CHAPTER V

NAVI MUMBAI MUNICIPAL CORPORATION

Information Technology Reviews

5.1 Information Technology (IT) Audit of Property Tax application in Navi Mumbai Municipal Corporation

Highlights

Input source documents required for data entries were inadequate and incomplete.

(Paragraph 5.1.7.1)

Business rules in respect of classification of usage and structure of properties were not properly incorporated.

(Paragraphs 5.1.7.2)

Names of persons liable for payment of property tax were not entered in respect of 570 properties and ambiguous terms were recorded against names in respect of 6148 properties.

(Paragraph 5.1.7.4)

Lack of validation controls to facilitate correct mapping of business rules led to incorrect calculation of rateable value and short levy of property tax amounting to Rs 8.84 crore.

(Paragraph 5.1.9.1)

Non existence of adequate audit trails and an IT security policy exposed the business operations to risk and the possibility of unauthorized manipulation of data.

(Paragraphs 5.1.13 and 5.1.14)

Non involvement of the user department resulted in non utilization of the application rendering Rs 9.74 lakh incurred on development of application for Property Tax unfruitful.

(Paragraphs 5.1.16.1)

5.1.1 Introduction

Navi Mumbai Municipal Corporation (NMMC) came into existence in January 1992. The City and Industrial Development Corporation (CIDCO), which was entrusted with the development of the Navi Mumbai area and for providing civic amenities hitherto, handed over the civic functions to the

Corporation. The Corporation area was divided into nine[49] wards. NMMC started collecting property tax from April 1994 through a computerized system using a Dbase III platform. Subsequently, in 1998, an application software in FoxPro was developed in-house which was in use till September 2006. From October 2006, NMMC switched over to a new application using Java with Oracle (8i) as RDBMS[50], developed by M/s Resilient Softech Pvt Ltd. The application was running with one server and six personal computers.

The database captured the following details:- (i) property details such as property numbers, names of owners, addresses;(ii) assessment details such as assessment dates, areas, usages, structures, rateable values; (iii) demand details such as demand cycles, demand amounts; (iv) collection details such as collection dates, collection amounts, collection centres, delay payment charges, notice fees and (v) issue of bills and notices .

Property tax was levied on the basis of the rateable value (RV) of land and buildings, assessable on the expected annual rental value which such properties may get when let out. Property tax was 35 *per cent* of the total receipts of NMMC for the year 2005-06. The demand and recovery of property tax for the previous five years were as follows :

(Rupees in crore)

Year	Demand	Collection
2001-02	88.44	72.68
2002-03	94.43	78.09
2003-04	103.49	80.71
2004-05	122.08	88.66
2005-06	159.00	106.29

5.1.2 *Organisational set up*

The Commissioner is the administrative head of NMMC. The Property Tax department is headed by the Deputy Assessor and Collector who is assisted by an Assistant Assessor and Collector, three Office Superintendents-cum-Recovery officers and 22 Property Tax Inspectors. The data base is maintained by one programmer and six Data Entry Operators. The receipts collected through the nine ward offices and designated bank branches are later entered into the system.

5.1.3 *Scope of Audit*

The Information Technology (IT) Audit of the property tax application was conducted during October 2006 to February 2007, covering the implementation and functioning of the application in respect of data pertaining

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[49] Airoli, Belapur, Dahisar, Digha, Ghansoli, Koparkhairane, Nerul, Turbhe and Vashi

[50] Relational Data Base Mangement System

to all the nine wards and all types of properties, viz private property in the CIDCO developed nodes, CIDCO built tenements, properties under the area of the Gaonthan Extension Scheme(GES) of CIDCO, properties located in village areas and in the Maharashtra Industrial Development Corporation (MIDC) areas.

5.1.4   *Audit objectives*

The audit objectives were to evaluate

↘   adequacy of input, processing and output controls available in the system

↘   completeness and correctness of data captured in the system

↘   incorporation of business rules in the application

↘   adequacy of security controls to ensure integrity of data and

↘   adequacy of audit trails available in the system

5.1.5   *Audit Methodology*

Audit commenced with an entry conference held on 3 October 2006 with the Municipal Commissioner and other Heads of the departments of NMMC. The application and database were reviewed with respect to relevant resolutions, rules and procedures relating to property tax. The Oracle data was analysed using CAATs[51].

5.1.6   *Audit findings*

It is imperative that the business rules are completely and correctly mapped into the application with all the necessary controls to ensure that tax is assessed and collected according to prescribed rules.

Audit observed that relevant business rules had not been completely and correctly mapped into the application. This coupled with lack of effective input, processing and output controls, resulted in incomplete and incorrect data and also had an impact on the tax collection. It was also observed that security controls were inadequate and that audit trails built into the system were weak.

These deficiencies are discussed in the following paragraphs.

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[51] Computer Assisted Audit Techniques

5.1.7   *Input controls*

Input controls ensure that data received for processing is authentic, complete, has not been previously processed, is accurate and properly authorised and is entered accurately and without duplication.

5.1.7.1   *Input source documents*

It was seen that standard input documents/forms or a standard process were not being used to enter information into the system. The input documents used were the Tabulated Ward Report (TWR) of NMMC or the Occupancy Certificates issued by other organisations like CIDCO/Town Planning Department. All necessary information, like usage of property, number of floors, structure of property, *etc.* and even name of owner, which were necessary for calculation of tax were not included in these forms. As such there was no uniformity and completeness in the information on properties recorded into the system. There was no log or register maintained for recording the source documents. In Vashi, Ghansoli and Turbhe wards, only 41, 69 and 51 Occupancy Certificates (OCs) available for total assessments of 1211, 1707 and 1582 cases. Thus the correctness of input records could also not be validated.

NMMC replied that maintenance of logs or registers in respect of source documents received was under consideration.

5.1.7.2   *Classification of properties*

It was also found that classification of properties, essential for calculation of tax with respect to the usage and property structure was not correctly captured in the system. It was noticed that no property had been recorded under banks, hotels, dispensaries, schools, colleges, hospitals *etc* in the NMMC area and 390777 out of 408091 assessments were carried out with undefined property structure.

NMMC accepted the observations and informed that errors in classification would be corrected.

5.1.7.3   *Area of property not entered*

Absence of mandatory provision to enter the area of property in the old FoxPro system resulted in non entry of area in 37285 out of 408091 assessments.

NMMC stated that necessary corrections in the data would be made.

5.1.7.4   *Names of persons liable for payment of property tax not entered*

Rule 9(c) of CHAPTER VIII of the BPMC Act 1949 stipulates that names of persons primarily liable for payment of property taxes should be recorded. Analysis of the database revealed that names of persons were not entered in respect of 570 properties, and ambiguous terms such as 'HOLDER OF THE PROPERTY', *etc* were recorded against names in respect of 6148 properties. .

NMMC stated that the database would be updated and necessary corrections made.

5.1.7.5   *Incorrect and incomplete names of collection centre for payments*

The ward offices of NMMC and a number of designated bank branches are approved as collection centres for depositing property taxes.

Analysis of data relating to collection revealed that in addition to the approved collection centres, incorrect centre names such as '!', DX,Q, X, b, c, m, n, X, bill Junction *etc* appeared in the data, against which there were 38,1, 14309, 0,199,24,17294, 13283,51425 and 1 receipts respectively.

Further, 11162 receipts pertaining to the period from 1995 to 2004, recorded without the collection centre code in the old FoxPro database were not updated before migrating the same into the new Oracle system.

Thus collection centre-wise MIS reports generated from the database were incorrect and could not be reconciled.

NMMC stated that necessary modification in the data would be carried out.

5.1.7.6   *Duplicate assessment records of properties*

The assessments should be identified as unique records in the database, based on property codes and dates of assessment.

Audit observed that absence of input controls to restrict the duplication of data entry of an assessment resulted in 5878 assessments entered twice, one assessment entered three times and seven assessments entered four times. Acceptance of duplicate records indicated a risk of some property not being assessed at all, if it shared a duplicate number with some other property, or duplicate demands being generated by the system.

NMMC stated that duplicate records would be rectified or deleted from the database.

5.1.8 *No control procedure to ensure correctness of data entry of receipts*

Copies of receipts for collections against property tax bills which are received in the ward offices of NMMC and designated bank branches are sent to the computer cell for data entry. To ensure the completeness and correctness of the tax collections captured in the system, the same is required to be reconciled with actual receipts. The total collection of property tax reported by the nine ward offices for the year 2005-06 was Rs 105.44 crore as against the figure of Rs 106.59 crore available in the database. In the absence of reconciliation, the figures for total collection could not be vouched for by audit.

NMMC stated that reconciliation would be done.

5.1.9 *Non mapping of business rules in the application and absence of validation controls*

All the relevant business rules are required to be identified and suitably incorporated in the application to avail the benefits of information technology and achieve objectives of computerization. Data analysis revealed business rules had not been mapped resulting in revenue loss as detailed below.

5.1.9.1 *Incorrect calculation of rateable value resulting into short levy of Rs 8.84* **crore**

Rule 7 of Chapter VIII of the Bombay Provincial Municipal Corporation Act (BPMC Act), 1949 stipulated that the RV should be determined on the basis of the annual rent at which a property might reasonably be expected to be let from year to year. The letting rates for various types of properties are prescribed by NMMC.

Audit observed that incorrect assessments were made due to

* application of incorrect letting rates during the assessment of property tax as shown in **Appendix XII**.

* condition for the minimum rent was not applied in arriving at the letting rates in respect of 515 cases

This led to short levy of property tax amounting to Rs 8.81 crore and Rs 2.72 lakh respectively.

NMMC accepted the errors in valuation of properties due to oversight and agreed to review and revise the assessments if found incorrect.

It was also observed that different letting rates were adopted for properties under similar usage in the same area the reasons for which were not on record.

In the absence of guidelines on calculation of RV in respect of properties in MIDC area, the impact could not be analysed.

Reply of NMMC in this regard is awaited.

5.1.10   *Recommendations:*

NMMC should :

    ☞ **Design appropriate input source documents to facilitate data input**

    ☞ **Facilitate necessary input and validation controls to prevent errors during data input**

    ☞ **Modify the system by incorporating validations for ensuring correct mapping of all business rules**

5.1.11   *System design*

Various lacunae were noticed in the system design as detailed below.

5.1.11.1   *Important fields not provided for in the database*

Audit observed that the new Oracle based system did not provide for data entry of certain important information such as year of construction of property and reasons for reassessment, which were available in the old FoxPro based system, leading to non migration of the legacy data to the new system.

NMMC stated that the said data would be migrated.

5.1.11.2   *Module not designed to handle the entry of bounced cheques*

The tax amount in respect of bounced cheques is required to be shown as outstanding in the subsequent bills and recovery is to be effected.

In 1617 cases, the amount of property tax received was shown as zero, indicating deletion of data. NMMC stated that entries with zero amounts of collection were due to bounced cheques. It was noticed that no separate module was designed in the application to handle such cases. Thus, NMMC followed a system of making the collection zero when information on a bounced cheque was received. Further, it was observed that the ward offices also did not submit the details of bounced cheques regularly. Audit observed that in respect of one ward office, information on bounced cheques between November 2003 and January 2005 were not entered in the system. As a result, subsequent demands of property tax in 17 cases generated were lesser by Rs 2.10 lakh.

NMMC stated that action had been taken in respect of the above 17 cases and reverse entries had been made in the system and the procedure of collecting information on bounced cheques would be streamlined.

However, the requirement of the provision to be built into the system is reiterated.

5.1.11.3 MIS reports not designed

Management Information System (MIS) reports on the tax assessed, demand raised and collected are essential for timely and effective monitoring of property tax collections. Audit observed that there were no such MIS reports designed in the application.

5.1.12 Recommendations

* **NMMC should devise a mechanism in the system to incorporate cases of bounced cheques and design the essential MIS reports in the system**

5.1.13 Security

By way of enunciating an IT security policy, the organisation demonstrates its ability to reasonably protect all business critical information and related information processing assets from loss, damage or abuse.

5.1.14 Inadequate audit trails

Audit trail which depicts the flow of transactions is necessary in a system in order to track the history of transactions, system failures, erroneous transactions, changes/modifications in data *etc*. It was observed that adequate audit trails did not exist in the system as detailed below.

5.1.14.1 Data modified without proper authorisation

Modification of data should be properly monitored and authorized in order to check unauthorized data manipulation.

The software was designed to calculate the notice fee and Delayed Payment Charges (DPC) simultaneously. In 5578 cases though notice fees were charged indicating delays in payment, DPC was not charged. Reasons for not charging DPC were not recorded.

NMMC stated that DPC was waived off in all the above cases.

The reply is not acceptable as no audit trail had been built into the system to capture the reasons, date of such modification, the persons authorising these modifications. Further, no basic records for both modification and waiver were

furnished. In absence of audit trails and manual records, risk of manipulation could not be ruled out.

5.1.14.2   *Missing Assessment records*

The assesses are identified by property tax account numbers/property codes based on the ward to which the properties belong. Analysis of the property data revealed that there were 6017 gaps in the series of account numbers / property codes.

NMMC stated that due to various reasons such as amalgamations and sub divisions of properties and exemptions granted, the records had been deleted from the database.

The reply is not acceptable as no manual record or audit trail was available.

5.1.14.3   *Lack of IT security policy*

It was observed that no security policy has been formulated. Further, while there were only six data entry operators, in the database 147 users had been given access.

NMMC stated that the database administrator was manning the security policy at the database centers and a documented security policy would be prepared.

5.1.14.4   *Lack of disaster recovery plan*

There exists no documented IT disaster recovery plan in NMMC. Further, backups were not taken on CD and kept offsite and were stored in the same server.

NMMC stated that a documented disaster recovery policy would be prepared.

5.1.15   *Recommendations*

☞ **IT security policy and disaster recovery plan should be formulated and implemented.**

☞ **Backup of data should be taken regularly and stored off site.**

☞ **An audit trail to track the transactions should be inbuilt in the system to monitor changes made in the data.**

5.1.16   Other points of interest

5.1.16.1   *Unfruitful expenditure of Rs 9.74 lakh on development of the application for Property Tax*

M/s ACE Televoice and Services was awarded a work order amounting Rs 28.80 lakh for computerisation in Health and Property Tax departments of the NMMC in May 2001 and Rs 4.30 lakh was paid for preparation of the SRS in January 2002. However, the scope of the work was modified and a revised work order for development of applications for property tax and water billing amounting to Rs 11.80 lakh was awarded to the same agency against which payments of Rs 5.44 lakh towards development of application for property tax was made in April 2003. It was noticed that application for property tax was not implemented.

Thus, the total expenditure of Rs 9.74 lakh paid on account of development of an application package for property tax was unfruitful. Further, the work order for the new application for property tax was awarded in November 2005 to M/s Resilient Softech Private Ltd at a cost of Rs 2.00 lakh and the application was under implementation.

NMMC attributed the reason for non implementation of the application developed by M/s ACE Televoice to the lack of involvement of the user department, even though vendor support was available for two years. This indicated lack of coordination and non involvement of the user department in the development and implementation of the application.

5.1.17   *Conclusion*

The general objective of the computerization of property tax functions was to reap the benefits of information technology to improve operational performance besides providing error free and better services to the tax payers. However, even after nine years of computerization, NMMC could not evolve an error free application. NMMC did not maintain proper input records to support data entries relating to assessments. Lack of sufficient input controls along with inadequate monitoring resulted in incomplete and incorrect database. This led to irregular fixation of rateable value and non-adherence to the conditions of minimum rateable value, there by impacting the collection of revenue. MIS reports in respect of demand and recovery were not designed in the application. Receipts entered in the system were not reconciled with manually reported totals received from banks/ward offices indicating poor management controls. Poor security controls and lack of audit trails made the system vulnerable to unauthorized manipulation.

The matter was referred to Government in April 2007. Reply had not been received (December 2007).