

CHAPTER III
Performance Audit of Billing and Customer Care System in
Mahanagar Telephone Nigam Limited

HIGHLIGHTS

- **The Company procured a new Billing and Customer Care System (B&CCS) at a time when a convergent billing system was scheduled to be launched**
(Paragraph 3.10)
- **MTNL failed to take over B&CCS even after 18 months of its installation resulting in complete dependence on the vendor for its operations**
(Paragraph 3.11.1)
- **The Company did not sign any non-disclosure statement with the vendor but has given them full access to the database**
(Paragraph 3.11.2)
- **Customization of B&CCS was not done properly leading to problems in revenue realization**
(Paragraph 3.12)
- **The Company did not implement the credit control module in B&CCS resulting in accumulation of outstanding dues and possible loss of Rs 40.15 crore.**
(Paragraph 3.12.1)
- **B&CCS could not levy late fee/surcharge for delayed payment of GSM bills resulting in nearly 62 per cent delayed payment of bills**
(Paragraph 3.12.2)
- **Subscriber database in B&CCS lacked complete details of customers as required under Government orders**
(Paragraph 3.13.1)
- **IT related controls like exclusive security policy, Business Continuity plan and Disaster Recovery Plans were not implemented by the Company for its GSM services**
(Paragraph 3.15)

RECOMMENDATIONS:

It is necessary for MTNL to:

- **Fine-tune its planning of IT projects, which should invariably include proper justification and cost benefit analysis of alternative options.**
- **Take steps to introduce the credit control module so as to contain the piling up of outstanding revenue.**
- **Introduce charging of late fee/surcharge, for delay in payment of bills which would facilitate better discipline in revenue realization.**
- **Take steps to update the database with complete details of the subscribers.**
- **Enter into Non-disclosure Agreements with its vendors with a view to protecting the interests of the Company.**
- **Prepare 'Business Continuity Plan' and 'Disaster Recovery Plan' for early implementation.**

3.1 INTRODUCTION

Mahanagar Telecom Nigam Limited (MTNL) started its Cellular Mobile Telephone Service (CMTS) with Global System for Mobile Communication (GSM) technology in the metro cities of Delhi and Mumbai in 2001. The main equipment for the CMTS service was procured from ITI Limited, and the billing and customer care system (B&CCS) was procured from M/S Tata InfoTech Limited (TIL). The B&CCS was replaced in November 2004 with a new package supplied by Motorola India Private Limited (MIPL) as a part of the turnkey project for expansion of MTNL's GSM service at Delhi and Mumbai. The B&CCS delivered by MIPL (Unicorn 6.0) was developed to run on Oracle RDBMS with Developer-2000 (for user interfaces and reports) and the Sun-Solaris Operating System. As of August 2006 the B&CCS of MTNL had 9.32 lakh and 11.91 lakh subscribers at Delhi and Mumbai respectively.

3.2 ORGANISATIONAL SETUP

The administrative and overall functional control of MTNL is vested in the Board of Directors headed by the Chairman and Managing Director (CMD) who is assisted by three functional Directors in charge of Technical, Finance and Human Resources departments and a Company Secretary. The MTNL Delhi and Mumbai are headed by Executive Directors. The Wireless services of MTNL Delhi and Mumbai are headed by Chief General Managers (WS) who supervise the

operations of the GSM services of their respective units with the help of the General Manager (Planning), the General Manager (Projects) and the General Manager (Commercial).

3.3 SCOPE OF AUDIT

MTNL introduced (December 2004) a new B&CCS procured from Motorola India Private Limited covering its Delhi and Mumbai units. Audit reviewed the planning, development and implementation of the system, and its functioning for the period from December 2004 to September 2006. Billing of service connections was excluded from the scope of audit.

3.4 AUDIT OBJECTIVES

The objectives of audit were to confirm whether:

- the planning and procurement of the billing and customer care system were proper and in line with the business needs of MTNL;
- the system was functioning efficiently and effectively to meet the objectives of billing and customer care;
- the security controls associated with the system were adequate; and whether there were adequate IT trained and skilled manpower to run the system efficiently and effectively.

3.5 AUDIT CRITERIA

The main audit criteria used were:

- Best practices regarding Information Technology (IT) system development and implementation.
- Business rules of the Company.
- Standard IT security controls.

3.6. AUDIT METHODOLOGY

The audit of the B&CCS in MTNL was based on the CoBIT[•] framework. Audit adopted system based techniques like use of B&CCS menu facilities, SQL¹ data extraction and analysis for evaluating the performance of the billing system against the audit criteria broadly outlined above. In addition, Audit methodology involved the following:

- Understanding the billing system of MTNL.

• Control Objectives for Information and related Technology –

¹ Structured Query Language

- Interaction with personnel working with B&CCS and visits to Bill Processing Centre, Call Centre, Customer Centres (Sanchar Haats).
- Identifying the risks that attached to key revenue business cycle processes[♦] and assessing effectiveness of implementation of relevant internal controls.
- Use of live database for data extraction and scrutiny
- Confirmation of audit observations through issue of test audit memos before firming up audit conclusions.

3.7 ACKNOWLEDGEMENT

The Audit teams visited MTNL Corporate office and the mobile services' billing centres at Delhi and Mumbai. Access to the billing database, with permission to run independent audit queries on it, was provided by the Company to the Audit teams. Healthy interaction was possible with the officers at the Billing centres. Entry conferences were held at the units as well as at the corporate level and exit conferences were held at the units. Audit acknowledges the cooperation and assistance extended by all the levels of management at various stages of completion of the Audit.

3.8 FUNCTIONING OF THE B&CCS

The new B&CCS delivered by Motorola India Private Limited was intended to provide a platform for effective and accurate billing, efficient customer care services and support for decision-making required to address issues like customer satisfaction and prevention of frauds. A brief about the functioning of the system is set out below.

Front end application

The front end of the system, located at the various customer service centres of MTNL is responsible for the processing of applications for new connections/services. A customer profile is created in the B&CCS by the front end user after confirmation of the credentials of the applicant like identity proof, address etc. The customer profile thus created would include all the details of the subscriber, the Plans he has opted for, features he has availed, his billing address, his mobile number, SIM number etc. Details of calls made by subscribers are received in the billing system from the Mobile Switching Centres (MSCs) through call detail records (CDRs)^ψ.

[♦] Processes involved from registering a customer, provision of telecom facility to issue of bills.

^ψ Call Detail Record is a record containing information about recent system usage, the duration of each call, the amount billed for each call, the total usage time in the billing period etc.

Major components of B&CCS

- The mediation device converts the incoming data formats to a compatible format for further applications. It is connected to the MSC on one side and application modules on the other side. It collects data from MSCs and processes and distributes CDRs to other application modules such as fraud management, decision support system, customer care and billing system, inter-operator administrative accounting system and data warehousing system.
- Billing and Customer Care Module, which processes the incoming CDRs from the mediation device based upon pre defined tariff structures.
- Printing sub-system, which is an intelligent module capable of printing the billing information electronically, has a direct interface with the Billing and Customer care module.

B&CCS process

The mediation device of the B&CCS system processes the CDRs and hands them over to the billing engine, where the table of tariffs resides, for their rating*. After rating, the calls are billed against respective subscribers. At the end of each billing cycle, bills are generated, printed and despatched to the post paid subscribers for payment. In the case of prepaid subscribers, the credit particulars of the subscribers i.e. the balance of credit available against the value of the recharge vouchers are stored in the Intelligent Network (IN) platform. The switching system (MSC) communicates with the IN platform and confirms the sufficiency of credit before processing calls.

For providing customer care service, MTNL has an outsourced call centre system. The call centres are established in Delhi and Mumbai for handling and redressal of customer grievances and for providing efficient billing, commercial services and inquiries. The customers' queries are entertained either through the IVRS@ system or by the call centre agents. Queries are replied to, based on the database available in the call centre and complaints/requests are taken care of through coordination with the respective units.

3.9 AUDIT FINDINGS

In the highly competitive field of telecommunications, a well-organized billing and customer care function plays a very important role in business growth and ensuring efficient revenue realization. IT companies have introduced various billing and customer care solutions since the basic concepts in CDR based billing system are common for all mobile service providers. So selection of the right

* Rating – process through which CDRs are billed as per the applicable billing plans/rates.

@ IVRS – Interactive Voice Response System

billing package, customizing the off-the-shelf package to suit the business needs of the user, ensuring strong controls around the system i.e. monitoring of the functions of the system and speedy and effective remedial response to customer requests are vital for supporting good business.

3.10 INJUDICIOUS PROCUREMENT OF NEW B&CCS

MTNL started their GSM mobile services in 2001 with the B&CCS procured from Tata InfoTech Limited at a cost of Rs 9.69 crore. Though the B&CCS was initially to cater to two lakh subscribers (one lakh each at Delhi and Mumbai) it was scalable (both hardware and software) to handle up to eight lakh subscribers. The Company decided (October 2002) to expand its GSM services to eight lakh lines (four lakh each at Delhi and Mumbai) and B&CCS was an optional item in the expansion project since MTNL proposed to implement a convergent billing* system before the expansion. In January 2004, the turnkey project for expansion of GSM services was awarded to Motorola India Private Limited with B&CCS as one of its compulsory components.

The financial propriety of investing Rs 30 crore on a new billing system, at a time when a convergent billing system was scheduled to be launched in March 2007 should have been an important consideration for MTNL, before deciding to opt for the new B&CCS. However, no cost-benefit analysis of upscaling the earlier system vis-a vis procuring a new system was carried out. With proper planning, investment on a new billing system could have been avoided.

The Management stated that the earlier billing system supplied by M/s TIL was only for one lakh lines each at Delhi and Mumbai and was not equipped to handle additional subscribers.

The system supplied by TIL was scalable (both hardware and software) to take care of estimated future growth of eight lakh subscribers. The billing system was mainly for the post-paid subscribers, and the post paid subscribers of MTNL were only five lakh (both Delhi and Mumbai combined) up to August 2006. Hence the reply that capacity constraints of the existing system necessitated its replacement was not tenable.

3.11 ACQUISITION AND IMPLEMENTATION OF B&CCS

Implementation of an IT system should be a well- planned and systematic process with clearly set deadlines for its different stages like installation, acceptance testing and commissioning.

* Convergent billing is more advanced than B&CCS. It means creating a unified view of the customer — and all services provided to that customer — for single-point customer care.

3.11.1 Delay in taking over and continued dependency on the vendor

As per conditions of purchase order the commissioning of the entire project was to be completed within 12 months from the date of issue of purchase order i.e. by January 2005. The system supplied by M/s. MIPL was launched in October 2004 and the B&CCS was put to use in November 2004 at Delhi and in January 2005 at Mumbai. An Acceptance Testing team was constituted in September 2004 to carry out the Acceptance Testing on 32 points. It was noticed that even after a lapse of eighteen months (June 2006), only seven points had been cleared by the AT team. As a result B&CCS is yet to be technically cleared and formally taken over by MTNL and the Company is still dependent on the vendor for its operations. Moreover, MTNL has not executed any escrow agreement^ψ with the vendor. In the absence of source-code the Company would neither be in a position to update/customize the software to suit its business requirements nor rectify any software problem in case of default by the vendor. Further, it was noticed that no database was being maintained regarding skills acquired, training imparted, experience gained etc. in respect of B&CCS staff and the B&CCS was maintained by the vendor.

3.11.2 Absence of non-disclosure agreement with the vendor

Subscriber database is the most important asset of a telecom service provider and hence maintaining its confidentiality is very important for supporting good business. The B&CCS was procured through outsourcing and is maintained by the vendor. It was noticed that the Company had not entered into any non-disclosure agreement with the vendor to safeguard its interest against any possible data leakage. The management stated that since the billing system was not yet taken over by the Company the privileged users like System Administrator, Database Administrator and Programmers were of the vendor and managed accordingly.

Thus, the Company had not been able to sufficiently safe guard its data security before implementing the system.

3.12 INADEQUATE CUSTOMIZATION OF BILLING PACKAGE

Firming up System Requirement Specification (SRS), defining User Requirements Specification (URS) and deciding on the customization required based on the URS, are crucial steps in the system development methodology of IT projects. Deficiencies in any of these steps could lead to non-fulfillment of

^ψ Source code escrow agreement means deposit of the source code of the software into an account held by a third party escrow agent so that the software source code is released to the licensee if the licensor files for bankruptcy or otherwise fails to maintain and update the software as promised in the software license agreement.

planned requirements. Since B&CCS was an off the shelf package supplied by MIPL, customizing it to suit the business needs and practices of MTNL, before putting it to use was very vital for ensuring its efficient functioning.

3.12.1 Non-implementation of credit control in respect of post paid subscribers

A Credit Control Module in a computerized billing system enables fixing credit limits for customers, based either on the amount of deposit received or by reviewing the usage pattern. Evaluation of the paying habits of customers and the deposits obtained from them are important parameters for fixing credit limits. As per Telecommunication Engineering Centre (TEC) approved Generic Requirement (GR*) for B&CCS for Cellular Mobile Service, the system should be capable of sending automatic deactivation command suspending the service in case the credit limit is exceeded.

Heavy outstanding dues

Audit noticed that the Company had not enabled the credit limit feature in the billing system leading to piling up of outstanding dues. The outstanding revenue of Delhi unit, as of November 2006, was Rs 41.48 crore, against 2.80 lakh subscribers. Scrutiny of these cases revealed that out of this Rs 29.37 crore (70.8 per cent) was due from 76,916 subscribers whose services had been disconnected. The corresponding figures for Mumbai were Rs 34.34 crore against 2.38 lakh subscribers and Rs 10.78 crore (31.39 per cent) against 31,801 disconnected subscribers respectively.

It was noticed that in Delhi, the maximum outstanding against a single customer was more than Rs 14 lakh (Rs 14, 37,331 against a total deposit of Rs 6,000 only) and in Mumbai it was more than Rs 3.5 lakh (Rs 3.66 lakh against a total deposit of Rs 6,000 only).

In the cases where services had been disconnected the possibility of realization of outstanding dues was remote. Thus, the Company faced the possibility of loss of Rs 40.15 crore (due from 1.08 lakh subscribers) due to its failure to activate the credit control module before putting the system to use. On this being pointed out by Audit it was replied by MTNL Mumbai that the software was being customized to suit the Company's requirements and was expected to be implemented by September 2006.

* Technical specification and standards laid for MTNL and BSNL

Continuation of telephone facilities despite non-payment of bills

An analysis of data for the 66th bill cycle of Delhi unit (for June 2006), revealed that 165 subscribers whose outstanding bills was between Rs 10000 and Rs 20000, 46 subscribers whose unpaid amount was between Rs 20000 and Rs 50000, 21 subscribers with dues between Rs 50000 and 1 lakh and 6 subscribers with more than Rs 1 lakh were allowed to continue their telephone facilities despite their huge outstandings.

Manual barring of outgoing calls due to non-payment and non-implementation of credit control module led to piling up of outstanding revenue.

3.12.2 Non-implementation of late fee module for delayed payment of bills

Delayed payment of telephone bills by subscribers leads to accumulation of outstanding revenue and adversely affects the cash flow of the Company. Levy of late fee/surcharge for delayed payment is intended to act as a deterrent against this. All telecom service providers in the country charge late fee/surcharge for delayed payments. However, the Company could not implement the charging of late fee in its B&CCS till date as the system was not customized for levy of late fee. A report generated from the database of the system showed that out of 32.46 lakh bills raised in Delhi and Mumbai for which payments were due for the bill cycles 61 to 66 (ie for the period January-2006 to June 2006), payments in 20.12 lakh (62 per cent) cases were received after the due date. Customization of the package to include provision for charging late fee/surcharge would have facilitated a more disciplined cash flow for the company besides earning additional revenue.

On this being pointed out by Audit the Management while accepting non-levy of late fee stated (August 2006) that the Billing system was under customization and late fee would be levied.

3.12.3 Non provision of latest facilities like hot billing[€], payments through credit card

In a competitive environment, it is essential that convenient facilities like hot billing, easy options of payments through credit cards, etc. are offered to the subscribers. It was noticed that the Company could not offer these facilities to its customers due to non-customization of the system. The Company could not tap the full potential of the IT asset so as to offer improved services.

[€] Hot billing refers to a facility to provide on demand invoices. These invoices include up to date usage and non-recurring charges incurred by a subscriber within a current billing cycle.

3.13 DEFICIENCIES IN FUNCTIONING OF B&CCS

B&CCS integrates the functions of Commercial, Revenue and Customer Care onto a single platform. Accurate creation of subscriber data base, good verification procedures and sound monitoring systems are thus imperative to make optimum use of its IT capabilities.

3.13.1 Incomplete registration of prepaid subscribers

Recognizing the importance of maintaining complete details of subscribers in the interests of national security, the Vigilance Cell of Department of Telecommunications (DoT) had issued (July 2006) detailed instructions on the booking procedures of all mobile services which were agreed to by the Cellular Operators Association of India (COAI) also. Accurate creation of customer master data in the billing system is the most important step in ensuring efficient revenue realization. Customer details should be captured completely and accurately at the time of registration of a customer. Moreover, good verification procedures and archiving of the verification documents in an easily retrievable format facilitate the change management processes which include change of customer profile, change of tariff plans etc. Electronic archiving of customer documents viz. application form, proof of identity, proof of residence along with signature scanning is necessary for easy retrieval and verification through the system and facilitates single window clearance of subscriber complaints

It was noticed in Audit that out of 6.01 lakh prepaid subscribers as on 31 March 2006 of Mumbai Unit, in the case of 1.61 lakh (27 per cent) subscribers fields for important identification parameters like name, address etc were not fed with proper entries. Again, scrutiny of the database for connections released in April 2006 revealed that out of 24,076 new connections, details of 19,780 (82 per cent) customers were not registered correctly. Similar omissions were noticed in Delhi Unit also in respect of 25,281 subscribers out of seven lakh prepaid connections. Of this 13,497 were active subscribers, 41 were under temporary disconnection and 11,293 connections were closed. Similarly other personal identification details like date of birth, PAN number, etc of 7.57 lakh customers out of 9.64 lakh active customers (79 per cent) were not available in the B&CCS. These deficiencies in populating the database with correct entries would not only hamper collections in case of non-payment of dues but also pose problems in tracking down of a subscriber in cases of misuse/unauthorized use or use for unlawful activities.

The management stated that the shortcomings were due to the heavy growth of prepaid customers which exceeded the capacity of the database and instructions were issued to all the Sanchaar Haats to obtain necessary identification and address details if any such subscriber approaches for replacement of SIM cards.

The proposed corrective actions reflect a very soft approach in updating the customer details.

It was also observed that the data on applicants were not being archived electronically which may hamper easy redress of customer grievances.

Management replied that a new tender for electronically archiving the remaining forms was in progress, and software for browsing the forms was also being procured.

3.13.2 Non utilization of system for sales activities

Apart from its own network of Sanchar Haats for sale of its products i.e. postpaid and prepaid mobile connections, the Company engaged franchisees for sale of its products on commission basis. On scrutiny it was found that the System was not being utilized for sales activities due to non-customization of the related module. Effective utilization of the System for sales activities would help in better management.

3.13.3 Non-recovery of Service Tax and Education Cess

The rates of Service Tax have been raised to 12 per cent from 10 per cent in the Finance Act 2006. The rates came into effect from 18th April 2006.

On scrutiny it was found that the revised Service Tax for recharge coupons of prepaid connections was given effect from 10th May 2006 at Mumbai and 22nd April 2006 at Delhi. The delay in effecting the required changes led to short recovery of Service Tax amounting to Rs 24 lakh.

On this being pointed out the Management accepted that there was delay in effecting changes in the system.

3.14 MONITORING THROUGH B&CCS

Apart from the built in controls of the IT application, strong controls around the system i.e. sound monitoring of the information system ensures its proper functioning and timely detection and rectification of defects. The Decision Support System of the B&CCS is an important tool which can generate various reports to facilitate effective monitoring of its functions. However, it was noticed that effective monitoring was lacking in the following areas.

3.14.1 Delay in disconnection in respect of cheque dishonour cases

As per rules adopted by the Company, a subscriber whose cheque has been dishonoured by Bank should be intimated immediately and given one day's time to make payment failing which the service should be deactivated. During test check of cheque dishonour cases in respect of the 62nd bill cycle it was noticed that there was delay, ranging between 6 and 50 days in disconnection of mobile phones after the date of cheque dishonour. It was noticed that some subscribers

made heavy calls in the intervening period i.e. during the period from cheque dishonour date to the date of permanent disconnection. The value of calls made by individual customers during this period ranged from Rs 3 to Rs 1.18 lakh.

As the disconnection procedure of MTNL GSM service was not system driven, monitoring controls should have been in place to issue alerts to the subscribers whose cheques were dishonoured.

3.14.2 Erroneous information on delays in providing services

Timely activation of all the services requested by a subscriber improves customer satisfaction and revenue earning.

- It was observed that the data in respect of these facilities was erroneous. In most of the cases the date of provision of facilities was shown as the date of application, instead of the date on which the facility was provided.
- With a view to ascertaining the promptness of the Company in providing the services requested by subscribers, a test check was done on the 'Jeevan-Sathi' Plan at Delhi. This plan offered life long connection for a one time payment, and STD and National Roaming facilities were also to be given at the same time on the same application. It was observed that out of 20,940 connections provided under this plan in first week of April 2006, there were delays ranging between 5 and 159 days in respect of 13,007 cases in activating STD/Roaming facilities. However, it was noticed that in these cases, the date of application for the additional two facilities was fed as the same date on which these facilities were actually provided.

The depiction of date of actual provisioning as the date of application for that facility was erroneous and hence information available in the system could not be relied upon.

3.15 INFORMATION TECHNOLOGY SECURITY

The success of any IT system depends on the strength of its IT security policies. Audit observations on the IT security of B&CCS are discussed in the succeeding paragraphs.

3.15.1 Non-availability of exclusive security policy

B&CCS handles a large database with huge revenue implications and thus merit a well documented IT Security Policy and the same should be made available for all employees. No exclusive IT security policy existed in respect of MTNL's GSM services.

On this being pointed out the Management stated that the GSM billing system was still under customization and IT security policy would be implemented once it was taken over.

3.15.2 Absence of Business Continuity Plan (BCP) and Disaster Recovery Plan (DRP) for GSM

BCP/DRP entails identification of areas of the business process which would affect business continuity in the event of an interruption or disaster leading to temporary or partial loss of computer facilities. Identification of key personnel who would be required for continuity of the business process, in a contingency and making them aware of their responsibilities are important factors of BCP/DRP. It was observed that no such plans were communicated by the Company to the personnel manning the B&CCS or any key personnel identified to deal with any eventuality.

Further, the backup data of B&CCS was kept on magnetic tapes with multiple sets of tape in tape library in the same telephone exchange building in Delhi where B&CCS was located which would hamper any recovery in case of a disaster.

3.15.3 Physical access not barred

Physical access to outsiders, outside materials, floppies, CDs etc., should be restricted to ensure the desired level of security for an IT system. The Customer Service Representative (CSR) terminals working at Customer Service Centres (CSC) were with the facility of USB port; and CD/Floppy drives which could lead to unauthorized data extraction.

On this being pointed out it was replied by the Mumbai unit that the work of disabling USB ports and CD/Floppy drives in CSR terminals was in progress to restrict physical access.

3.16 CONCLUSION

MTNL took the decision to procure a new B&CCS replacing their existing system at a time when plans for a new convergent billing system were already on the anvil. While planning for the new B&CCS the Company did not recognize the capabilities of the billing package it chose to replace resulting in avoidable investment on the system. Inadequacies in customization of the new off-the shelf package and deficiencies in its functioning as brought out in the report and the absence of a non-disclosure agreement with the vendor which compromises the security of the database point to the need for fine tuning the Company's efforts in planning, defining and implementing its IT programmes. Incomplete feeding of data, especially in respect of pre-paid customers could have serious revenue and security implications. Similarly, failure to implement credit control module could result in further leakage of revenue. The company should strengthen their IT security areas with regard to access controls and formulate and implement a

business continuity plan to match the best practices in the industry and to safeguard their interests. The Management should strive to tap the full potential of IT so as to offer improved services like hot billing, payment through credit card, easy redressal of customer complaints etc., so that the Company performs better in the prevailing competitive environment.

New Delhi
Dated :

(C.V. AVADHANI)
Deputy Comptroller and Auditor General
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Countersigned

New Delhi
Dated :

(VIJAYENDRA N. KAUL)
Comptroller and Auditor General of India