

CHAPTER III COMPREHENSIVE PERFORMANCE REVIEWS

Information Technology Audit of DotSoft package of Bharat Sanchar Nigam Limited

Highlights

- **The integrated package could not eliminate unaddressed bills with the result that bills worth Rs 39 crore were lying in the database in 33 SSAs of eight telecom circles from the year 2000 onwards.**
(Paragraph 3.5.1)
- **The package did not have checks to ensure whether changes in exchange capacity, tariff and interest rates had been regularly updated. This resulted in short billing of rentals amounting to Rs 42.68 lakh, short billing of installation charges totalling Rs 30.19 lakh and excess payment of interest of Rs 7.55 lakh.**
(Paragraph 3.5.2, 3.5.3 and 3.5.4)
- **No audit trail was available for cancelled bills.**
(Paragraph 3.5.6)
- **The package did not have any provision for checking of unbilled trunk call tickets, which resulted in tickets worth Rs 37 lakh lying unbilled in eight telecom circles.**
(Paragraph 3.6.1)
- **The package did not have any provision for reconciliation of calls metered in the telephone exchanges and actually billed for particular billing cycles, so as to prevent leakage of revenue.**
(Paragraph 3.6.2)
- **There was no provision in the package for calculation of rent on pro-rata basis.**
(Paragraph 3.6.5)
- **System resources were not utilised for immediate disconnection of telephone connections in five SSAs under the Gujarat, Karnataka and Orissa Telecom circles which led to accumulation of arrear bills of Rs 1.17 crore.**
(Paragraph 3.7.2)
- **Sub-ledger accounting was being done manually and the package was not being utilised.**
(Paragraph 3.7.3)

➤ **No monitoring measures were in place to prevent data manipulation and tampering.**

(Paragraph 3.8.1)

➤ **The Company did not have any Information Technology security policy or a documented disaster recovery and business continuity plan.**

(Paragraph 3.8.2 and 3.8.3)

3.1 Introduction

The DotSoft package, introduced in September 1998, is an integrated telecom database system comprising modules for commercial services, billing services, accounting services, fault repair services and directory enquiry service. It is designed to make the billing of basic telephony services of BSNL fully computerised.

DotSoft was developed in-house by the Department of Telecommunications (DoT) at the Software Development Centre of the Office of the Chief General Manager, Andhra Pradesh Telecommunications Circle, Hyderabad. It was approved by the Telecommunication Engineering Centre (TEC), New Delhi, for implementation all over India from 1998 onwards. At present, the package is functioning in 76 Secondary Switching Areas (SSAs) under 13 telecom circles out of a total of 332 SSAs in 26 circles of the Company.

The package, which functions in a Client/Server environment, runs on the Oracle Relational Database Management System (RDBMS) and the UNIX and Windows Operating Systems (OS).

3.2 Scope of Audit

The audit of this package was conducted during April 2003 to July 2004 covering the period from September 1998 to July 2004 in 35 SSAs of 10 circles¹. The main objective of this audit was to examine the effectiveness of the functioning of the package, maintenance of data integrity, incorporation of rules and regulations as per codes and manuals and also to evaluate and test the effectiveness of general IT controls specific to the computerised database system operated by the Company, ensuring non-leakage of revenue.

3.3 Organisational setup

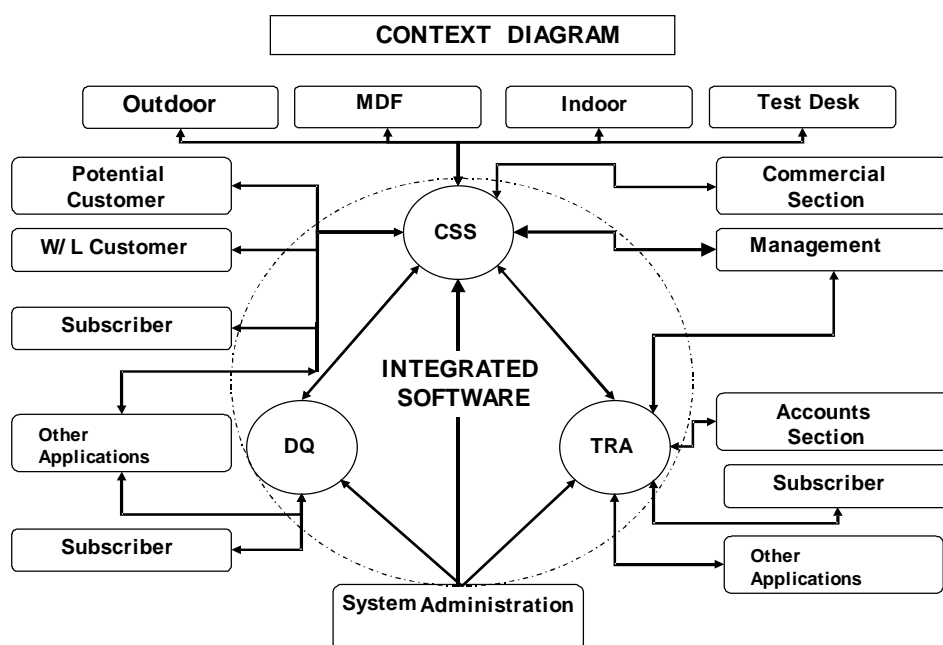
At the apex level, the Director (Finance) is the head under whom the Senior Deputy Director General (TRF) monitors the functioning of the General Managers of the various circles. The Telephone Revenue Billing and

¹ Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Orissa, Punjab, Tamil Nadu, Madhya Pradesh, Uttaranchal and Uttar Pradesh (West) circles.

Accounting (TRBA) wing functions under the heads of SSAs, who function under the heads of the circles, assisted by the General Managers (Finance/Telephone Revenue Accounts).

3.4 Outline of the package

The functioning of the various modules of the package and its integration are as shown below:-



*CSS – Commercial Services Section ; DQ – Directory Enquiry ; TRA – Telephone Revenue Accounts
MDF – Main Distribution Frame ; W/L – Wait listed
(The Commercial Services Section interacts with the customer, TRA deals with the billing functions and DQ deals with Directory Enquiry functions of the customer queries. All these are handled by a single package)*

The Commercial Services Section of the package interacts with the customers and the subscribers. Once a customer applies for a telephone connection, an Advice Note is issued by the Commercial Section for installation of a new telephone connection after conducting a feasibility study. The Advice Note flows from the Commercial Section to the Outdoor for checking of wires and cables, then to the Main Distribution Frame, Indoor and Test Desk where the line is activated in the telephone exchange. The Commercial Services Section, Directory Enquiry and Telephone Revenue Accounting modules are all inter linked and all activities can be viewed from any terminal. The system administrator is the overall incharge of the computerised system.

During the course of audit (April 2003 to July 2004), a number of deficiencies were observed in the DotSoft package. The principal ones are discussed under the broad categories of billing deficiencies, package related mapping deficiencies, non-utilisation of package facilities and IT security.

3.5 Billing Deficiencies

3.5.1 Deficiencies in handling unaddressed bills

The complete details of each subscriber such as name, address, etc., are there in the Subscriber Record Card (SRC) which is the master data. The bills which remain incomplete due to want of these details, are termed unaddressed bills. These details are entered into the SRC on receipt of the completed Advice Note. An unaddressed bill implies that only call charges are being billed and rentals are not being charged for want of addresses as different rentals are levied for urban/rural subscribers.

In the computerised environment, DotSoft is an integrated package running on a Local Area Network, where the electronic flow of the Advice Notes is controlled by the system itself. The system can track the flow of Advice Notes from the Commercial Office, Outdoor, the Main Distribution Frame, Indoor and the Test Desk, which indicates the different phases that the Advice Note is passing through². Hence the concept of unaddressed bills should not arise, as the complete data pertaining to a subscriber is already available in the system.

Unaddressed bills valuing Rs 39 crore were lying in the system

However, test-check during the period (April 2003 to June 2004) of database of 33 SSAs in eight telecom circles, revealed that unaddressed bills amounting to Rs 39 crore were lying in the system from the year 2000 onwards, as detailed in Appendix-11. Audit also observed that once an addressed bill is generated for a particular telephone number, the package does not have an automatic provision for cancellation of unaddressed bills. This indicated that the Company had so far not formulated any mechanism for monitoring/reviewing the continuation of unaddressed bills for the last four years.

On this being pointed out the Andhra Pradesh, Madhya Pradesh, Tamil Nadu and Uttar Pradesh (West) circles replied (January to June 2004) that unaddressed bills were being generated mainly due to non-cancellation of unaddressed bills after creation of the master data, non-completion of Advice Notes in the package, non-receipt of completed manual Advice Notes in TRA section, data pertaining to the old package lying unmatched and issue of manual Advice Notes.

The replies were not tenable because the package has a procedure for cancellation of unaddressed bills manually once the bills are treated as addressed. The issue of Advice Notes, allocation and completed Advice Notes is on-line, and the data pertaining to each subscriber is available in the system. The migration of data from the old package to the new package should have been carried out to ensure that there were no unaddressed bills.

² By using COMIT - Commercial Office (C), Outdoor (O), the Main Distribution Frame (M), Indoor (I) and the Test Desk (T)

3.5.2 Short-billing of rentals due to failure to update database

The package calculates the rental from the data entered into the relevant data tables, i.e., exchange capacity and rental to be charged. The changes in exchange capacity and tariff are fed into these data tables. Rent and installation charges are calculated by the package based on the exchange capacity. Company rules stipulate that rentals for rural exchanges having capacity of less than 1000 lines and of 1000 lines and above are to be charged at Rs 110 and Rs 220 respectively for bi-monthly period with effect from February 2001.

The package did not calculate rent based on increase in exchange capacity due to non-updation of the increase in the system

It was observed in the course of audit that though the exchange capacity had been increased to 1000 lines and above, the package was not calculating rent based on the increased exchange capacity, as the relevant updation pertaining to the exchange capacity had not been carried out. Short-billing could have been avoided had the data on increased capacity been provided by the exchanges. Audit observed (December 2003) that an amount of Rs 40.72 lakh in three SSAs of Andhra Pradesh, Rs 1.12 lakh in one SSA of Uttaranchal and Rs 0.84 lakh in one SSA of Uttar Pradesh (West) Circles, had been short billed.

3.5.3 Installation charges

Company rules provide that installation charges for rural subscribers in respect of new telephone connections, for an exchange having capacity of 500 lines and above were to be charged at Rs 300 upto April 1999 and at Rs 800 from May 1999 onwards. The charges are calculated by the package from the data entered in the relevant tables.

Installation charges were calculated by the package at old rates due to incorrect data fed into the system

Test-check by Audit in four SSAs of the Andhra Pradesh Circle, during the period December 2003 to February 2004, revealed that installation charges at the old tariff of Rs 300 were being collected even after increase in the exchange capacity, resulting in short billing of installation charges to the tune of Rs 30.19 lakh. This was due to incorrect data fed into the system.

On this being pointed out by Audit, the Chief Accounts Officer (CAO)(TRA-I) of Vijayawada SSA, while confirming the fact of short billing, replied (December 2003) that the amount was being recovered.

3.5.4 Excess interest paid on telephone deposits

Subscribers are eligible for interest on Own Your Telephone (OYT) and Non-OYT deposits made by them, at the time of registration of new phone connections. The interest is admissible as per the rate fixed by the State Bank of India, from time to time. The revision of interest rates, needs to be immediately entered into the system, failing which the calculation would be done by the package at the pre-revised rates, which may lead to excess interest to the subscriber.

Interest rates on telephone deposits were not revised periodically in the system

Audit scrutiny (January 2004) revealed that an excess amount of Rs 2.71 lakh and Rs 4.84 lakh towards interest was allowed in the subscriber bills in the Punjab and Orissa Circles during the period September 1995 to July 2004, as the Company failed to update the revised SBI interest rate in the system from time to time.

3.5.5 Discrepancy in Meter Reading

A computerised billing package should have in-built controls to detect any variation in meter-reading of a telephone, when the exchange data in terms of calls made by a subscriber is downloaded. The Closing Meter Reading (CMR) of the previous bill date and the Opening Meter Reading (OMR) of the current bill date of each DEL³ should be the same, for billing purpose. Any variation on the positive side will lead to loss of revenue.

Test-check by Audit during the period (January 2004 to July 2004) of the billing database of the Gujarat, Karnataka and Uttar Pradesh (West) Circles, revealed that there was a variation between the OMR of the current bill date and the CMR of the previous bill date in 25,706, 151 and 10,156 cases in these circles.

The package lacked input controls for detecting variations in OMR and CMR

This should not occur in a computerised environment, and in case of changes in telephone indicators, the reasons should be available in the database. The package lacked proper input controls for checking any variation in OMR or CMR, while accepting the data for processing of Local Call Charges (LCC).

3.5.6 Cancellation of bills

A computerised billing system, should have proper audit trails of bills generated and cancelled, so that the reasons for cancellation of bills can be easily traced. This is vital to the management for analysis of reasons and also serves as a check against fictitious cancellation. Hence database should have the complete particulars pertaining to authorisation of bills cancelled among other documentation.

No audit trail was available in the system for cancelled bills

On review of cancellation of bills in the database during the month of April 2004, it was noticed that in the Uttar Pradesh (West) Circle, 3,283 bills amounting to Rs 84 lakh for the period April 2003 to September 2003 and in the Rajasthan Circle, 117 bills amounting to Rupees five lakh were found cancelled. Similarly, in Tamil Nadu and Uttaranchal Circles, 15,559 and 31 bills were cancelled. No indication was available in the database as to why these bills were cancelled.

In the Tamil Nadu Circle, it was also observed that almost in every billing cycle from January 2003 to December 2003, between 100 and 500 bills were

³ DEL – Direct Exchange Line

cancelled after issue. On certain occasions, more than 1000 bills also had been cancelled.

The DotSoft package itself takes care of all commercial activities and there is no manual interface right from registration to issue of bills and therefore the cancellation of bills, after their issue, should not arise. In the Tamil Nadu Circle, analysis revealed that in about 1,400 bills issued in 2003, bills where the difference in old value and new value was greater than Rs 10,000 had been cancelled and no reasons for cancellation were found available in the system. However, the reasons and the records for cancellation which were called for were neither provided nor a reply was given.

3.5.7 Unavailable master data and resultant non-billing

A computerised billing database should have the complete details of a subscriber i.e., name, address, telephone number etc., which is called the master data. The bills are generated and issued on the basis of the available master data.

Non-creation of master data led to Rs 2.40 crore lying unbilled

Audit scrutiny of the database revealed that in one SSA each of the Uttaranchal and Uttar Pradesh (West) Circles an amount of Rs 1.38 crore was lying unbilled for the period September 1997 to July 2004 on account of master data not being created in the system. It was also observed that in the Karnataka Circle (July 2004) an amount of Rs 1.02 crore for the period from October 2000 to November 2002 remained unrealised.

On this being pointed out, the Management replied (July 2004) that the details of the subscribers were not available and efforts were being made to trace the relevant master data. This showed that the data lying in the system was not being reviewed.

3.6 Package-related mapping deficiencies

3.6.1 Non-provision for checking of unbilled trunk call tickets

Trunk call booking is a service extended to subscribers at their request, and the charges thereof are included in the consolidated bills of the subscribers as per the billing schedules. The billable trunk call tickets from the exchanges are received in the Telephone Revenue Accounting (TRA) branch for feeding in the package and inclusion in the periodical bills.

The package did not have provision for valuing trunk call tickets booked from STD PTs

Audit analysis of the database (April 2003 to July 2004) showed that in eight telecom circles, trunk call tickets valuing Rs 37 lakh (Appendix-12) were lying unbilled, due to the trunk calls being booked prior to creation of the master data (details of subscriber not entered in the system) and calls were booked from Public Telephones (PT) having Subscriber Trunk Dialing (STD) facility,

though there was no provision in the package to bill these tickets while processing the bills of STD PTs.

In reply, the Deputy General Manager (DGM)(F&A), Andhra Pradesh Circle, stated (February 2004) that the SSAs had already been asked to bill the trunk call tickets after verification and that provision existed in the finalisation module to check the trunk call tickets which were lying unbilled.

The reply of DGM (F&A) is not tenable as the package does not generate any error report for unprocessed trunk call tickets at the time of generating the bills. Though provision was available in the package for checking unbilled trunk call tickets, it was not being utilised and the Company had not taken steps to modify the package for billing of trunk call tickets in respect of STD PTs.

3.6.2 Non-provision for reconciliation

The exchange data which contain the number of calls made by the subscriber, are transferred to the DotSoft package through tapes/cartridges. Once the bills are processed and generated, proper controls should be in place to reconcile the exchange data in terms of number of calls with actual calls that have been billed by the package for a particular billing cycle. During manual billing, reconciliation of the total calls generated from exchanges with the total calls billed was done, along with reconciliation between the actual bills issued (bill register) and charges due to be claimed from the subscriber through documents such as Rent Control Register, Local Call Charges, Trunk Reconciliation Register, Supplementary Bill Register etc.

The package had no provision for reconciliation between metered and billed calls

Test check by Audit (February 2004 to July 2004) revealed that in the Andhra Pradesh, Kerala and Uttar Pradesh (West) circles, no such reconciliation procedure was available in the package. Absence of this reconciliation procedure gives scope for leakage of revenue and further showed that the system had not been properly designed.

While accepting the contention of Audit, the Andhra Pradesh Circle stated (February 2004) that a mediation device would be required to link the system to the switch (exchange), till then, as an interim measure, Accounts Officer (AO) (TR) could obtain bulk meter reading from the exchange and compare it with the reports generated in DotSoft.

The above showed that reliance was being placed on manual intervention and no efforts had been made to rectify this deficiency persisting in the package in order to ensure that revenue leakage possibilities were plugged.

3.6.3 Off-line billing of ISDN/Non-directory items

Non-directory items like Private Wires, Non-Exchange Lines, Circuits, etc., are services provided by the Company to commercial customers. The revenue from these services should also be handled by the package, which will result in its

computerised billing and accounting becoming complete in its coverage of subscribers.

The package did not have provision for billing non-directory items

In all the circles, the activities involved in non-directory items were being done manually. On this being pointed out (October 2003), DGM (F&A), Andhra Pradesh Circle replied (February 2004) that inclusion of billing activities pertaining to non-directory items involved extensive software development. The reply shows that computerisation was being done in a piece-meal manner and all the billing activities were not being processed through the package. This defeated the very purpose of having an integrated billing software.

3.6.4 Non-integration of Fault Repair Service and Directory Enquiry modules

Though there was a provision to integrate Fault Repair Service (FRS) in DotSoft system, Audit observed (November 2003 to April 2004) that the same had not been installed in the Tamil Nadu, Rajasthan, Maharashtra and Madhya Pradesh circles. Similarly, Directory Enquiry (DQ) modules were yet to be integrated in the Madhya Pradesh Circle even after one year of operation of DotSoft package.

Fault Repair Service and Directory Enquiry modules were not integrated

The system also did not have a provision to give automatic rebate to the customer in case of faults not being set right within specified time. This defeated the very purpose of an integrated package, and also the Company's objective of establishing a customer-friendly approach.

3.6.5 Lack of provision in the package for calculation of rent on pro-rata basis

Company rules stipulate that free calls are to be provided to a telephone subscriber. These free calls are different for urban subscribers (60 free calls) and for rural subscribers (120 free calls). When a subscriber transfers his telephone connection from an urban area to a rural area or vice-versa, the free calls are to be allowed proportionately.

The package lacked provision for proportionately calculating free calls and rent

It was noticed (October 2003) in the Andhra Pradesh Circle that when a subscriber shifted from an urban area to a rural area, the package was processing the bill for the subscriber as per the status on the date of issue of bill instead of calculating the pro-rata rent, free calls and local call charges applicable from time to time (i.e., splitting the period prior to category change and after change of category). On this being pointed out, while accepting the facts, DGM (F&A), Andhra Pradesh Circle, stated that the modification of the software was in process.

3.7 Non-utilisation of package facilities

3.7.1 Loss of potential revenue due to delay in provision of new phone connections

Advice Note is issued by the Commercial Section for opening a new telephone connection after feasibility studies are conducted. Once an Advice Note is issued, the Company rules state that a telephone connection should be installed within seven days. The rules also stipulate that the Company has to pay interest to subscribers on the deposit made for a new telephone connection till its installation. DotSoft being an integrated package for commercial, engineering and TR billing activities, any delay in the various processing stages of the Advice Note can be tracked online.

The package lacked provision for reconciling Advice Notes issued and received

Audit noticed during the period April 2003 to July 2004 that there was delay ranging from eight to 823 days in 1,09,559 cases (Appendix-13) in eight SSAs in providing new phone connections resulting in potential loss of revenue. The delay was also due to the fact that there was no provision in the package for reconciliation of Advice Notes issued and received. The occurrence of delay reflected non-utilisation of the online tracking aspects available in the package in a Local Area Network (LAN) environment.

3.7.2 Non-utilisation of computerised facilities for disconnection

Company rules provide that a telephone bill should be paid within 15 days from the date of issue of the bill. In case of non-payment, the telephones in respect of individual subscribers are liable to be disconnected on the 40th day.

Non-utilisation of facilities for speedy disconnection led to accumulation of arrears of Rs 1.17 crore

Audit noticed (April 2003 to July 2004) that in three SSAs of the Gujarat Circle, in one SSA of the Karnataka Circle and in one SSA of the Orissa Circle, subscribers continued to avail of telephone facilities despite non-payment of bills ranging from 6 to 24 months (3 to 12 billing cycles), which led to accumulation of arrears of Rs 1.17 crore. Also in respect of Itarsi SSA of the Madhya Pradesh Circle and Davengere SSA of the Karnataka Circle, it was noticed by Audit that there was delay in generation of disconnection list.

The package was setup in a network environment and the disconnection list processed by the package could be viewed online through the computer placed in the exchange (Test Desk). Hence there should not have been any delay in disconnection, which showed that the computerised facilities available were not being utilised.

3.7.3 Sub-ledger (accounting function) not being utilised

A Sub-ledger account is a progressive account and shows the outstanding amounts brought forward, the amounts billed during the month, the amounts recovered, cancelled, written off, etc. during the month and the balances carried

over. Separate sub-ledger accounts are to be prepared in respect of Telephone Charges and Deposits. The package processes the sub-ledger on the basis of the data available i.e., bills issued, bills received, outstanding list, etc., in the system. The sub-ledger module performs the accounting functions of the various activities processed by the package and as such it should not be amenable to manual intervention. Such intervention would have adverse implications on the integrity of the package.

Sub-ledger accounting facilities available in the package were not utilised

Audit noticed (June 2003 to July 2004) that in Gujarat, Orissa, Madhya Pradesh and Uttaranchal circles, the sub-ledger accounting was being done manually and the system facilities were not being fully utilised. In the Maharashtra Circle, though the system facility was being utilised, there was discrepancy between the ledger figure and the outstanding list.

On this being pointed out, the CAO (Telephone Revenue), Madhya Pradesh Circle, replied (January 2004) that the manual processing of the sub-ledger could be avoided only after upgradation of the DotSoft versions, which was not possible on account of the huge investment required in upgrading to higher versions of OS and Oracle RDBMS. The AO (TR) of the Maharashtra Circle stated (June 2003) that the matter had already been brought to the notice of the Software Development Centre at Hyderabad.

The replies were not tenable as sub-ledger processing is an integral part of the package, and it does not depend on the version. This is further testified by the fact that the sub-ledger facility was being utilised by the Maharashtra Circle. Manual sub-ledger accounting only showed that the objectives of computerisation had not been met.

3.7.4 Discrepancies in MIS and actual DELs billed

In every SSA, exchange-wise monthly Management Information System (MIS) statements in respect of equipped capacity and working lines are prepared. Bills are generated through the package for the working lines. As such, there should not be any difference between the MIS data on working lines and working lines for which bills are generated through the package. Otherwise, it would give scope for leakage of revenue.

Differences existed between MIS data and database data

Audit scrutiny (April 2003 to July 2004) of the billing database in five telecom circles revealed that there was a difference of 45,119 DELs (Appendix-14) in a bi-monthly billing period between the number of working lines as per MIS and number of DELs billed as per the DotSoft package. This indicated that all the billing particulars were not available in the package and the data available in the system were not being regularly reconciled with the MIS statement.

3.8 Information Technology Security related issues

3.8.1 Lack of system integrity permitted data manipulation and tampering

Computerised system should have a provision for exercising complete control over the activities pertaining to the data to be entered, how it is to be fed, where it should be stored etc., as the package would be relying on the data for starting its processing and billing activities. RDBMS environment has the tools to monitor all the activities of the various users. These activities are recorded in the system log files.

Changing of data downloaded from exchanges indicated lack of system security measures

In the DotSoft package, the data from exchanges are downloaded into the relevant data tables through tapes/cartridges. Audit scrutiny (April 2004) of the database in Orissa and Rajasthan Circles revealed that when the data from the exchanges were transferred to the billing package, the exchange data were being reconfigured⁴ in respect of unaddressed bills. Consequently, the bills could not be generated for subscribers/telephone numbers whose data had been reconfigured.

In the Orissa Circle, it was also observed that the reconfigured data⁵ of unaddressed bills were worth Rs 7.86 crore, which the package could not process. This showed that there was no monitoring mechanism to review the system log files, the number of tables created and the activities of the System Administrator to ensure system integrity.

3.8.2 No Information Technology security policy

BSNL did not have any Information Technology security policy

It is imperative that an organisation which uses Information Technology (IT) tools on a large scale, should establish an IT security policy which is normally expressed in the form of a concise narrative. This would contain a definition of general and specific responsibilities for all aspects of information security and an explanation of the process for reporting suspected security incidents. There should be a monitoring mechanism for compliance with the policy and also to ensure that the policy remains upto date, keeping pace with the latest developments. Security policy should be made available to all employees responsible for information security, as the Company has a huge database with commercial value which is accessed in a LAN environment. It was, however, noticed that the Company had not framed any IT security policy.

⁴ The data were downloaded from the exchanges into the main tables. These tables were directly accessed and data pertaining to unaddressed bills were transferred to duplicate/dummy tables created in the system.

⁵ Dummy table.

3.8.3 Lack of adequate disaster recovery and business continuity plan

BSNL had no documented disaster recovery and business continuity plan

BSNL is dependent on its computerised billing package for accounting, billing and realisation of revenue dues against services rendered by it to the customers. The computerised system is the backbone of its revenue stream and a critical tool that works along with its internal controls. This has a major impact on the Company's operations viz., capacity utilisation, resources allocation, provision of services, customer care, realisation of revenue and correct accounting thereof. In the event of human error, failure on account of electric and magnetic fluctuations, natural calamities or the computerised system crashing, all its activities would be affected, which would have adverse impact on a key aspect of the Company's business process.

Audit observed (April 2003 to July 2004) that the Company did not have a documented disaster recovery and business continuity plan which would ensure that its activities are carried on without any delays and business processes are not affected in the event of occurrences like natural calamities, etc.

3.8.4 Inadequate password access controls

As per the internationally accepted standards and also as per the computer security guidelines issued by the Government of India, it is imperative to build adequate controls in any IT system. Computer password, which is a key ingredient of such controls, should be alphanumeric with at least eight characters in length. Normally the system should also have a limitation on multiple sign-ons, and there must be password-protected screen-savers for control of unattended terminals.

The package accepted passwords not in conformity with required standards

It was observed in Audit (July 2003) that the access controls in DotSoft application were inadequate, exposing the system to serious risks. There was no clearly defined policy available with the SSAs regarding monitoring of access by different users, change in passwords, password length etc. Some of the short-comings noticed were: the system was accepting even single character passwords, the passwords were not changed since their creation, the user-ids and passwords were not changed even after transfer of personnel, there was no limitation on multiple sign-ons and there were no password protected screen savers for control of unattended terminals. All of this resulted in scope for unauthorised manipulation of data and adverse revenue implication for the Company.

The matter was referred to the Ministry in September 2004; its reply was awaited as of November 2004.

3.9 Conclusion

Audit of the DotSoft package revealed that all the activities of the integrated package were not being used/implemented. There was no review mechanism to monitor the functioning of the package. Deficiencies existed in the package,

such as non-billing, short-billing, non-reconciliation, non-working of various modules, gaps in coverage of all subscribers etc. These facts indicated that the objectives of computerisation had not been fully achieved.

3.10 Recommendations

- In order to improve BSNL's billing process, the DotSoft package should be redesigned to take care of un-addressed bills, ensure regular updation of data in tables in respect of tariff changes, address the issues of discrepancies in meter reading, etc. The package should ensure that proper audit trails are created by the system to ensure that changes are duly recorded and authorised.
- The package needs to address issues of non-reconciliation since it has revenue implications for BSNL. Accordingly the package should be redesigned to reconcile calls downloaded from exchange and billed. It should also generate all MIS reports so that reliance on manual methods is avoided.
- There should be a mechanism to control and monitor the activities of Data Base Administrator. Internal systems audit should be carried out regularly, in order to ensure that confidentiality and integrity aspects of the IT system are not put to risk.
- Proper disaster recovery and business continuity plan and an IT Security policy should be framed and made available to all the SSAs and staff.