scanners each. Every updation to the database would require the finger print /password of the ASO of the Tehsil. As per system requirement specification (SRS), User ID in the database was to be saved as '3' after successful ROR correction by ASO. But analysis of database of 46 tehsils revealed that there were blank entries for the User ID in 44775 cases. On this, the Tehsildars stated that User ID was not saved in the cases where corrections were made through the client using password where there was no finger print scanner. Such use of password for record correction without using bio-metric device compromised access control, as bio-metric device ensured access to authorised individual only, especially, when two scanners were provided to ensure business continuity.

3.6.11 *Deficient web page*

As per GOI guideline, a web portal was developed for monitoring and supervision of the BHULEKH which provided ROR information to general public.

(i)   The web site used drop down lists to enable navigation through the site. The drop down list contained options in Oriya. It was seen that the website was only compatible to Microsoft Internet Explorer where the Oriya font was readable but could not be read in any other browser i.e. Netscape Navigator, Mozilla etc or other latest operating system like Window Vista.

(ii)   In addition to the above, the tenant name wise ROR search facility contained a drop down list where all the tenant names were populated without any order (ascending/descending). Selecting a particular tenant's name from the list for viewing his/her ROR was difficult. An alphabetical order in the drop down list could have made the internet experience easier for the user.

(iii)   It could also not be found as to how many users had made use of the website in downloading of the RORs which was free of cost.

(iv)   The number of tenants shown on the website was 2,60,09,447 whereas the number of households in Orissa as per the figures of the Census of India 2001 was only 77,38,065. Thus there was a risk that the system recognised one person as more than one tenant in the land record system. This called for unique identification of the land record holders, a system for which has not been planned.

(v)   The navigation to the map was not possible after having selected district, sub-division, tehsil, police station and village, although the hyperlink was available. This made the experience on the website as much less satisfactory.

3.6.12   Other points of interest

Non-accountal of certificates

For the purpose of making the computer cells of tehsils self sufficient, Government of India suggested for collection of user fee from the beneficiaries to generate adequate resources to meet the running expenditure of the system and sustain the computer system in the Tehsil. Accordingly, the State Government formulated (September 2005) the policy for collection of user fee from the beneficiaries for issuing computerised ROR, miscellaneous certificates and RORs etc. The tehsildars collected the user fee as per the instructions. But the BHULEKH did not have the provision to generate the account of the amount collected against the issue of ROR and the other miscellaneous certificates.   Scrutiny of records of 51 test checked tehsils revealed that there was discrepancy among the figures recorded in the copy registers maintained to register the number of applications received per day, cash book and the monthly progress report submitted to district collector for onward transmission to the BOR indicating possibility of revenue leakage in collection of user fee. In Angul tehsil where online BHULEKH was operational, it was noticed that number of ROR issued and accounted for in the cash book was lesser than the number reflected as issued in the BHULEKH database. Similar was the case in Jharsuguda tehsil for issue of miscellaneous certificates. The details are below:

Sl. No.	Name of the Tehsil	Type of case	Period	Number of cases recorded in database	Number of cases against which user fee was collected as per cash book/MPR
1	Angul	ROR Certified Copies	April 2007 to December 2007	4827	4296
2.	Jharsuguda	Miscellaneous Certificates	July 2006 to August 2007	2334	1135

While the Tehsildar, Angul stated that due to power failures, printer problems etc manual copies were issued even though data had been fed to the computer and no user fee were collected. The Tehsildar, Jharsuguda stated that the matter would be investigated and action would be taken accordingly. The reply of the Tehsildar, Angul was not acceptable since data entry was to be made only after collection of user fee which should find place in the cash book

figure. Further, in case of issue of manual ROR, the data was not required to be fed into the system.

3.6.13   Conclusion

The primary objective of CLR project to ensure systematic maintenance and retrieval of land records, thereby providing prompt service to the general public was only partially fulfilled. The software "BHULEKH" suffered from deficiencies like inadequate system design and inadequate input, validation and security controls. The presence of duplicate and blank records for tenants and case numbers rendered the data incomplete and unreliable and the inconsistent dates made the audit trail deficient. Deficient system design necessitated manual interventions which in turn created scope for human errors and even manipulations.

Even after 20 years of taking up pilot implementation and 10 years of project implementation, deficiencies still exist in the system. As a result, the intended objectives have not been achieved to the extent envisaged and benefits were not commensurate with the expenditure of Rs 31.60 crore incurred as of July 2008.

3.6.14   Recommendation

- The process of the land record management should be automated to minimise manual interventions.

- Incomplete works like the linking of databases, cadastral maps and the unlinking from individual tehsils should be completed in a time bound manner.

- The input and validation controls should be reviewed and built in to the system to ensure data integrity and reliability.

- Extensive training should be imparted to more operators as well as staff dealing with mutation who are to use the system.

- Adequate access control along with logs and audit trail should be planned for the varied users. Up-to-date antivirus packages may be provided to all centers.

- A provision to uniquely identify the tenants with their respective holdings may be evolved and built into the system.

- Wide publicity should be given so that common man is able to make use of the facility, especially through internet where no fee is charged for downloading ROR and the same could be used for the varied purposes of the users.