CHAPTER II

PERFORMANCE REVIEWS

This chapter presents three performance reviews dealing with (a) Computerisation in municipalities, (b) Solid Waste Management by municipalities and corporations and (c) Income from remunerative assets of municipalities.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

2.1   Computerisation in municipalities

Highlights

↘   **Of the 18 functions taken up for computerisation, only five to six, on an average, were implemented.**

(Paragraph 2.1.5)

↘   **Software developed was not fully utilised due to defective planning.**

(Paragraph 2.1.6)

↘   **Unwarranted supply of programme development tool (Visual Studio .NET software) and Digital Audio Tape Drives to municipalities resulted in avoidable expenditure of Rs 77.63 lakh.**

(Paragraphs 2.1.7 and 2.1.8)

↘   **Non-raising of demand for Property tax of Rs 39.84 lakh per half year between April 2002 and September 2005 resulted in non-recovery of Rs 2.11 crore.**

(Paragraph 2.1.10)

↘   **Data relating to the 'Birth and Death Registration' contained a variety of errors and deficiencies rendering the data unreliable.**

(Paragraph 2.1.17)

↘   **Due to lack of audit trail, causes for inaccuracies in the calculation of Property tax aggregating to Rs 94.43 lakh could not be identified.**

(Paragraph 2.1.20)

2.1.1   Introduction

In order to improve the efficiency of municipalities in the discharge of their responsibilities Government decided (December 1996) to computerise their functions[1]. This was taken up in 1997 at a total cost of Rs 4.64 crore through a World Bank loan. Additional servers and networking facilities were supplied to the municipalities at a total cost of Rs 10.53 crore in 2003-04.

2.1.2   Functions computerised

An application software in FoxPro encompassing 18 functions[1] of the municipalities was developed by Electronic Corporation of India Limited (ECIL) and supplied to all the municipalities in 1997. The same application was redeveloped by ECIL in client-server environment with Oracle (RDBMS) and Visual Basic (Front end) in 2002.

Software for five crucial functions listed below were further developed in-house on the same platform:

- ↘   Property tax
- ↘   Water charges
- ↘   Professional tax
- ↘   Miscellaneous collection
- ↘   Personnel management

The software was to be made use of in 102 municipalities (excluding 49 Grade-III municipalities) across the State.

2.1.3   Scope of audit and audit strategy

During the review, conducted from July to September 2005, IT policy, planning, development and implementation of the application software in various municipalities were assessed.

A sample of 20 *per cent* of the municipalities under each grade was selected for detailed examination as indicated below:

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[1]   (i) Birth and Death Record System, (ii) Buildings Plan Approval, (iii) Census Records, (iv) Electoral Rolls, (v) Financial Accounting System, (vi) Hospital Records Maintenance, (vii) Miscellaneous Collection System, (viii) Mother and Child Welfare, (ix) Movable and Immovable Properties, (x) Non-Tax Revenue, (xi) Personnel Management System, (xii) Professional Tax System, (xiii) Property Tax System, (xiv) Stores and Inventory, (xv) Solid Waste Management, (xvi) Trade License, (xvii) Water Charges System and (xviii) Vehicle Records System.

Grade of Municipality	Actual Number	Number Audited
Special Grade	13	3
Selection Grade	26	5
Grade-I	38	7
Grade-II	25	5
Total	**102[*]**	**20**

[*] In June 2004, Government upgraded 49 Town Panchayats as Grade-III municipalities. As computerisation there had just begun, these were not taken up for Audit.

2.1.4 Audit objective and methodology

The objective of the review was to assess whether the aim of computerisation, implemented with a view to bringing about an effective management and rendering better services to the public at minimum cost was achieved. Uniform implementation of the software in all municipalities, suitability of its design, adequacy of controls, consistency, correctness and dependability of data to achieve the set objectives were examined.

Information on the status of computerisation was collected through a questionnaire. Data commencing from implementation (November 2003) of the Oracle system till August 2005 was downloaded and examined in audit using SQL Queries and special programmes.

2.1.5 Partial implementation of computerisation

The computerisation taken up in 1997 is yet to become fully operational in the municipalities for all functions on any of the platforms (either FoxPro before 2002 or Oracle). On an average, only five to six[2] out of the 18 functions were implemented in the municipalities (September 2005) (**Appendix XIII**). There was lack of uniformity in software across the municipalities and monitoring of its implementation was inadequate. Even the implemented modules required corrections and supplementation.

2.1.6 Acquisition of Application Software – defective planning

On commencement of computerisation in 1997, a stand-alone application software encompassing 18 functions was developed by ECIL in 1997 in FoxPro at a cost of Rs 57.95 lakh and installed (September 1998) in all municipalities. At a stage when only four out of these 18 modules had been implemented (2002), a new software for the same functions was developed by ECIL in client-server architecture in 2002 on Oracle at a cost of Rs 26.55 lakh.

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[2] (i) Birth and Death Record System, (ii) Property Tax System, (iii) Water Charges System, (iv) Non-tax Revenue, (v) Professional Tax System and (vi) Miscellaneous Collection System.

Both these softwares were developed without finalising, the requirement of the user in the form of an 'User Requirement Specification' or the assessment of the requirement by ECIL in the form of 'System Requirement Specification'. Even before the Oracle software could be fully developed and supplied by ECIL, the Department resorted to in-house customisation of the same. Accordingly, of the 18 modules developed on Oracle by ECIL, five modules were customised in-house and are under implementation. Efforts are on to customise other modules as well. It is apparent that inadequate planning and inadequate assessment of user and system requirement led to frequent changes in development of software and sub-optimal utilisation of software developed at a cost of Rs 84.50 lakh.

2.1.7   Supply of unwarranted software development tool

Unwarranted supply of software resulting in avoidable expenditure of Rs 44.48 lakh.

Computerisation in the municipalities was to work on a set of centrally developed programmes. Accordingly, only executable versions were to be supplied to them since personnel at the municipalities were neither required to make any alteration in the software supplied, nor develop programmes on their own. Hence they did not require any program development tool. However, one copy of 'Visual Studio .NET' procured from HCL Info Systems Limited at a cost of Rs 43,610 (per copy, excluding taxes) and supplied (October 2003) to all the 102 municipalities. No justification for the purchase was drawn up and placed on record. The expenditure of Rs 44.48 lakh on the supply of this software was avoidable.

2.1.8   Unwarranted supply of Digital Audio Tape drives

Unwarranted supply of backup device resulted in avoidable expenditure of Rs 33.15 lakh.

The server procured from HCL Info Systems Limited and supplied (October 2003) to each municipality contained a Digital Audio Tape (DAT) drive costing Rs 32,500. Each municipality was also supplied (October 2003) with one external CD writer. Though both these devices were for taking backup of data, all the municipalities chose to use the external CD writers only. Thus, the supply of DAT drives did not serve any purpose and expenditure of Rs 33.15 lakh incurred towards its supply was infructuous.

2.1.9   Lack of documentation

Though the software developed in-house was in operation for five crucial functions of the municipalities, no documentation or user manuals were prepared and supplied to the municipalities for any of these modules. This resulted in users committing errors as brought out in paragraphs 2.1.18 to 2.1.20.

2.1.10   Demands not raised in respect of assessed properties

Non-raising of Property tax demands to the tune of Rs 2.11 crore in 622 instances.

Taxes for all properties are assessed by the computer system and demands are raised thereafter. In five municipalities taken up for examination, a comparison of the assessments and the demands disclosed that there were 622 instances where properties were assessed for tax of Rs 39.84 lakh while no

corresponding demands were raised. Half year-wise break up of the instances are given in the table below:

Year	Period of the year	Number of cases	Amount per half year (Rupees in lakh)	No. of half yearly periods	Total amount (Rupees in lakh)
2002-03	I half	80	5.53	7	38.71
2002-03	II half	33	23.92	6	143.52
2003-04	I half	10	0.24	5	1.20
2003-04	II half	50	0.31	4	1.24
2004-05	I half	118	7.78	3	23.34
2004-05	II half	114	0.75	2	1.50
2005-06	I half	217	1.31	1	1.31
Total		**622**	**39.84**		**210.82**

In respect of these cases, demands were not raised, due to lack of referential integrity[3] and internal control mechanism resulting in non-recovery of Property tax of Rs 39.84 lakh per half year aggregating to Rs 2.11 crore between April 2002 and September 2005.

Inadequacies in the transfer of Data

The data from the manual system was captured in the FoxPro based application and thereafter the same was transferred to the Oracle based application. However, there were inadequacies in the data transfer as brought out in the following paragraphs.

2.1.11   Non-reconciliation between manual records and computer data

When a computerised system replaced the manual system, all the manual records were transferred to the computerised system. The data thus transferred was to be reconciled with the manual records. However, in respect of all the revenue collection functions in the test checked municipalities, the data captured in the computer system was yet to be reconciled with the manual records. Thus, collection of various dues to the municipalities was carried out based on the unreconciled data on the computer system. As a result, the correctness and completeness of the computer data was not ensured.

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

2.1.12   Incomplete transfer of data from FoxPro to Oracle

Data captured in FoxPro was not fully transferred to Oracle, rendering the latter data deficient.

Data for all 'Demand, Collection and Balance' based accounting procedures and 'Birth and Death Registration' was captured in 1997 in FoxPro based applications from manual records. When the application was converted to Oracle in 2003-04, the data was migrated using a conversion software. However, in respect of Property Tax System, only the identity of the assessee and the tax payable by him were converted to Oracle leaving out factors like type of construction, age of building, usage, area, annual value, etc. Similarly, in respect of Birth and Death, while the FoxPro application had data from 1992, only data from the year 2000 had been migrated to application based on Oracle. Such incomplete migration of data rendered the present Oracle Database deficient and incomplete. As a result, the calculation of tax during further revisions or making modifications to the existing tax may not be feasible with the current Oracle data.

Deficiency in System Design

The software run in the municipalities had design deficiencies and was unable to function as one integrated unit as brought out in the paragraphs:

2.1.13   Lack of proper integration of modules

The system for collection of dues was claimed to be on-line and fully integrated with all the in-house and external collection counters being linked on LAN and the data centrally stored. However, the collection function was carried out using software developed in-house while the Financial Accounting System being utilised was developed by ECIL. Lack of integration between these modules resulted in tax collection details not reaching the accounting module automatically. As a result, collection details had to be fed manually to the Accounting Module, giving room for errors defeating the purpose of having an integrated system and increasing the time and cost of updation.

2.1.14   Different assessment numbers for the same properties for Property Tax and Water Charges systems

Despite the system being integrated, the same set of properties were given different codes for different functions.

Property tax was due from all properties in a municipality, while Water charges were due only from properties, which had water connections. Thus, payers of Water charges were only a subset of the payers of Property tax. In an integrated computer system it would have been advantageous to have the same code for both Water charges and Property tax. However, the same property was given separate codes for each of these functions thus constituting a deficient data design. As a result, introduction of controls in the form of referential integrity between the two tax collection systems was not possible. A test check, in Ambattur Municipality alone revealed that 2,296 assessees who were paying Water charges were not correspondingly assessed for

Property tax. Thus, there was a risk of non or short-assessment of Property tax.

2.1.15   Non-assignment of Zones by the computer system

The area under each municipality was divided to fall under three or four different zones depending on its prevalent rental value. Each zone was assigned a different 'basic rental rate' using which the Annual Value (AV) of the property was calculated. In the present system, the user had to feed in the Zone Code manually, based on which the computer selected the related 'basic rental rate' and calculated the AV of the property. Incorrect feeding of the Zone Code would lead to under or over assessment of Property tax, which could be avoided if the Zone Codes were included in the master table(s) and the Zone Code was selected automatically based on the address of the assessees.

An examination of data in respect of 15 streets in the Pallavaram Municipality having 210 properties, disclosed that 51 properties where assigned incorrect Zone Codes. This resulted in short assessment of Rs 0.39 lakh in 36 cases and excess assessment of Rs 0.17 lakh in 15 cases.

2.1.16   Incorrect procedures followed in respect of accountal of cheques

The software provided for the accountal of cheque payments and for their reversal if a cheque got dishonoured. However, all the municipalities test checked resorted to receiving and holding cheques outside the computer accounting system till their realisation. Such methodology defeated the purpose of having Property tax collection on-line. Apart from presenting an inaccurate financial position this procedure is inconsistent with the provisions of the Accounting manual for urban local bodies and provides scope for possible irregularities in the handling and accountal of cheques.

2.1.17   Deficiencies in birth and death data

The data on 'Birth and Death Registration' had a variety of errors in large numbers rendering the data unreliable.

For the registration of birth and death, different municipalities were using different versions of the software. An examination of 8.75 lakh births and 1.19 lakh deaths registered in the 20 selected municipalities, disclosed errors and omissions in the data. The major discrepancies noticed are tabulated below:

Sl. No.	Discrepancy	Number of cases
1.	Registrations done on dates earlier to the date of their occurrence	4,519 births in 15 municipalities 4,875 deaths in 13 municipalities.
2.	Age of mother at the time of child birth lower than her age at the time of marriage	1.26 lakh birth cases in 15 municipalities constituting 14.35 *per cent* of the total births (8.75 lakh) in 20 municipalities.
3.	Name of the Father or Mother left blank or filled in with meaningless characters	11,953 births in 18 municipalities. 13,002 deaths in 18 municipalities.

Sl. No.	Discrepancy	Number of cases
4.	Name of the deceased left blank	904 instances in 17 municipalities.
5.	Address of the father of the child left blank	5.39 lakh cases in 20 municipalities constituting 61.64 *per cent* of the total births (8.75 lakh).
6.	PIN code entered as '0'	6.53 lakh cases comprising 74.63 *per cent* of the total number of records examined in 20 municipalities.
7.	Irrelevant characters and numbers were fed in place of religion	10,100 births in 18 municipalities.
8.	Cause of death left blank	9,210 cases
9.	Cause of death contained meaningless character	4,506 cases
10.	Weight of a child on birth:	
	Remained blank	16,104 cases
	Contained Dots and dashes	4,563 cases
	Given as '0'	1.29 lakh cases

All the above errors and omissions were due to lack of effective validation controls at the data input stage thereby adversely affecting the integrity.

Inconsistencies in the calculation of Property tax

Instead of integrating the constant parameters in the application software itself, the assessment of Property tax was done based on a set of parameters to be keyed in by the user at the time of installation of the software. Several deficiencies were noticed in the application of such parameters besides some inaccuracies in the software itself leading to incorrect Property tax assessments as brought out in the following cases:

2.1.18   Inapplicable discount for RCC buildings

Incorrect discount allowed for RCC buildings resulting in short assessment of tax of Rs 3.34 lakh.

Although no 'roof discount' is applicable for RCC buildings as per existing rules, parameters for roof discount of one *per cent* was given for such buildings in Ambattur and Mayiladuthurai municipalities. While Mayiladuthurai municipality was yet to commence assessments through the Oracle application, Ambattur municipality had assessed 8,445 RCC roofed properties giving a discount of one *per cent*.

Non-incorporation of crucial parameter[4] into the system resulted in incorrect data entry of the discount rate leading to short assessment of Property tax of Rs 3.34 lakh from the time of introduction of the Oracle application (2003) to the second half year 2005-06.

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4   Parameter indicating discount based on roof type.

2.1.19   Incorrect calculation of Library cess

Library cess collected in respect of each Municipality is to be calculated at 10 *per cent* of Property tax. Despite it being a constant percentage of the Property tax, 'percentage' was required to be entered as a parameter for calculation of Library cess. This unnecessary procedure gave room for the municipalities keying in wrong parameters and calculating incorrect amounts for Library cess. If this parameter had been incorporated in the software itself, incorrect calculation of Library cess as stated below could have been avoided.

	Municipalities		
	Alandur	**Madhavaram**	**Mannargudi**
Basic Tax (*per cent* of AV)	11	10.5	14
Percentage of AV to be taken as Library cess	1.1	1.05	1.4
Percentage of AV actually taken for calculating Library cess	10	1.5	10
Number of cases of incorrect calculation	548	1,556	184
Library cess actually collected (in Rupees)	1,78,854	1,41,018	11,896
Library cess actually due (in Rupees)	19,672	98,708	1,666
Excess Collection (in Rupees)	1,59,182	42,311	10,230

2.1.20   Error in calculation of Property tax – Lack of Audit Trail

A well defined and complete audit trail is a pre-requisite for ensuring reliability of data and also acts as an effective internal control mechanism. The system under review did not provide a complete audit trail for the calculation of Property tax. As a result, reasons for short or excess assessments involving Rs 94.43 lakh could not be ascertained in audit or explained by the municipalities.

For want of a complete Audit Trail in the data tables, difference of Rs 94.43 lakh in Property tax could not be reconciled.

Municipality	Usage	No. of cases	Excess or short assess-ment of tax	No. of cases	Difference (amount in Rupees)
Erode	Residential	2,929	Excess	430	3,33,812
Alandur	Commercial	838	Short	483	89,93,865
Alandur	Residential	3,885	Excess	33	45,523
Madhavaram	Residential	1,515	Short	1,408	24,399
Madhavaram	Commercial	29	Short	28	38,418
Madhavaram	Industrial	25	Short	25	6,631
Total		**9,221**		**2,407**	**94,42,648**

Further, lack of an internal control mechanism led to such inaccuracies remaining unidentified.

2.1.21   Deficiency in application software

Property tax is the sum total of 'Basic tax', 'Library cess' and 'Education tax'. The software has to ensure that the Property tax assessed is the sum total of all the three component taxes. However, in 515 cases from Gobichettipalayam and Erode municipalities, the Property tax calculated did not work out to the total of the three component taxes. The break up details of excess and shortfall year wise is as given below:

Year	Excess		Shortfall	
	Number of cases	**Amount (In Rupees)**	**Number of cases**	**Amount (In Rupees)**
2001-02	1	742	..	..
2002-03	68	47,969	5	401
2003-04	251	2,31,836	78	1,85,419
2004-05	97	52,639	1	123
2005-06 (first half year)	13	2,315	1	64
Total	**430**	**3,35,501**	**85**	**1,86,007**

Such errors in totalling in a limited number of cases cannot be attributed to faulty programming. This is possible only if the tax calculated by the computer has been altered by direct access to the back end tables indicating lack of logical security controls.

2.1.22   All residential properties treated as occupied by the owner

Rented residential properties in large numbers were declared as owner occupied resulting in short levy of Property tax.

Owner occupied residential properties were due for a discount of 30 *per cent* on Property tax. It was seen from the data tables relating to 15 municipalities that the number of rented residences were grossly under-projected in 11 municipalities and ranged between zero to two *per cent* (**Appendix XIV**). In the other four municipalities this ranged between 17 and 30 *per cent*. It was apparent that rented residences have been declared as owner occupied in many municipalities as gauged from the following facts.

↘   Statistics collected at the Municipality of Pallavaram in the year 1999 indicated that 12.8 *per cent* of the residential buildings were rented.

↘   Similarly, an examination of data of the same municipality relating to the earlier FoxPro based system (2002-03) indicated that 11.7 *per cent* of their residential buildings were rented.

↘   The Pallavaram Municipality had not even created a provision in their application software to assess rented residential properties. Consequently, the municipality recorded a '0' *per cent* residential rented accommodation in the

4,803 residential properties assessed using the Oracle system. The municipality in its reply (September 2005) offered to correct the omission in the software and data.

It is thus apparent that municipalities had grossly under-projected the number of rented residences.

2.1.23 Collections of Property tax not accounted for against individual's accounts

An examination of the data relating to collection and accountal of Property tax for the period 1994-95 to 2005-06 disclosed the following discrepancies.

The accountal of amounts received against Property tax demands was deficient.

↘ 10,369 half yearly demands aggregating to Rs 1.33 crore were reduced despite there being no corresponding receipts, indicating that demands were reduced even without collections.

↘ In respect of 626 half yearly demands, the reduction of demands were more than the corresponding collections by Rs 7.11 lakh.

↘ 5,502 receipts aggregating to Rs 65.36 lakh though recorded as received were not accounted for as collections against demands.

↘ In respect of 6,858 half yearly demands, the reduction of demands were less than the corresponding collections by Rs 70.96 lakh.

Such inaccuracies in the treatment of collections indicated complete mis-match between demand and collection data leading to the inconsistencies in the database apart from making the data itself unreliable.

2.1.24 Conclusions

On account of the deficiencies in planning, the computerisation in the municipalities that started in 1997 is incomplete even after incurring an expenditure of Rs 15.17 crore. Though the software was developed twice by ECIL on different platforms, the Department proceeded with customising the same in-house. The software customised in-house was also deficient resulting in lack of data integrity. Lack of documentation resulted in users being unable to make correct use of the software. Unnecessary hardware and software valued at Rs 77.63 lakh were supplied to the municipalities resulting in avoidable expenditure. Demands amounting to Rs 2.11 crore were not raised and inapplicable discounts were allowed to the tune of Rs 3.34 lakh. Incorrect data design, non-availability of audit trail, lack of referential integrity and internal control mechanism resulted in incorrect tax assessments.

2.1.25 Recommendations

For proper implementation of computerisation in the municipalities, the following is recommended:

↘   Proper planning should precede any computerisation effort, focusing on the in-house expertise available.

↘   Documentation of computerisation in terms of design documents, user manuals, etc., should be ensured.

↘   An effective internal control mechanism to monitor the implementation and operation of the computerisation process may be put in place.

↘   System should have an in-built mechanism to capture audit trail of transactions in view of its criticality to the functioning of the organisation.

↘   Referential integrity in the database should be ensured.

↘   Reconciliation of the computer data with the manual data should be carried.

↘   As the basic rates of the tax, Zone Codes, etc., do not change frequently, their entry at the data entry stage should be avoided by automating the same.

↘   User manual should be obtained from the software developer.

The above points were referred to Government in December 2005; reply had not been received (January 2006).