MUNICIPAL ADMINISTRATION AND URBAN DEVELOPMENT DEPARTMENT

3.5 Information Technology Audit of Hyderabad Metropolitan Water Supply and Sewerage Board

3.5.1 Introduction

The Hyderabad Metropolitan Water Supply and Sewerage Board (HMWS&SB) (Board) started its operations from November 1989 with the enactment of HMWS&SB Act, 1989. The functions and responsibilities in the Hyderabad Metropolitan area are:

- Planning, design, construction, maintenance, operation and management of water supply system and the supply of potable water.
- Planning, design, construction, maintenance, operation and management of all sewerage and sewerage treatment works and the efficient disposal and treatment of sewage.

The computerisation of the functions of the Board started as early as in 1997 and new modules independent of each other, were introduced periodically till 2005. Major functionalities that have been computerised are demand generation and bill collection (Revenue billing), tracking of new applications for water supply/ sewerage connection and enhancement of existing connections (Single Window Cell), Customer complaint tracking (Metro Customer Care). On an average, the Board has been spending an amount of Rs 70 lakh per annum on computerisation.

The Board is headed by Chairman (Chief Minister), Vice-Chairman (Minister for Municipal Administration & Urban development), six Ex-Officio Directors, two Directors and a Managing Director (MD). MD is the chief controlling authority. The functions of the Board under the functional Directors have been distributed into Circles, Divisions, Sub Divisions, Sections besides the Single window cell, Metro customer care centre.

3.5.2 Audit objectives

The objectives of IT Audit were to assess/check whether:

- the security for database management was adequate;
- policies, standards and procedures in respect of all data processing functions were adhered to;
- the data was effectively used for Management information and for enhancing the Board's revenues; and
- the complaints lodged by the consumers were properly addressed.

The Oracle Database was analysed by Audit for substantive checking of its completeness and integrity using an audit software tool viz., Interactive Data Extraction and Analysis package (IDEA). Data analysis was done to assess compliance with HMWS&SB Act, Rules made thereunder, Citizens Charter, periodical tariffs for water and sewerage charges. An Entry conference was

held (April 2007) with the Managing Director and other officers of the Board. Audit has confined its scope to data analysis and querying since the Board has embarked (February 2007) on implementation of an integrated enterprise wide package[1] for computerising various departments and integrating systems for enhancing its performance. An exit conference was also held (September 2007) with the senior officials of Government. The results of the review are presented in the succeeding paragraphs.

Audit findings

3.5.3 Database administration

Security of the database was inadequate

The Database Administrator (DBA), as the custodian of an organisation's data, is responsible for the administration and management of the database systems. A study of the rights and privileges revealed the following weaknesses and security risk to the database.

- Although every database should normally have only one Database Administrator, there were six DBAs. As a result, the database was exposed to risks of unauthorised manipulations apart from lack of accountability.
- DBA privileges had also been granted to developers as well.
- Testing was done on production (live) database resulting in the risk of the database being populated with the test data.
- Default users were not changed allowing unauthorised access.
- 'Audit trail' had not been enabled on the database. Consequently, the activities of the DBAs and other users could not be tracked for fixing responsibility in case of any unauthorised manipulation.

The Special Officer, Information Technology (IT) replied (August 2007) that privileges were issued as per the current resources required and that policy guidelines on privileges stipulated by the Government were not available with them. The contention of the Board is not tenable as the IT Act, 2000 itself clearly specifies that security of any database developed should be ensured by the user organisation. This only showed the lack of basic security awareness strategy with the Board. Thus, security of the database was not adequate and privileges were not being assigned to users on a need basis.

3.5.4 Revenue billing

3.5.4.1 Huge loss of revenue to Board on account of number of meters under repair

Board sustained loss of revenue of about Rs 45 crore per month on account of defective orders and non-replacement of defective water meters

One of the important functions of the Board is to see that all the consumers are installed with working meters and to get the defective meters repaired. For discharging this function the Board was empowered to issue notice to the consumers whose meters were defective, to get them repaired within two months, failing which water would be charged at twice the normal rates for

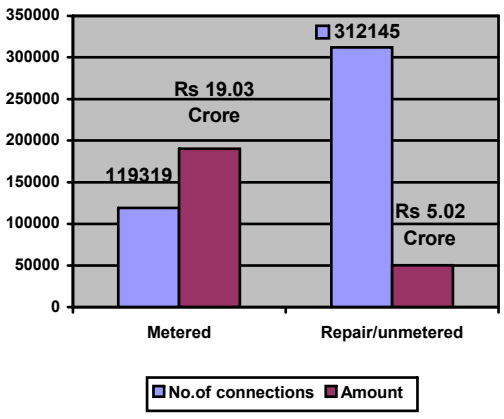
[1] to review current application, integrate the existing disjointed applications, build new modules wherever required and to migrate the existing legacy systems

consumption of units as recorded in last metered bill, till the meter was repaired, tested and re-fixed. However, contrary to the above water supply rules, Board issued orders (May 2002) that consumers whose meters are not working for more than three months continuously would be only charged the minimum amount applicable to the category under which the consumer falls.

Analysis of the demand raised for the month of May in the years 2005 to 2007 revealed that the number of meters under repairs itself constituted 48 to 52 *per cent* of total number of bills generated. Further, the number of un-metered connections had also been on the increase from 12 to 17 *per cent* as shown below:

Month/ Year	Total No. of Bills generated	No. of Meters in working condition (*per cent*)	Cases of door lock (*per cent*)	No. of meters under repair (*per cent*)	No. of un-metered connections (*per cent*)
May 2005	230037	59301 (26)	32118 (14)	110463 (48)	28155 (12)
May 2006	256104	69780 (27)	20391 (8)	123630 (48)	42303 (17)
May 2007	479267	119319 (25)	47796 (10)	249096 (52)	63049 (13)

Thus, with the protection given by the Board's orders of May 2002 about 65 *per cent* of the consumers whose meters were 'conveniently' not functioning or who have no meters, were paying only the minimum charges over the years irrespective of their consumption, resulting in huge loss of revenue to the Board as depicted in the graph. While the demand raised for 1.19 lakh metered consumers was Rs 19 crore, it was a meagre Rs 5 crore in respect of 3.12 lakh un-metered connections/ meters under repair. Had all the defective meters been replaced with new ones and meters installed wherever required, the Board could have earned approximately, a total revenue of Rs 70 crore per month instead of Rs 25 crore per month as at present. Taking into account the prevailing rate of new meter, the approximate cost for replacing all the defective meters would only be Rs 20 crore (*Appendix 3.15* refers) and even this amount would have been realised from the consumers in due course.



Database was not used effectively for enhancing the revenues of the Board

The Board replied (August 2007) that fixing of meters for all the consumers was being programmed for completion in the next one year based on the water supply position in various areas. The reply is not acceptable as the Board by postponing the repair and fixing of new meters is in effect penalising legitimate users with functional meters and favouring those with no meters. This is all the more iniquitous as the Board is now admitting that the water supply was actually not sufficient and good from April 2004, as it had

claimed. It is evident that the Board is contended with the revenues that are being generated automatically without utilising the available data effectively.

Thus, the Board by issuing defective orders for recovery of only minimum charges in the case of non-working meters and by not taking action to get the meters repaired/replaced, had in effect encouraged consumers with non-working meters at the expense of the legitimate user. In the process the Board sustained huge loss of revenue.

3.5.4.2 Demand not raised at all or raised irregularly

Demand was either not raised at all or for certain periods affecting the Board finances to the extent of Rs 8.84 crore

As per the Citizens Charter, first bill shall be issued within a maximum of three months after the release of connection. Data analysis, however, revealed that for 7231 connections, the demand was never generated (June 2007), as shown in the *Appendix 3.16*. Of these 1872 connections were more than five year old and the remaining 5359 pertained to more than three months and upto five years. Computed even at the minimum rate, the Board could have realised a revenue of Rs 2.32 crore.

Similarly, for 19374 consumers, the demand was in arrears for more than three months to as high as two years as shown in *Appendix 3.16*. The revenue of Rs 6.52 crore would have accrued to the Board had it raised the demand timely even at the rate of minimum charges.

It was replied that non-raising of demands on the due dates would not result in losses to the Board. The reply is not acceptable as it not only effected the finances of the Board but would cause unnecessary inconvenience to the consumers when they are asked to pay arrears.

3.5.4.3 Multistoried complex billing

Data relating to multistoried complexes was not updated. This deprived the Board of the possible revenue earnings

In the case of multistoried residential apartments complexes, where the complex consists of five or more residential apartments, the Board had decided (December 2006) to levy water charges at a minimum of Rs 90 per flat per month, based on the residential units available in the database. The analysis of database however, disclosed that in 2552 (out of 7895) multistoried complexes the data of number of residential units was not available.

Further, on comparison of the available database (under updation) maintained by the erstwhile Municipal Corporation of Hyderabad (MCH) with that of the Board, showed that in 203 cases, while the MCH database showed them as multistoried complexes with five or more residential units, these were shown as individual units as per the database of the Board. Had the database of the Board been updated as per the approved municipal plans the revenues of the Board could have increased appreciably. The Board has agreed (August 2007) to review the cases.

3.5.4.4 Demand not raised for Sewerage cess from disconnected consumers

Sewerage cess was not being collected on disconnecting water connection (loss of revenue: Rs 6.61 crore)

As per the rates of tariffs, 'Sewerage Cess' for consumers who do not avail water supply connection but only use the sewerage system of the Board, was fixed at Rs 400 per annum. The Board while disconnecting the water supply to such premises was not disconnecting the sewerage connection keeping in view the global environmental issues.

An analysis of the consumer's details in the database indicated that there were 21076 consumers whose water connections were disconnected. Sewerage cess was not being collected, though prescribed, from such consumers, resulting in loss of revenue of Rs 6.61 crore (up to June 2007).

Board's contention that the sewerage cess was collected at the time of reconnection is not correct as Audit noticed that in 681 cases, new connections were given by the Board without clearing the arrears of sewerage cess. Further, in 33 cases, it was observed that the consumers were paying only for the water charges without paying sewerage cess as stipulated, even though they were enjoying the facility of sewerage provided with the previous connections.

3.5.5 Single window application

3.5.5.1 New water connections provided without collection of arrears

New water connections were irregularly provided to the premises where dues were outstanding

According to Water Supply Rules, any consumer for whose premises water supply connection has been disconnected has to clear the dues before restoring the connection with the same Consumer Account Number (CAN).

An analysis of the database, however, revealed that 293 premises, where water connection had been disconnected, were irregularly provided subsequently with a new connection (with a new CAN) (instead of reconnecting), even though arrears amounting to Rs 40.96 lakh were still outstanding against the consumers in respect of the earlier disconnected water connections.

The Board while accepting the audit point, stated (August 2007) that such cases would require to be examined after field level inspections. The reply is not tenable as the Board could have identified such cases through the database at the time of providing new connection and failure to do so has resulted in the loss of revenue of Rs 40.96 lakh to the Board.

Thus, the policies, standards and procedures of the data processing functions were not adhered to. The deficiencies thus, indicated that the Board had not effectively used its database for management information for enhancing the Board's revenues.

3.5.6 Metro customer care

Metro customer care module was poorly implemented. Complaints of consumers were not given adequate attention

In order to provide prompt solutions to customer grievances and to improve customer services a Metro Customer Care (MCC) had been constituted by the Board. Complaints on the website could be related to water supply, sewerage, billing, etc. A citizen lodges a complaint with the expectation of having the cause of the complaint rectified. An analysis of the MCC data revealed that the DBA was closing the complaints that were more than two months old without however, attending to them. During the year 2006-07 alone, 723 complaints were so closed without being attended to. There was also no system of complaints being escalated to the next higher authority if not rectified within the time limit.

The reply (August 2007) of the Special Officer, IT that the system would automatically close the complaint after 60 days, is not an explanation but an admission not only of inefficient programming but also insensitivity to the genuine complaints of the consumers. The MCC has not lived up to the expectations of its mandate.

3.5.7 Conclusions

Although the Board had made pioneering efforts in IT enabling its functions like Revenue billing and Customer care, etc. the Board failed to use its database effectively for enhancing its revenues. The policies, standards and procedures of the data processing functions were not adhered to while the security of the database was inadequate. This resulted in huge loss of revenue to the Board. The Metro Customer Care module was poorly designed and the complaints of the consumers were not given adequate attention.

3.5.8 Recommendations

- There should be only one Database Administrator (DBA) to ensure data security and accountability of the individual users.
- Database should be effectively used for management information. The Board should take immediate steps to rectify/replace all the defective water meters so as to enhance its revenues.
- The Board should ensure strict adherence of all procedures, standards and rules relating to water supply while providing water connections, raising demands and collection of revenues.
- Complaints of consumers should be adequately addressed and the system should provide automatic escalation to the higher authority for attending complaints.

The above points were reported to Government in August 2007; their reply has not been received (August 2007). The audit recommendations were accepted in the exit conference held in September 2007.