3.4   Computerisation of District Employment Offices

Highlights

The Department of Employment and Training runs 35 Employment Exchanges in order to bring about a better matching of the demand for and the supply of work opportunities in the State. The Department has under its control, one employment exchange for each district, apart from special exchanges for technical, handicapped and professional candidates.

➢ **In the absence of Y2K compliant FoxBASE, DBMS, 3245 dates between 2000 and 2008 got stored as dates between 1900 and 1908.**

(Paragraph 3.4.7.1)

➢ **The database being localised at the district level, could not be utilised to generate State-wide lists of eligible candidates.**

(Paragraph 3.4.7.1)

➢ **Manual intervention resulted in errors in data entry in respect of 'due date for next renewal' and premature lapsing of 22,733 registrations.**

(Paragraph 3.4.8.1)

➢ **Manual intervention was resorted to during selection of candidates for employment rendering the authenticity of the selection process doubtful.**

(Paragraph 3.4.8.2)

➢ **Out of the 1,90,670 re-registrations carried out in 2007, renewal was not done in respect of 3,555 candidates, resulting in pre-mature lapsing of their candidatures.**

(Paragraph 3.4.8.3)

➢ **Lack of input controls and validation checks resulted in awarding of higher seniority to 9.31 lakh candidates, duplication of data entries in respect of 1.28 lakh candidates and incomplete data with respect to the qualifications of 2,07,199 candidates.**

(Paragraphs 3.4. 9 and 3.4.10)

➢ **There was a backlog of 6.50 lakh candidates (26 *per cent*) in data entry for the period 2004-07.**

(Paragraph 3.4.11.2)

3.4.1   Introduction

Computerisation of Employment and Training Department commenced in 1988 and its implementation completed in 2002-03. So far, Rs.2.50 crore has been spent on hardware and system software. The functional activities of the Department, like registration, renewal and sponsoring of candidates for

employment have been computerised. Now, the Department is totally dependent on the computer system for their day to day operations. The system was developed by M/s.Tata Consultancy Services using DOS based FoxBASE as DBMS[1], Novell NetWare as operating system and Clipper as programming language. The system works on a batch process and is decentralised to the district level.

3.4.2 Organisational structure

The Department is headed by a Commissioner of Employment and Training (CET) at the State level and a set of three Joint Directors and four Regional Deputy Directors assisted by one District Employment Officer in each District.

3.4.3 Audit objectives

The objectives of audit were to check whether:

➢ the computerised system met the basic objectives of the Department;

➢ the application was developed with adequate application controls to ensure completeness, accuracy and reliability of the data;

➢ the versions of the application in use were current and uniform;

➢ adequate security controls were inbuilt in the system to ensure the safety of data against accidental or wilful manipulation, and

➢ the computerisation was supported by business continuity plan.

3.4.4 Audit criteria

The criteria of audit are

➢ manuals and rules in force

➢ policies of the government with reference to the selection of candidates

➢ instructions issued from time to time for maintenance and updation of data

3.4.5 Scope of audit

As the Department completely relied on the computer system for its activities, the data maintained in the system needed to be complete, accurate and reliable. The data from 31 out of 35 District Employment Offices (DEOs) were examined. Data in respect of the remaining 4 DEOs were not made available to Audit. Other activities of the Department like training and payment of unemployment Assistance, not being computerised, remained outside the scope of this review.

3.4.6 Audit methodology

The review commenced with an entry conference with the Head of the Department. The rules, regulations and policy decisions relating to computerisation were reviewed. Further, information was gathered through

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[1]   Data Base Management System

questionnaire issued to all the DEOs. Data from the commencement of computerisation till date of audit (January 2008) was obtained and analysed using Computer Assisted Audit Techniques. The provisions and controls available in the application software were ascertained through an examination of the data entry screens and a review of the source code wherever required. Audit observations were then confirmed by a detailed study in five DEOs[2] in the State. Audit concluded with an exit conference (July 2008) with the Commissioner of Employment and Training wherein all observations raised were discussed.

Audit findings

3.4.7 Deficiencies in General Controls

3.4.7.1 Post-implementation review not carried out

The application software now in use has been in operation for over 6 to 20 years and is being used with all the deficiencies with which it was implemented. No attempt has been made to review the functioning of the system by conducting a comprehensive post-implementation review to detect, analyse and correct errors or deficiencies existing in the system.

- *Database Management System*

The DOS based FoxBASE DBMS in use for the storage and management of the data in the employment exchanges was deficient in the following respects:

(i)   The DBMS in use could not ensure uniqueness of records.

(ii)   Non-availability of logical access controls in the FoxBASE DBMS provided easy access to the data through the back end, affording scope for data manipulation, by-passing the access controls provided at the front end.

(iii)   DOS based applications were designed for stand alone personal computers and hence the built-in security features were inadequate for a multiple user system on a Local Area Network

(iv)   It has no in-built provision for ensuring relational integrity within the database

The discrepancies of data as indicated in subsequent paragraphs were attributable to the deficient DBMS in use. Department continued to depend on a deficient DBMS for its day to day activities.

- *DBMS in use was not Y2K compliant*

It was observed that since the DBMS was not Y2K compliant, 3,245 dates falling between the years 2000 and 2008 entered in "dd/mm/yy" format representing dates of registration, dates of seniority etc, were stored in the system as the dates between 1900 and 1908. This resulted in consideration of 348 candidates as senior-most by the system during selection of candidates to be sponsored for employment. Manual intervention was resorted to remove such candidates, before forwarding the same to the respective employers.

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[2]   District Employment Offices at Chennai, Coimbatore, Kancheepuram, , Madurai, and Thiruvallur.

> - *Non-switching over to a centralised database*

In a manual system, it was not possible to maintain the data relating to citizens seeking employment for the State as a whole (with around 67 lakh candidates) and to utilise the data to prepare the required outputs in a consolidated form. It was seen that even after computerisation, as the database was localised at the district level and not maintained as a State-wide centralised database, the prospective lists of candidates for employment could be generated at the district levels only. The resultant deficiencies are as follows.

Failure to have a centralised database resulted in several operational deficiencies.

(i)   State-wise lists of eligible candidates based on requests from departments like education, transport etc. could not be generated through the system.

(ii)   While a candidate is permitted to have one registration across the State, a test check of data relating to three[3] pairs of adjoining districts disclosed that 47 candidates had registered themselves in two DEOs. It was also detected in a test check of data in four[4] districts that 49 candidates had more than one registration in the same DEO.

(iii) Renewals could be carried out only at the office of the original registration.

(iv)   Candidates were allowed to transfer their candidature from one employment office to another without loss of seniority. Transfer of candidates across districts required manual intervention and thus resulted in delays and gave scope for data entry errors and manipulation. A test check of transfers made to Chennai and Thiruvallur Districts from nearby districts[5] disclosed that due to manual intervention, in respect of 224 candidates, the seniorities higher than their previous seniorities were assigned in the latter districts.

Government in their reply (November 2008) accepted the observations and promised corrective action. Government have also stated that the system was proposed to be shifted to a more secured centralised Relational Database Management System (RDBMS).

3.4.8   System development controls

3.4.8.1   *Deficiency in system design*

> - *Candidates getting placed in jobs on their own – information not captured in the computer system*

A registered candidate after getting employed is required to surrender his/her employment card. However, the system did not have a provision to capture the fact. In the absence of such information in the system, there is a risk of maintaining the records related to the employed personnel live in the system as well as denial of opportunities to genuine candidates continued to exist.

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3   Kancheepuram- Thiruvallur, Madurai-Dindigul and Coimbatore-Udhagai
4   Thiruvallur, Kancheepuram, Madurai and Coimbatore
5   Into DEO Chennai General from Kancheepuram, Nagercoil, Thiruvallur, Vellore and Tiruvannamalai; Into DEO Thiruvallur from Kancheepuram, Nagercoil, Chennai General and Vellore.

- *Due dates for renewal of registrations-non utilisation of system*

Manual interventions resulted in pre-mature lapsing of registration.

The registration of a candidate would lapse if not renewed before the due dates. It was noticed that the due dates for next renewal were calculated and entered manually instead of by the system. This manual intervention led to entry of due renewal dates earlier to the actual in respect of 22,733 candidates due to which their registration would lapse prematurely. Similarly, the registration of 18,937 candidates would remain live even beyond the dates of their actual due renewal due to entry of later dates.

- *Non-capture of critical information - Enhanced seniorities given to transfer-in candidates*

Transferred candidates given enhanced seniorities.

As stated earlier the system is maintained as a localised data base. Further, the system has no provision to capture the registration number of the earlier district and only the name of the earlier district was captured while admitting the transfer of the candidates. A test check of data in six selected districts revealed that the information relating to most of the transferred candidates were not available in their earlier districts as detailed in **Table 1.**

Table 1

Transfer		Total number of transferees	Number of candidates not traceable in the original district
From	**To**		
Thiruvallur	Chennai	435	417
Dindigul	Madurai	307	272
Ooty	Coimbatore	149	134
Tirunelveli	Tuticorin	469	397
Nagercoil	Tirunelveli	381	345
Krishnagiri	Salem	63	40

Hence, the accuracy and validity of seniorities assigned to such transferred candidates could not be ensured.

- *Re-registration type not stored in computer system*

The database did not have provision to store the re-registration types

The registration of a candidate lapsed on account of non-renewal or on getting employment could be revived and re-registered without loss of seniority. The re-registration could be effected in the system in the following three different circumstances i.e., if sought for re-registration within

(i)   90 days from the date of his ousting from his employment.

(ii)   18 months after the due date for his renewal was over, under 'general relaxation'; or

(iii)   such time limits as stipulated under 'special relaxations' by the Government.

Lack of provision to capture the type of re-registration resulted in lack of information and lack of audit trail whereby the correctness of the due dates for next renewal as entered in the system could not be ensured.

- *Monitoring the selection of sponsored candidates*

The list of prospective candidates as per the seniority is generated as per the requirement of employers and sponsored for employment. After the

completion of the selection process, the status is to be reported back to the Department by the respective employer to record the details of the selected candidates. A person thus sponsored for an employment may get selected or rejected or might not have reported to the employer. The system however, did not have a provision to capture the fact of a person not reporting for the selection. Thus the information regarding such candidates could not be tracked through the system.

Government in their reply (November 2008) stated that steps would be taken to correct the database and address the deficiencies pointed out in their proposed new system.

3.4.8.2 Non-utilisation of System – Outputs generated by the computer system required manual intervention

One of the objectives as envisaged through maintenance of a computerised system was to select the eligible candidates based on different criteria from a large number of registrants. However, the system was not able to generate comprehensive lists of candidates satisfying different criteria at a time and required manual intervention, brought out as under.

(a) When an employer required candidates from Open Competition, Backward Class and Most-Backward Class, etc. the system could not generate a single list with the required number of candidates with relevance to proportionate reservation percentage. Hence, separate lists had to be generated in respect of each reservation category. As open competition also contained the candidates of other categories there was an overlapping of candidates between the lists, were required to be removed manually.

The system could not generate the final output as required by users and required manual intervention

(b) Due to errors in data relating to doubtful seniority, qualifications, lacking in information, etc., manual intervention was resorted to delete the name of certain candidates due to such errors from the list generated through the system. In order to accommodate such removal by manual intervention the users were compelled to generate a list with more number of candidates than required.

(c) The system could not generate the required list of eligible candidates when candidates were required based on more than one criterion like a conductor's license with Higher Secondary qualification. In such circumstances candidates satisfying one criterion were generated through the computer system and those having the second criterion picked out therefrom manually.

The Department continued to use this system for more than six years with all these deficiencies without taking any action to address these issues. Further, manual interventions pose the risk of frauds, manipulation leading to denial of opportunities for genuine candidates.

In respect of (b) above, Government stated (November 2008) that the proposed modified system would take care of the deficiency. In respect of (a) and (c) the reply furnished did not address the issues raised in the observations.

3.4.8.3   Non-linking of processes by the system

- *Candidatures not renewed on re-registration*

Based on relaxation orders of the Government, the lapsed registration of the candidates satisfying certain conditions were allowed to be revived without loss of seniority through re-registration process. The process of re- registration was carried out in the system in two stages

1. Changing the status of the candidate from 'lapsed' to 'live' (Re-registration)

2. Updating his 'due date for next renewal' (Renewal).

However, the system allowed completion of re- registration with the first stage alone without invoking the second stage. As a result, though the lapsed candidatures were revived, the respective 'due dates for next renewal' were not updated. Failure in this regard resulted in candidature of revived candidate getting lapsed, when the process to detect and lapse the registration of candidates who were not renewed their registration was carried out at the end of the month rendering the whole re-registration process futile.

Data analysis revealed that the candidature of 3,555 candidates out of the 1,90,670 re-registrations carried out during the year 2007 were prematurely lapsed at the end of the month of re-registration itself, while the due date of next renewal according to the respective candidate being three years from such date of revival.   Thus, deficient and non-transparent service was rendered to the candidates.

- *Candidatures not renewed on registration of an additional qualification*

Non-renewal of registration of additional qualification resulted in pre-mature lapsing of 9,997 registrations.

Whenever a candidate registers for an additional qualification, his candidature would be renewed for further three years with effect from that date as per the provisions contained in the Department's circular No.22/92 dated 23 April 1992. The registration process and the renewal process have to be carried out through distinct modules in the application software. In the event of not carrying out the renewal process, the candidature lapses pre-maturely based on the non-updated renewal date already available in the system. Due to not linking of these two processes and failure to carry out renewal process, registration of 9,997 candidates out of 4,18,181 candidates who had registered for additional qualifications during 2005 to 2007 were indicated as lapsed even before the end of 2007.

Government in their reply stated that field officers were asked to account for the premature lapses, and corrective measures were proposed in respect of non-renewals on registration of additional qualifications.

3.4.8.4   Deficiency in application software - Information on placement of candidates not captured in the data

The details of candidates getting employed through the system were required to be maintained in the system along with the other details of employment like the employer, remuneration, etc. However, due to a deficiency, the system failed to provide the link between the candidate and the employment awarded

to him. This has resulted in non-availability of details of employments awarded in respect of 54,633 candidates.

Government in their reply (November 2008) stated that the lacuna in the program will be removed.

3.4.9   Input controls and validation checks

Input controls and validation checks ensure the data entered is complete, accurate and reliable. The department did have a manual control whereby data captured was manually checked, authenticated by the HOD and stored as a hard copy at the end of each day.   Ineffectiveness of this critical control combined with lack of other input controls/validation checks resulted in the following accuracies in the database.

(i)   Apart from other criteria, a candidate is always recommended for employment based on his seniority. Despite the criticality of this information, the data contained the following discrepancies.

> ➢   The date of seniority was blank in 18,349 instances and system considered them as senior-most.

> ➢   There were 654 instances where the date of seniority was prior to 1,963 when the Department was not even formed.

> ➢   There were also 633 instances where the seniority was given as a future date.

> ➢   Apart from transfer candidates, no candidate can have a seniority date higher than his date of registration. However the data contained seniority dates higher by a few months to a few years than their respective registration dates in respect of 9,30,974 candidates.

(ii)   Due to absence of validation checks with respect to the date of birth , thesystem accepted dates in respect of acquiring various qualification which resulted in indication of candidates acquiring such qualifications much earlier than the possible limits as detailed below.

> ➢   9,178 candidates were shown to have completed their Matriculation at less than 15 years of age,

> ➢   22,434 candidates were shown to have completed their Higher Secondary (Plus Two) at less than 17 years of age and

> ➢   6,249 candidates were shown to have completed their Graduation at less than 20 years of age.

(iii)   Seniority of candidates is maintained against the respective National Code for Occupation (NCO) for which they had registered and the type of employment to which they are to be recommended is based on the NCO. Though NCOs were standardised and their entry was mandatory for deciding the nature of job opportunities

> ➢   NCO codes were not captured in respect of 919 candidates and

> ➢   NCO codes captured did not conform to the standardised codes available in the system in respect of 2,235 candidates.

(iv)   The fifth character in the Registration Number indicated the sex of a candidate. However,

➢   a redundant provision to capture the sex of the candidate has also been made

➢   discrepancies relating to sex of the candidate were noticed in 5,853 live candidates between Registration Number and as indicated in the separate column meant for storing the same.

Registrations of over 26,000 candidates remained incomplete

(v)   The registration of the candidate has to go through a three-stage process in the system. Failure to complete the registration process would result in no benefit accruing to the registrant. Lack of input controls resulted in incomplete registration process in the following cases.

➢   There were 20,636 instances where registrations were left incomplete at the preliminary stage where only few details of the candidates were entered.

➢   In 5,494 other instances, though full details of candidates were captured, the third stage i.e., the transfer of the data to the database was not gone through.

In respect of the above mentioned observations, Government (November 2008) stated that the data will be examined and remedial action taken.

3.4.10   Data Management

It is imperative that necessary controls need to be in-built to ensure safety of data against corruption, loss or duplication during restoration of the back ups in the event of disaster, transfer of data between machines. Deficiencies in this regard had resulted in

1.28 lakh duplicate entries made in the database rendered the same unreliable.

➢   64,913 candidates having duplicate entries with the same registration number, name and date of birth,

➢   63,210 candidates having duplicate entries for the same qualification,

➢   details of qualifications were not available in respect of 2,07,199 candidates and hence could not be considered for any employment,

➢   names and identities were not available in respect of 61,315 candidates though the details of qualifications were   available and hence could not be offered any employment opportunity

➢   postal addresses for communication were not available in respect of 11,472 candidates.

This indicated lack of input controls and resulted in poor service rendered.

Government (November 2008) have stated that the instructions were issued to the field officers to make good the missing data.

3.4.11 General Controls

3.4.11.1 Lack of documentation/training

In order to maintain the business continuity of the system it required comprehensive training and a documented user manual. Though the Department claimed that training was provided to the staff during 1997 and 2000, and user manual was available, it was noticed that neither user manual nor any trained personnel were available in the DEOs. Due to lack of training and in the absence of user manuals, the users were unable to use the system efficiently. The CET stated that (July 2008) staff would be given training on the functioning of the system.

3.4.11.2 Backlog of data entry

During the time of declaration of examination results (SSLC, Higher Secondary etc) due to the rush for registration, the registration process was done manually and registration was confirmed through the manual 'employment card' given to candidates.

Registration details of 6.50 lakh candidates were not fed into the computer system.

However, it was noticed that some of these manual registrations were yet to be entered in the computer system. Data analysis revealed that the details of 6.50 lakh out of 24.98 lakh candidates who had registered during the period 2004-2007 were yet to be entered in the computer system. As the selection of candidates for employment was done only through the computer system, these candidates were deprived of the benefits from their registrations. Thus, *26 per cent* of registered candidates were kept outside the computer system which indicated failure of service intended.

Government in their reply (November 2008) stated that instructions were issued to field officers to clear the backlog at the earliest.

3.4.11.3 Lapsing of Registration of candidates

The registration of the candidates who did not renew even after the grace period of two months after the prescribed due dates, were identified and were given "*lapsed*" status through a separate process carried on the last day of each month. On a test check of data, it was revealed that the process was not carried out in 10 districts[6]. Such failure was not even monitored by the head office. Thus, the status of registration of 2,48,534 candidates continued to remain *live* even without due renewal.

Government in their reply (November 2008) stated that action has been initiated to monitor the running of this process as per schedule.

3.4.12 Conclusion

The computerisation in the Department, despite its criticality, continued to function on outdated software lacking in controls and security features. For want of a comprehensive post-implementation review, the system with several deficiencies continued to be in operation for about 20 years. The computerisation lacked in manual and system input controls resulting in a database with erroneous data. Inadequate monitoring by the management led

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[6]   Coimbatore, Cuddalore, Dharmapuri, Krishnagiri, Perambalur, Salem, Sivaganga, Tiruvarur, Udhagai and Villupuram.

to backlog in data capture. The decentralised, unlinked district level database was unable to handle inter-district transfer of registrations efficiently and failed to render State level outputs when required. The present unreliable database compounded with the non-supply of user manuals and lack of training led to an inefficient functioning of the system. Further, manual interventions led to scope for manipulation.

Thus, after an investment of Rs.2.50 crore and being in operation for about 20 years, the objective of computerisation in the Department of Employment and Training is yet to be fully achieved.

3.4.13 Recommendations

➢ A comprehensive review of the software has to be conducted and errors that have crept in due to system deficiencies and lack of controls in the existing database should be corrected.

➢ The backlog in data capture has to be cleared without further loss of time.

➢ It should be ensured that system generated outputs are free from errors without requirement for manual alterations.

➢ The system has to be switched over to a centralised database on a more secure RDBMS to improve its efficiency.

➢ Introduction of E-Services may be considered for registration and renewal.

➢ To avoid heavy rush on the declaration of results, sharing of data available with the Education Department may be considered for registration.