

## **2.4 INFORMATION TECHNOLOGY AUDIT OF BRANCH AUTOMATION IN THE KERALA STATE FINANCIAL ENTERPRISES LIMITED**

### **Highlights**

#### **Major Audit findings are as follows:**

**The application software though developed/ handed over in March 2001, the cash transactions at the Pilot study branches made online by August 2002 and the final acceptance of the Branch Automation Software (BAS) effected on 17 June 2004, the BAS, failed to stabilize even after 3 years from the date of acceptance.**

*(Paragraph 2.4.6)*

**Though the hardware and software for 66 branches were ready by April 2006, the Company failed in rolling out automation to the 56 branches as planned and the Hardware/Software costing Rs. 5.42 crore lay idle at these branches for more than one year. Further the expenditure to the extent of Rs. 8.95 lakh incurred against the Annual Technical Maintenance on software licenses procured for the 66 branches proposed to be made online became infructuous.**

*(Paragraph 2.4.6)*

**Inadequate validation controls enabled the sanctioning of multiple gold loans to customers on a given day, exceeding permissible limit and consequent loss of interest to the company.**

*(Paragraph 2.4.11)*

**The adoption of wrong logic for the computation of interest by the system resulted in excess payment of interest under sugama deposit scheme.**

*(Paragraph 2.4.13)*

**The Trial balance generated from the system varied widely with the manually generated trial balance at the Kesavadasapuram Branch due to incorrect legacy data capture.**

*(Paragraph 2.4.15)*

### **Introduction**

**2.4.1** The Kerala State Financial Enterprises Limited (KSFE) was incorporated in November 1969 as a Government Company with a view to socialising Chitty\* business in the State, so as to ensure safety, security and

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\* Chitty or kury is a transaction in which a person, known as Foreman, enter into an agreement with a number of persons, known as chittals, who shall subscribe a certain amount of money by periodical installments for certain definite period of time and that each in his turn, as determined by lot or auction, shall be entitled to prize amount payable in cash after deducting the foreman's commission.

better service to the public thereby protecting them from exploitation by private financial institutions. The Company also provides other facilities such as Chitty Loan, Gold Loan, Fixed Deposit Loan, Reliable Consumer Loan, Trade Loan, Hire Purchase Loan, Loans under New Housing Finance Scheme and House Modernising Scheme, Special Car Loan, Sugama Savings Deposit, Akshaya Deposit, Kerala Golden Jubilee Chitty (KGJC) Scheme, etc to the public. The company with an authorized capital of Rs. 25 crore and paid up capital of Rs. 10 crore earned an operational profit of Rs. 44.12 crore based on an annual turnover of Rs 268.32 crore during 2005-06 as per the certified annual accounts.

With a view to overcome the threat of efficient customer service by financial institutions like banks, non banking financial institutions and other local chitty institutions with their computerised environment, the Company decided (1999), to go in for complete automation to be implemented in three phases starting with the front office automation of its branch offices. The company selected (July 2000), Accel Limited for analyzing the business requirement, preparing feasibility study of the project and for developing the application software for the Front Office automation of the branch offices. The branch automation software developed by Accel Limited., installed at the two branches, viz. Thrissur Main (November 2001) and Kesavadasapuram (August 2002) was accepted by the company on 17 June 2004 after testing and was rolled out to 12 out of 269 branches as on May 2007.

The Branch Automation Software (BAS) in use in the company has been developed in Red Hat Linux Enterprise edition 3 with Visual Basic as front end and Oracle 9i / 10g as back end.

As on date (May 2007) the total outlay on computerization inclusive of computer, accessories and software amounted to Rs 8.83 crore. The number of PC/ Desktop used in the Company was 620 (HO-98; RO-25; Branches-487 and SDT-10). The additional expenditure estimated for computerization of existing/expected new branches and development of new application software for the HO and RO is Rs. 20.74 crore.

### **Organisational Structure**

**2.4.2** The Managing Director, the Chief Executive of the Company, is assisted by a Business Manager and a Finance Manager at the Head Office (H.O.) located at Thrissur. The Senior Manager (IT) reports to both General Manager (Finance) and General Manager (Business) based on functions. The Company has five Regional Offices (R.O.) located at Ernakulam, Kollam, Kozhikode, Thrissur and Thiruvananthapuram, managed by respective Regional Managers and the business is carried out through a network of 269 branch offices (as on 30 April 2007) spread all over the State. The total staff strength of the Company as on 31 March 2006 was 4115, consisting of 1089 Officers, 2397 Assistants, 306 Subordinate Staff and 323 Part-time Employees.

### **Audit objectives**

**2.4.3** To increase efficiency and competence in all areas of operations and to overcome the threat of efficient customer services by other financial institutions by;

- Establishing connectivity between all the branches, regional office and head office
- Introducing internet remittance facilities in selected branches in tie up with selected banks to exploit business from NRI customers.
- Introducing debit cards and virtual branch concept.

### **Scope and Audit methodology**

**2.4.4** Considering the investment of Rs 8.83 crore and the anticipated expenditure of Rs 20.74 crore in the Automation of Business Critical Operations, audit felt it necessary to evaluate the IT governance framework of the project to assess the adequacy of General IT Controls and Application Controls using COBIT framework and Computer Aided Audit Techniques (CAAT).

The audit was conducted during the period March 2007 to May 2007. The branches located at Kesavadasapuram, Thrissur Main, Thrissur Evening and Patturaikkal, the Regional Offices at Ernakulam and Thrissur and the department of IT at Head Office were covered during the review. The detailed audit findings are as given in the succeeding paragraphs.

### **Audit criteria**

**2.4.5** The criteria considered for assessing the achievement of audit objectives were

- Targets set up and their achievements regarding project implementation
- Guidelines provided in the functional manuals in respect of chitties, loans etc.,
- Rules and procedures prescribed for the conduct of chitties and sanction, disbursement, follow up as well as recovery of loans.

### **Project implementation**

#### ***Absence of IT strategy***

**2.4.6** The company decided (March 1999) to go in for full computerisation of its branches, to call open tender for providing consultancy services covering system study, programming, implementation etc., and to constitute an expert committee for monitoring the computerisation project. The expert committee selected Accel Limited, the lowest tenderer and awarded (25 July 2000) the firm, the work of conducting feasibility study, developing the most suitable software and implementing the software at the two branches selected for pilot study at their quoted rate of Rs. 10 lakh. The contract period stipulated was

five months from the date of order (ie., software to be delivered by December 2000).

As per the original project plan the software developed for front office automation was proposed to be on trial run upto 15 March 2000 and the full automation was proposed to be achieved by 2002-03 including the development of upgraded software for the regional office and head office. The application software developed by Accel Limited was handed over in March 2001 and the cash transactions at Thrissur Main and at Kesavadasapuram were made online in November 2001 and August 2002 respectively. The final acceptance of the Branch Automation Software (BAS) was however effected only on 17 June 2004. Owing to the inordinate delay in acceptance of the 'Branch Automation Software', the initial plan for total computerisation by 2002-03 failed to materialise. The reasons attributable for the inordinate delay in freezing the software were

- Delay in procurement
- Fragmented implementation/testing of various modules in the software
- Incorrect/ delayed data capturing
- Frequent revision of user requirement specification.

It was observed in audit that

- Though the Board resolved (27 October 2004) to roll out the frozen software to 66 branches (inclusive of 35 existing branches and 31 new branches) and though the hardware and software were ready by April 2006, the company did not succeed in rolling out automation as planned and the Hardware / Software costing Rs 5.42 crore was kept idle at 56 branches for more than one year as on May 2007. The reasons attributable were the delay in procurement of hardware, site preparation, deciding on branches to be computerised and legacy data capture. Had the 36 new branches launched since June 2004 been automated at the beginning itself, the delay in automation due to the delay in legacy data capture could have been avoided.
- The company procured (January 2005) Oracle Enterprises License (50 User) for head office, Oracle Standard Licenses (355 user) for branches and regional offices, one copy each of Red Hat Linux (Advanced Server Premium) for head office and regional offices and Red Hat Enterprises Server standard Edition for branches at a total cost of Rs 49.63 lakh inclusive of Annual Technical Support fee. Owing to the delay in procurement of hardware (April 2006), its installation expenditure to the extent of Rs 8.95 lakh incurred against the Annual Technical Support fee on software licenses procured for 66 branches proposed to be made online became infructuous as the period of technical support expired by February 2006.
- As per the feasibility study and other management reports the manual operation and parallel run was expected to be concurrent only for 6 months and thereafter the surplus manpower was proposed to be redeployed at branches identified for computerisation in the next

phase. It has, however, been noticed that in all automated branches, except in Thrissur Main, parallel run and manual accounting are being continued including the four branches which were online for more than six months namely, Kesavadaspuram, Thrissur Evening, Patturaikkal and Kadakkavoor. As such, the envisaged benefit of 40 *per cent* reduction in employee cost failed to materialise.

- As per the agreement dated 28 September 2004 with Accel Limited the developer assured KSFE all technical support based on agreed rates for maintenance of the BAS and implementation in new office for three years. KSFE has not yet acquired the technical expertise to install, implement and maintain BAS and the agreement will expire by September 2007. As such the company will have to depend upon external agency to implement the BAS, which is legally the property of KSFE when it goes for implementation in other branches in future.

Management stated (September 2007) that the I<sup>st</sup> Phase of Branch Automation covering 66 branches was over by June 2007 and that the warranty provided by Accel Limited was extended by one year from 1 August 2007 to 31 July 2008.

#### ***Improper testing, Acceptance of BAS***

**2.4.7** As per the work order (25 July 2000) issued to Accel Limited for the development of application software for the front office computerisation of branches, KSFE reserved the right to suggest necessary changes in the application software developed till trial runs are completed and the application software accepted finally. It was also specified that all modules of the software should be subjected to three level acceptance test. The time schedule for system analysis, prototyping, submission of interim reports, trials and final reports to be furnished by the supplier were however not decided upon and a test plan for acceptance of the software were not formulated.

The final user acceptance test of the Branch Automation Software was conducted at Thrissur Main branch (June 2004) and it was certified that the developed application software is user-friendly, agree with the systems followed by the company, contains sufficient security measures and controls to check manipulation as well as tampering of data, supports the company's information system processing and business requirements efficiently and effectively and that the system is ready to be deployed in other existing/ new branches. However on a scrutiny of change request pending clearance by the Developer, it was observed that certain modules were not developed according to business rules and that certain provisions essential for day to day operation were lacking in the software as detailed below:

- Fixed deposits pledged against chitties could not be closed to the chitty in default based on a previous effective date, though such closing was permitted by the Chitty Rules being followed.
- One Time Settlement and like schemes were not incorporated in the software.

- Every personal surety offered were considered new and consolidated figure for the total liability of a surety could not be traced out.
- Closing of Terminated chitty was not possible through the system
- Lack of log of modification/ deletion in operational accounts leading to possibility of deletion of an account after accounting collection.

These defects though pointed out to Accel Limited for rectification, are yet to be rectified (May 2007). It was reported that (February 2007) the developer was not clearing/ checking/ modifying the corrections at their end to the satisfaction of the end user.

Thus the Branch Automation Software installed at the pilot study branches, frozen after 4.5 years, and rolled out to other branches, failed to stabilize even after three years from the date of freezing.

### ***General IT controls***

**2.4.8** The controls in IT process and services i.e., the policies, procedures, practices and organizational structures designed to provide reasonable assurance that business objectives will be achieved and undesired events will be prevented or detected and corrected are referred to as General IT controls. Though the Company initiated their computerisation process in 1999, even till today, i.e., after eight years they have not formulated any IT strategy covering the investment/operation budget, funding sources, sourcing strategy, acquisition strategy and legal as well as regulatory requirements; defining how IT will contribute to the enterprise's strategic objectives (goals) and related costs and risks. They also do not have any

- IT Security policy,
- IT Password policy,
- Change Management Policy, and
- Version Control procedure.

Absence of these policies make the entire process of computerisation vulnerable.

## **Results of Data Analysis**

### ***Inadequate validation controls***

**2.4.9** Audit observed that the business rules of the company were not properly incorporated in the system. This resulted in inadequate inbuilt validation controls as follows.

### ***Gold loan for public***

**2.4.10** The gold loan scheme of the company provides that where the total loan required is Rs 30,000 or below, the loanee is permitted to pledge the ornaments in two to three accounts. If the loan required is above 30,000 the pledge should be in one account and request for further loan, on the same day, should not be entertained. The rate of interest on Gold Loan for amount exceeding Rs. 50,000 applicable was simple interest of 11 *per cent* and

12 per cent (for default) w.e.f. 1 June 2005 vide Cir No. 82/2005 dated 27 May 2005.

A scrutiny of records at Kesavadasapuram branch and Patturaikkal branch revealed that the BAS did not have adequate controls to comply with the above two conditions as detailed below:

- The Kesavadasapuram branch had issued 423 gold loans to 157 customers, on a given day pledging the gold in more than one account, where the total amount of loan advanced to a single customer exceeded Rs. 30,000 in violation of gold loan scheme envisaged by the Company. The BAS did not have a control to prevent issue of loans pledging gold in 'more than one account' where the total loan amount advanced to a customer exceeded Rs. 30,000.
- User level selectable controls were introduced in the system only on 01 June 2005 for provision of control for higher rate of interest which provided for 11 per cent and 12 per cent for loan amount exceeding Rs. 50,000 per loan
- On an analysis of the BAS data in audit using CAAT it was noticed that where the total amount advanced per day per customer under gold loan scheme exceeded Rs. 50,000 it was paid as multiple loans enabling extension of undue benefit by application of lower rate of interest. The system did not have control measures to ensure pledging of gold in only one account when the total amount advanced exceed Rs. 30,000 and limiting the issue of multiple loans wherein the total amount paid to a customer per day exceeded Rs. 50,000 as higher rate of interest was due to the Company in such cases.
- Due to sanctioning of 271 multiple loans to 94 customers at Kesavadasapuram branch and 8 Multiple loans to 4 customers at Patturaikkal branches on a given day, wherein the advanced amount in total exceeded Rs 50,000 the Company has lost interest amounting to Rs 22,059 (Kesavadasapuram Rs. 20,725 and Patturaikkal Rs.1,334) where the interest installments were repaid by customers.
- At Kesavadasapuram branch it was observed that Gold Loan 12 numbers to Customer No 10,644 on 18 January 2007 and 15 numbers to Customer No. 10,023 totaling Rs.2,00,800 and Rs. 2,64,400 were issued on consecutive numbers and that on various dates issue of multiple loans to Customer No. 10,023, 10,644, 6,852 and 9,268 continued, where the total amount issued as loans exceeded Rs. 50,000, selecting the higher interest rate control.

The company stated (September 2007) that the flexibility to open more accounts has been provided in the BAS to bring about a judicial and practical flexibility in the conduct of Gold Loan business in a highly competitive environment. However, this was not supported by any management decision and the rules in force are being violated.

### ***Gold loan to employees***

**2.4.11** As per the Gold Loan scheme operated in the Company, interest concession to employees of the Company is limited to an advance of Rs 50,000 at anytime at all branches taken together. Though the Company has developed application software, “Gold Loan Liability Verification” to verify the extension of reduced interest rates to employees and to limit per person liability to a specified level to outsiders the system has not been updated and is not in use. The Branch automation software developed for the automation in branches failed to incorporate such laid down controls in the programme and the employees/outsideers split the loans and accommodate themselves for lower rate of interest and higher amount of loan than entitled, even at the branches which are automated.

The Gold Loan Scheme in BAS does not have control to evaluate the amount outstanding to a single employee on a given date. Interest rate controls are limited to a single loan and this enables employees to draw multiple loans exceeding Rs. 50,000 at concessional rate of interest as the total amount outstanding is not considered for working out the interest.

### ***Pre-closing of the deposit account against chitty default***

**2.4.12** As per the Handbook of schemes, at KSFE, “a chitty subscriber can offer fixed deposit at KSFE as security towards future liability against prized chitties. If default occurs in remittance of chitty installment, the subsequent FD interest credited to sugama account may be adjusted to chitty installments by forfeiting the dividend and charging penal interest. If the default exceeds three installments and the subscriber fails to respond to the registered intimation, such fixed deposit should be closed prematurely on the due date of the fourth defaulted installment itself. Even if such closure is actually done at a later date it should be given effect to retrospectively on the due date of the fourth defaulted installment”.

Normally, the pre-closing of FD to chitty installment due was not done on the due date of the fourth defaulted instalment. At Kesavadasapuram branch, as the ‘Branch Automation Software’ restricts premature closing of FD at a prior date, the closing is being done manually and the FD had been left open in the system. At the Thrissur Main branch penal interest is being charged on the dues and FD interest is being given till the date of FD closing, and the FD is closed through the system. Charging of penal interest on dues and payment of interest on FD for the periods beyond the due date of the defaulted fourth installments are beyond the scope of existing rules and regulations in the company and as such procedure followed is unauthorised.

### **Adoption of incorrect logic in computation of interest on Sugama Account**

#### ***Interest computed in excess***

**2.4.13** Sugama Deposit scheme aims at providing a deposit facility similar to SB account in banks. Initial deposit and minimum balance to be maintained at any time should not be less than Rs.100. For interest eligibility a minimum amount of Rs.250 should be maintained by a customer other than KSFE employees (wherein the minimum balance amount required was Rs.100). Interest calculated at the rate notified by the board was credited twice in a

year, on 30 September (interest relating to the period March to August) and 31 March (interest relating to the period September to February). The interest was calculated on the minimum balance maintained in the account between sixth and the last day of any month.

Audit scrutiny revealed that the system adopted wrong logic for computation of interest resulting in excess payment of interest on sugama amounting to Rs. 1,52,616. The calculation logic followed by the program (as informed by the management during September 2007) was (A) (Minimum Balance x Rate of Interest) / (12 x 100) as against the correct logic of (B) (Minimum Balance x Interest rate per annum x No. of Days in the Month) / (100 x No of days in a year). The importance of days in each month and in each year was totally ignored which has resulted in extending excess interest over the notified rate to customer in the month of February and months having only 30 days. The table only kept records in respect of minimum balance for the month arrived at and the date of reckoning of minimum balance was not captured in the table, as such the audit trail to check the functioning of the program was lacking.

Audit also observed that the system did not have proper control over computation of interest of account holders maintaining minimum balance of less than Rs 250 but more than Rs. 100 violating the scheme.

#### **Incorrect data entry**

##### ***Improper maintenance of Customer Register***

**2.4.14** Customer Register is the basic and most important part of the software in which the information about the appropriate facts and figure of a customer available to from Chitty Variola, Fixed deposit Application Form, Loan Application etc. is entered. All the fields in this register are to be entered correctly to enable classification of the customers based on their Age, Sex, Marital Status, Economical Status, Category, Social Status, Annual Income etc. in the MIS module of the Software. In case a Customer is already in the Customer Register modification of the Customer register for Address difference or any other reason shall be carried out avoiding duplicate entry. On an analysis of the data table following were noticed:

- The customer number though should have been generated by the system consecutively, without allowing gaps between two numbers, the register contained 114 gaps in case of Thrissur Main and 2 gaps in the case of Kesavadasapuram branch.
- The Dates of Birth entered in the table were erroneous in 5,939 out of 7,403 records in Thrissur Main, 9,174 out of 10,842 records in Kesavadasapuram and 4,529 out of 5,597 records in Patturaikkal branch. The incidence of erroneous Dates of Birth, which was on an average of 82 *per cent* largely occurred during legacy data capture due to lack of data validation. The wrong entry of date of birth has led to inability to compare the customer based on his age profile and to ensure whether any loan was given to minors.
- The column Electoral Id, Passport No, Driving License No, PF No, PAN which were incorporated in the customer register for unique identification of a customer based on documents issued by

government authorities were not validated with rule that 'at least one of them should not be blank' and this has resulted in more than 99 per cent customer remaining without unique identity

- The details of Date of Birth were erroneous in most of cases and the details of unique document number were blank in most cases out of 30 Employee customer accounts in Thrissur Main branch, Patturaikkal branch and 20 Employee customer accounts in Kesavadasapuram branch.
- More than one account was being maintained for the customers whose Name, Permanent Address and Communication Address entered in the Customer register table are identical. There were 241 customer records in Kesavadasapuram branch, 149 customer records in Thrissur Main branch and 45 customer records in Patturaikkal branch which were duplicates based on Name, Permanent address and Communication address fields.
- Actual duplication of customer records could not be quantified as the Names were recorded placing the initials before / after names or expansion / contracting of part of the name and variation in Permanent and Communication address due to expansion or contraction of part the address.

**Non reconciliation of Sugama Balances**

- Audit verified the *sugama opening account* in comparison with *sugama operative account*, *sugama non-operative account* and found that, the closing balance of sugama accounts as on 31 March 2006 did not tally with the balance appearing in the *sugama operative account*, *sugama non-operative account* due to the presence of negative balance in table *sugama opening account* as detailed in table below

Name of Branch	Sugama opening account	Sugama operative account	Sugama non operative account	Total of Schedule
(Amount in Rs.)	A	B	C	D =(B +C)
Thrissur Main Branch	1,39,88,519.22	1,68,16,712	56,170	1,68,72,882
Kesavadasapuram	(13,04,37,870.56)	1,94,74,671	71,071	1,95,45,742
Patturaikkal	1,67,45,480	1,67,10,112	35,368	1,67,45,480

- The balance of sugama operative account (Rs.1,94,74,671), sugama non-operative account (Rs.71,071) as per system did not tally with the audited trial balance of sugama operative account (Rs.1,93,05,089) and sugama non-operative account (Rs.71,081) at Kesavadasapuram.
- The difference was due to existence of negative balance of one record at Thrissur Main and 59 records at Kesavadasapuram and existence of duplicate records for 14 sugama account totaling Rs. 3,344 at Kesavadasapuram. The fact remains that there should not be negative balance in sugama, as it is a deposit account and customer is not allowed to overdraw.

Name of Branch	Positive balance of records in Sugama opening	Negative balance of records in Sugama opening	Sugama opening
	(Amount in Rupees)		
Thrissur Main Branch	1,68,72,882	(28,84,362.78)	1,39,88,519.22
Kesavadasapuram	1,95,49,086	(14,99,86,956.56)	(13,04,37,870.56)
Patturaikkal	1,67,45,480	nil	1,67,45,480

- As on 31 March 2006 there were 667 zero balance accounts at Kesavadasapuram, 533 zero balance accounts at Thrissur Main and 319 zero balance accounts at Patturaikkal branch in the table *sugama opening balance* and on an analysis of these zero balance with the table *sugama account closing* it was found that 254 accounts at Kesavadasapuram, 188 accounts at Thrissur Main and 199 accounts at Patturaikkal were not closed in system but were having Zero balance. The presence of negative balance in sugama scheme table maintained in BAS and difference in the balance of *sugama opening balance* with total of *sugama operative account and sugama non-operative account* points to fact that the BAS system is not self reconciling in respect of sugama
- Further though Kesavadasapuram branch was made online during August 2002 the table of *sugama interest amount* contained 3335 records relating to 280 sugama accounts pertaining to the period June 1990 to July 2002 and the interest on these accounts worked out to Rs 1,14,908 on minimum balance of Rs. 2,08,07,628. The fact remains that parallel manual accounting is being continued at Kesavadasapuram branch and the sugama account in total shows negative balance. The cause and effect of the working of interest as discussed above could not be ensured in audit.

#### ***Difference between the system generated and the manually arrived at Trial Balance***

**2.4.15** The Thrissur Main branch, Kesavadasapuram branch and Thrissur evening branch of the company were made online on 1 November 2001, 1 August 2002 and 1 April 2005 respectively. Parallel manual accounting is being continued at Kesavadasapuram and Thrissur evening branch and the same was lifted at Thrissur Main Branch. The Branch Automation software developed by Accel Limited based on the SRS prepared by Accel Limited was accepted by the company and declared production ready satisfying all documented requirements in line with the business objectives of the company on 17 June 2004. However the Trial balance as on 31 March 2006 generated from the system varied widely with the Trial Balance generated manually at the Kesavadasapuram branch. According to the company, the difference was due to errors in legacy data capturing.

#### **Conclusion**

**The Company took up the front office automation of the branches as early as 1999 to overcome the threat of efficient customer services by other financial institutions by establishing connectivity between all branches, regional offices and head office, introducing internet remittance**

facilities, debit cards and virtual branch concept. Even after a lapse of eight years branch automation alone was attempted to and that too was introduced only in 12 out of 269 branches (May 2007). The Branch Automation Software installed at pilot study branches at 2001 accepted after trial run for four and a half years and rolled out to 12 branches is yet to be stabilized even after three years from the date of freezing. Further the business rules were not mapped in the software properly. Since the head office, Regional offices and branch offices were not fully computerized, the company was not able to collect/generate the required reliable data for the effective control in respect of conduct of chitties and sanction, disbursement, monitoring and recovery of loans. Owing to the continuance of parallel manual accounting beyond six months as projected, at computerised branches, the envisaged labour efficiency of 40 per cent failed to materialize.

### **Recommendations**

The company should

- arrange to modify the BAS by suitably rectifying the defects occurred in mapping of Business Rules and incorporation of validation controls.
- arrange to test the software adopting a standard testing methodology before the expiry of AMC agreement with the vendor.
- frame strategies/policies as required for the implementation of BAS in the remaining branches.