PERFORMANCE REVIEWS
(URBAN LOCAL BODIES)

This chapter presents three performance reviews dealing with (a) Computerisation of functions in Chennai City Municipal Corporation, (b) Functioning of health care system in urban local bodies and (c) Financial management in municipalities.

MUNICIPAL ADMINISTRATION AND
WATER SUPPLY DEPARTMENT

CHENNAI CITY MUNICIPAL CORPORATION

2.1   Computerisation of functions in Chennai City Municipal Corporation

Highlights

↘   **Due to deficient planning, the Integrated On-line Information Processing System initiated in 1997 could not be implemented and was abandoned in February 2004 after incurring an expenditure of Rs 1.60 crore.**

(Paragraph 2.1.6.2)

↘   **Incorrect classification of non-residential properties as residential or partly residential resulted in short-assessment of Property Tax of Rs 41.79 crore.**

(Paragraph 2.1.6.4)

↘   **Demands of Rs 4.65 crore for Property Tax were not raised due to deficient systems and *adhoc* procedures followed.**

(Paragraph 2.1.7.1)

↘   **Demand for Property Tax of Rs 52.39 crore was raised short due to deficiency in the computer system.**

(Paragraph 2.1.7.2)

↘   **Property Tax demands of Rs 33.70 lakh were reduced without corresponding collections due to lack of access controls.**

(Paragraph 2.1.7.6)

> ↘ **Incorrect application of unapproved basic rental rates resulted in over assessment of Property Tax by Rs 52.03 lakh.**

(Paragraph 2.1.8.1)

> ↘ **Short-assessment of Property Tax of Rs 1.21 crore was noticed but reasons could not be ascertained due to lack of audit trail.**

(Paragraph 2.1.10.1)

> ↘ **Absence of general control led to a shortfall of 20.53 *per cent* in capture of birth data and 32.89 *per cent* in capture of death data.**

(Paragraph 2.1.11.1)

> ↘ **Data on birth and death lack integrity due to absence of input controls.**

(Paragraph 2.1.11.3)

2.1.1 Introduction

The Chennai City Municipal Corporation (Corporation) started the computerisation of its functions with a UNIX[1] based system in 1988. In 1997, an Integrated Online Information Processing System (IOLIPS) (IRIX[2] platform using Oracle/D2K[3] in client-server architecture) was conceived to cover 41 functions[4] for which hardware and software were acquired at a cost of Rs 1.60 crore. Implementation of IOLIPS was discontinued in 2004. Subsequently, a web-based application was developed in-house using Linux/Oracle for a limited number of functions[5].

Data was captured in 10 zonal offices and the central office. The data was stored in two servers at the main office connected with the zonal offices, through dedicated telephone lines. The computer wing is presently headed by an Assistant Executive Engineer, supported by a Systems Analyst, a Programmer and an Assistant Programmer.

2.1.2 Objectives of computerisation

An integrated computer system was launched in 1997 with funds provided by the World Bank. The objective was to improve the efficiency in the discharge of their responsibilities, elimination of human error in maintenance of records and to speed up the functions.

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[1] **Unix** (officially trademarked as **UNIX®**) is a computer operating system.
[2] **IRIX** is an operating system developed by Silicon Graphics, Inc.
[3] Developer 2000- a front end tool developed by Oracle.
[4] 1. Services (10 functions), 2. Personal management (eight functions), 3. Projects (six functions), 4. Asset management (two functions), 5. Inventory management (seven functions) and 6. Finance accounts (eight functions).
[5] Property Tax, Birth and Death, Professional Tax, Company Tax, etc.

2.1.3   Audit objectives

A review of the "computerisation" in the Corporation was undertaken with the objective of ascertaining whether

↘   the Corporation had a well defined policy and plan for computerisation,

↘   the systems were complete and dependable,

↘   the system had adequate access, input and validation controls,

↘   Property Tax assessments done through the system were in accordance with the rules and rates and

↘   the demands raised/collections made against the assessments were complete and correct.

2.1.4   Audit criteria

The audit criteria adopted were the

↘   Madras City Municipal Corporation Act,

↘   Instructions issued by the Government of India and Government of Tamil Nadu,

↘   Instructions issued and rates approved by the Council of the Corporation,

↘   Information available on the Website and Statistical Cell of the Corporation and

↘   Best practices for a computerised system.

2.1.5   Audit methodology and coverage

A general study of the computer policies of the institution and the systems available was conducted. The acquisition of hardware/software and infrastructure was examined followed by a check of the application software for its completeness and adequacy of controls. The review covered the specific fields of Property Tax and birth and death registration. The entire data for the period 1998-2006 relating to the subjects taken up, was downloaded and examined using SQL Queries and specially developed programs.

Audit Findings

2.1.6   General controls

General controls are the controls that regulate the environment in which the IT operations are run. These cover areas like system hardware and software acquisition and maintenance, application system development and maintenance, data centre operation and access security. Main examples include IT practices pertaining to IT security and information protection,

software change management, segregation of duties, business continuity planning and system documentation.

2.1.6.1 IT policy and planning

A clearly laid out IT policy combined with adequate planning are the essential pre-requisites for successful computerisation. A review of the computerisation process in Corporation disclosed the following lapses in planning.

2.1.6.2 Failure of IOLIPS

IOLIPS proposed for computerising 41 functions did not fructify due to improper planning and non-development of application software.

In 1997, when IOLIPS was planned, Corporation attempted to computerise 41 subjects in one go, without conducting any studies to assess the requirement, feasibility, etc. Equipment and system software were purchased for Rs 1.44 crore and installed in March 1999.

The development of application software was entrusted to Electronics Corporation of India Limited (ECIL), Hyderabad in an open bid, based on their lowest offer of Rs 16 lakh, while all other five bidders had quoted Rs 70 lakh or more. As a result of the inadequate systems study combined with the frequent changes of user requirements by Corporation, the developer could not complete the software even after the lapse of seven years, as against the agreed 15 months. The contract was terminated (June 2004) and implementation of IOLIPS was called off.

Under IOLIPS, the entire operation was dependent on a single central server. The server purchased (March 1999) at a cost of Rs 29.69 lakh recorded 18 *per cent* down time[6] during the period from April 1999-July 2002 due to frequent hardware problems. The server was decommissioned from February 2004 as maintenance of such an unreliable server was considered uneconomical. Though the operation of the server was mission critical, Corporation had failed to consider the risk of attempting to have their entire computerisation dependant on a single server.

Thus, attempt to computerise too many subjects in one go and the incorrect choice of server led to the abandonment of IOLIPS rendering the entire expenditure of Rs 1.6 crore incurred on the project unfruitful, besides contributing to a seven year delay in the computerisation activities of the Corporation.

2.1.6.3 Unplanned development of computerisation - failure of system development controls

After abandoning IOLIPS, the Corporation continued its computerisation with a set of existing stand-alone applications and in-house developed web-based applications for Property Tax collection, birth/death registration systems etc., using two new servers purchased at a total cost of Rs 6.46 lakh. Documentation regarding various manuals, systems design etc., in respect of the in-house developed software, was not done. Absence of documentation

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[6]   Time during which the server was not functioning.

reflects poor business continuity planning and lack of system development controls.

2.1.6.4   *Misclassification of properties in terms of usage – Short-assessment Rs 41.79 crore*

Lack of inbuilt controls to identify properties resulted in misclassification of properties leading to short-assessment of Property Tax (Rs 41.79 crore).

There was no system to monitor the changes in the manner of utilisation of a property if it was not reported by the owner. Such control is pertinent as the Property Tax assessed for a non-residential property is at least three times higher than that of an identical residential property. A comparison of classification of properties in Corporation with respect to that in Chennai Metro Water Authority revealed differences in classification of non-residential properties either as fully or partly residential properties resulting in difference in assessment of Property Tax to the extent of Rs 41.79 crore (September 2006), as shown below:

Sl.No.	Actual status of the property	Status as per assessment of Property Tax	Number of cases	Short-assessment (Rupees in crore)
(a) In respect of assessments made before GRS				
1.	Fully non-residential	Fully Residential	2,279	16.91
2.	-do-	Partly residential and partly non-residential	2,709	16.43
(b) In respect of assessments made after GRS				
3.	Fully non-residential	Fully Residential	346	2.28
4.	-do-	Partly residential and partly non-residential	914	6.17
Total				**41.79**

Besides, there were 11,042 properties that are partly non-residential and partly residential as per Chennai Metro Water Authority, but were treated as fully residential by the Corporation for taxation purpose. As data relating to the area under non-residential usage was not available, the resultant short-assessment could not be quantified.

The misclassifications are also confirmed by the fact that, against some of these properties, treated as residential for property tax purposes, trade licences have also been issued by Corporation.

2.1.7   Property Tax assessment/collection systems

The 'Assessment of Property Tax' has been fully computerised from the last General Revision Survey (GRS)[7] (October 1998). The Property Tax collection system including raising of demands and watching of their collection, developed in-house after abandoning IOLIPS is functioning since 2004 and is

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[7]   The revision of Property Tax of all available assesses by the Corporation is known as 'General Revision Survey'.

being used in the assessment/revision of property tax in respect of all the 5.63 lakh properties in Chennai city. The annual collection of Property Tax was of the order of Rs 220.55 crore (2004-05) forming 82 *per cent* of the total tax revenue, making the system mission critical to the functioning of the Corporation. The Property Tax system maintains the details about the assessees and the tax assessed/revised as master information and the tax due from them in the form of a Demand, Collection and Balance register (DCB) in respect of each half year. The details of collections made are separately maintained with effect from June 2004 for subsequent transfer to the accounts of respective assesses in the DCB. Lack of referential integrity[8] is noticed among the master, DCB and the collection details. The discrepancies due to the lack of referential integrity are listed below.

2.1.7.1   Non-raising of demands for live assesses

An examination of the DCB and the assessment records disclosed that demands relating to 695 assessees aggregating to Rs 71.43 lakh per half year and to Rs 4.65 crore till date (September 2006) were not brought under the DCB accounting system. The existence of these properties was confirmed by the fact that some of them were actually paying their taxes, which were collected and accounted for under suspense.

It was also noticed that details about 850 intervening half-yearly demands amounting to Rs 14.33 lakh were found missing in respect of another 398 assesses.

2.1.7.2   Demands not raised for increased Property Tax from due dates

Non-raising of demands in respect of revised assessments in respect of 11,573 assessments (Rs 52.39 crore).

Whenever there is a change in the area of a building or its usage, the assessment made is revised. Absence of provision for simultaneous updation in the DCB resulted in non-raising of demands amounting to Rs 52.39 crore due to revised assessments of tax made after II half-year of 1998-99 in respect of 11,573 assessments/properties till the II half-year of 2006-07, and the assesses continued to pay their taxes at the old rates. Only with effect from I half-year of 2007-08 the revised demands were found to be updated, prospectively, in DCB.

2.1.7.3   Demands against non-identifiable assesses

Identity details of 18,346 assesses with an outstanding demand of Rs 33.92 crore of Property Tax were missing.

The details of the assessments including name and addresses in respect of 18,346 assesses with an outstanding demand of Rs 33.92 crore were not available in the database. It was also noticed that in respect of certain demands the assessee codes available in the DCB were not in the format as adopted in the assessment database. Thus, there was a risk of non-recovery of the outstanding demands.

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[8]   Ensuring the existence of data in one table with reference to the data already available in another.

2.1.7.4 Inconsistencies in posting of collections

Due to inconsistencies in posting of collection Rs 5.31 crore relating to 12,368 assessees was posted in excess and Rs 5.63 crore relating to 11,984 assessees posted short.

An analysis of the collection file disclosed the following discrepancies.

Discrepancies noticed	Number of Assesses	Amount (Rupees in crore)
Amounts collected from June 2004 to November 2006 still held in the collection file and not posted to individual accounts	49,275	18.32[9]
Collections posted in excess in individual accounts	12,368	5.31
Collections posted short in individual accounts	11,984	5.63
Amounts collected and kept in suspense as assessee codes furnished did not match with any existing assessee	14,681	8.83

The lack of referential integrity between the collection and the DCB coupled with inconsistencies in the posting of the collection information led to the presence of the above cases, rendering the database unreliable.

2.1.7.5 Posting of collections without considering actual demands

The system of posting of collections of Property Tax was not correct.

The Property Tax collection system accepted any payment lesser or excess irrespective of the actual outstanding demand. When excess amounts were collected, the same were neither adjusted against future demands nor exhibited as excess in any of the reports generated through the software.

The results are as below:

Discrepancies	Number of instances
Lump sum collections for more than one half-year, posted against a single half-year	1,455
Lump sum collections for more than one half-year posted against all the related half-years[10] resulting in excess posting	276
The amounts collected were in excess (by over Rs 100) of the demand for no apparent reason	1,49,842

The above discrepancies had the effect of rendering individual accounts incorrect.

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[9]   Age-wise break-up as of September 2006:

     More than two years   :   Rs 0.54 crore (3,779 demands)
     More than one year   :   Rs 10.48 crore (77,211 demands)
     Less than a year but more than nine months :   Rs 7.30 crore (26,836 demands)
     Total   :   Rs 18.32 crore (1,07,826 demands)

[10]   For example, if a half-yearly Property Tax for a property was Rs 100 and tax for three half-years was received, instead of posting Rs 100 in each half-year, Rs 300 was posted in all the three half-years.

2.1.7.6 Reduction of dues without corresponding collections – Rs 33.70 lakh

Details of collections amounting to Rs 33.70 lakh were not available in the database.

A test check of collections posted to the DCB for the year 2006-07 disclosed that collections amounting to Rs 33.70 lakh were posted against 3,316 half-yearly demands relating to 2,360 assessments without corresponding details of collection data being available.

2.1.8 Change management controls

A sound change management procedure ensures that the requisite changes are made into the software in an authorised, accurate and timely fashion and the changes made are properly documented.

2.1.8.1 Application of unapproved basic rates - excess assessment of Property Tax- Rs 52.03 lakh

Application of unapproved basic rates resulting in excess assessment of Property Tax of Rs 52.03 lakh.

It was noticed that higher rates were used in the assessment of Property Tax during November 2004 to April 2005 and thereafter the assessments were done using older rates. However, no documents supporting the approval of higher rates during the period were available. This resulted in excess assessment of Property Tax in respect of 3,221 assessments with the resultant excess demand aggregating to Rs 52.03 lakh.

2.1.9 Lack of input/validation controls

The objective of input control is to ensure that the data received for processing are genuine, complete, not previously processed, accurate and properly authorised and entered without duplication. Validation controls ensure the correctness and completeness of data entered into the system duly checking the same with respect to some other data/range available. These controls are essential in the software of Corporation considering the recurring financial impact such data is bound to have in respect of Property Tax assessment and collection. Analysis of the system revealed the following discrepancies.

2.1.9.1 Incorrect adoption of rental rates leading to erroneous calculation of Property Tax

The city of Chennai is divided into several localities and different rental rates are prescribed for residential usage and non-residential usage in each locality. While the rates for residential properties vary from Re 0.50 to Rs 2 per sq. ft. the rates for non-residential properties vary from Rs 3 to Rs 9. While the system itself could assign these rental rates, assignment of the rates was being done manually. There was no validation control to guard against incorrect assignment of rental rates.

A test check revealed that two to six different rental rates were adopted, in 366 instances, for assessments in respect of properties situated in the same locality and street. There were several instances, where within the same property, the commercial portion was assigned the rate pertaining to one location, while the residential portion was assigned the rate pertaining to a different location. This had the risk of inconsistencies in the assessment of Property Tax.

2.1.9.2 Discrepancy in roof-type information

Roofing in a building is classified into asbestos/tiled or RCC. While the former attracts a 20 *per cent* discount, the latter does not. In the data entry screen, the totals of RCC, asbestos and tiled roofing are first keyed in, followed by a floor-wise break-up therefor. As the totals and the components are independently keyed in, validation of one against the other is possible. The failure to provide for such a validation control may lead to incorrect assessment and also make the information undependable. An examination disclosed 3,491 instances, where the roof totals did not agree with the sum of their component values.

Amongst the above, there were 219 instances where the total area was put under 'RCC' with the entire break up under asbestos/tiled roofing and vice versa in 755 cases.

2.1.9.3 Discrepancy in ownership category information

For the purpose of assessment to Property Tax, usage of a building is classified into four categories namely, residential owner or tenant and non-residential owner or tenant. In the data entry screen, the floor-wise areas under each type of usage are keyed in and stored along with their system-calculated aggregates. A check disclosed that in respect of 367 properties, the aggregate figures did not agree with their respective break-ups indicating lack of validation control between the aggregate and the break-up of the floor wise area.

2.1.10 Process controls

Process controls ensure complete and accurate processing of input and generated data. The objectives of process controls are to ensure that the processing of transactions is correct, accurate and complete. Weak process controls would lead to inaccurate processing of transactions leading to wrong outputs/results. An analysis of Property Tax assessment system revealed the following.

2.1.10.1 Short-assessment of Property Tax – Rs 1.21 crore

The process controls inbuilt in the system were weak and the audit trails were also absent.

In the Property Tax assessment system, only the basic data required for the calculation of tax viz. floor area, roof type, usage, the eventual annual value and the tax assessed are alone stored. In the absence of intermediate factors such as the rental value calculated, the different discounts allowed, the depreciation allowed, etc., a check of all the 79,306 assessments was made after GRS by Audit using the existing procedure to assess the Property Tax. The check revealed that in 465 cases the Property Tax was assessed short by Rs 23.12 lakh per half year and aggregating to Rs 1.21 crore till date (September 2006). Further it was noticed that the system did not contain any audit trail to analyse the wrong procedures adopted by Corporation in calculating the tax in these cases.

2.1.11 Birth and death registration system

Registration of birth and death is carried out through the computer system from 1998 and is presently functioning on a web-based application developed in-house. As on date, the system contains information on 22.28 lakh births and 6.81 lakh deaths. An examination of the data disclosed the following.

General controls

2.1.11.1 *Shortfall in the capture of birth/death data*

The statistical wing of the Health Department of the Corporation independently compiles the details of number of births and deaths in Chennai City, from the zonal offices as gathered from the number of applications received by them. The Health Inspector of respective zonal offices is responsible for providing information to both the statistical wing of the Health Department and for the capture of data in the computer wing. A comparison of data relating to births and deaths available in the database with the data in the statistical wing of the Health Department for the period 1999-2004 revealed the following:

Details	Statistical Wing (Number in lakh)	Database (Number in lakh)	Shortfall (*per cent*)
Birth registration	15.60	12.40	20.53
Death registration	6.11	4.11	32.89

Lack of appropriate input controls had led to incompleteness of data in the computerised system.

2.1.11.2 *Incorrect organisation of birth and death data*

The Corporation, in order to accommodate additional information as required by the Government and to meet the requirement of new Oracle/Linux software developed for them by NIC, had reorganised (January 2004) their database structure. In the reorganised format, many items of information were codified. All data captured subsequently, got stored in the reorganised codified form, while the earlier data remained in the original form, which was not migrated to the current format. The new application software generated birth/death certificates from the revised data formats only and did not have a provision to accept and print data from the pre-revised format. Thus, Corporation had to resort to manual operation in case of data pertaining to earlier period.

Lack of input/validation controls

2.1.11.3 *Incomplete capture of birth and death data*

Registration of births and deaths is mandatory and facilitates the issue of relevant certificates apart from acting as a source of statistical information.

Data in this regard is keyed in from the respective zonal offices and stored in the central server. An examination of the data disclosed that vital information such as name of mother, name of father, sex of the child, place of birth and address of the parents etc., were not available **(Appendix VI)**. In respect of death registration, information such as name of the deceased and cause of death were not available indicating lack of input control. Thus, the data was incomplete.

2.1.11.4   Duplication in data on birth and death

There were instances of duplication in registration of births and deaths due to lack of input controls.

Registration of births/deaths is compulsory and is done with reference to intimation received from hospitals or from other authentic sources. Registration of birth/death is identified by a unique serial number, which contains the year, number of the zone, number of the division and serial number of registration in that sequence. In the present system, the registration numbers are assigned manually.

An examination of the birth data disclosed that the same registration number had been assigned for more than one birth. This resulted in 3,36,842 different births being registered using only 1,57,274 different registration numbers[11] indicating that more than one birth was registered under the same registration number in many instances. Similarly, only 38,558 registration numbers[12] were assigned to 81,843 deaths.   There were also instances where the same birth/death was registered under different registration numbers. This indicated lack of input controls.

2.1.12   Conclusion

Computerisation in Corporation that commenced in 1988 is still in an initial stage of implementation. Due to deficient planning, the IOLIPS project initiated in 1997 could not be implemented and was abandoned in February 2004 after incurring expenditure of Rs 1.60 crore. Lack of documentation and absence of controls made the database incomplete and unreliable. Weak process controls led to inaccurate processing of transactions leading to incorrect assessments of Property Tax. Lack of referential integrity among Property Tax assessment system, DCB and collection details coupled with inconsistencies in the posting of the collections made the database unreliable. The birth and death registration database was incomplete to the extent of 20.53 *per cent* and 32.89 *per cent* respectively for want of controls to ensure their completeness. Thus the overall objective of the computerisation in Corporation was yet to be achieved.

2.1.13   Recommendations

↘   Chennai City Municipal Corporation should formulate a clearly defined IT policy and put in place a monitoring system involving the top level management.

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[11]   Birth registration numbers repeated twice 1,42,660; repeated thrice 11,548; repeated from 4 to 12 times 3,066.

[12]   Death registration numbers repeated twice 34,418; repeated thrice 3,616; repeated from 4 to 6 times 524.

↘ Development of systems should be planned for, documented and done under proper authority.

↘ Considering the criticality of the IT system, sufficient input and validation controls should be incorporated to ensure its reliability.

↘ A system should be evolved so that changes in rates etc., are adopted only under orders of competent authority.

↘ Considering the volume of revenue handled, the referential integrity among the assessment, demand and collection systems needs to be strengthened.

↘ Action may be taken to make the master data complete and accurate.

The above points were referred to Government in January 2007; reply had not been received (May 2007).