FINANCE DEPARTMENT

2.2   Information Technology Audit of 'Integrated Financial Management System'

The Government of Punjab initiated (October 2009) the Integrated Financial `Management System to bring transparency and responsiveness in public financial management by establishing a network between all stakeholders. An information technology audit of the 'Integrated Financial Management System' brought out shortcomings/deficiencies in the implementation of the project that undermined the achievement of its objectives in the State. Some of the significant audit findings are summarised below:

Highlights

➢ **Instead of availing services of Punjab State e-Governance Society, a designated agency of the State Government at no extra cost, services of Punjab Infotech were taken at four *per cent* of the project cost for implementation of the project resulting into avoidable expenditure of ` 1.59 crore.**

(Paragraph 2.2.6.1)

➢ **Treasury operations and pension (management and monitoring) modules were not fully implemented.**

(Paragraph 2.2.6.3)

➢ **Punjab Treasury Rules in respect of monitoring of Abstract/Detailed Contingent bills were not adequately mapped as a result of which the System was not depicting correct status of pending Abstract Contingent bills. Data analysis showed that 49,277 Abstract Contingent bills amounting to ` 7,400.91 crore were pending for adjustment against the actual pendency of only 976 Abstract Contingent bills amounting to ` 2,044.97 crore as of March 2016.**

(Paragraph 2.2.7.2)

➢ **The requisite validation checks for processing of bills and unauthorised operation of heads of accounts by Drawing and Disbursing Officers were not available in the System to ensure adherence to the extant rules. There were 54 dummy active DDO codes in the database.**

(Paragraphs 2.2.7.3 and 2.2.7.4)

➢ **Non-application of various controls and non-conducting of third party audit at the prescribed time indicated weak system control mechanisms in the Integrated Financial Management System.**

(Paragraph 2.2.8)

2.2.1   Introduction

The Government of Punjab (GOP) set up (June 2009) an Empowered Committee on Governance Reforms (EC) under the chairmanship of the Chief Secretary, Punjab to monitor and steer reform initiatives in various departments. The EC decided (October 2009) to implement the Integrated Workflow Document Management System (IWDMS) and Integrated Financial Management System (IFMS) projects in the State. The implementation objectives of IFMS were to bring transparency and high responsiveness in public financial management. IFMS also proposed to establish a network of all stakeholders[20] for sharing financial and performance information and for facilitating convergence of service delivery for better management of public finances through accountability as well as elimination of misuse/ misappropriation of public funds.

2.2.2   Organizational set-up

The Finance Department functions under the overall administrative control of the Additional Chief Secretary who is assisted by Secretary (Expenditure) and Special Secretary (Finance)-cum-Director (T&A). At field level, District Treasury Officers (DTO) are assisted by Treasury Officers (TO). The Drawing and Disbursing Officer in each Department prepares and submits bills to the district/sub-treasury.

The Finance and General Administration Departments were designated as the nodal departments for implementation of IFMS and IWDMS projects respectively while a Steering Committee[21] was constituted for review and monitoring of implementation of these projects. In order to streamline and make the governance mechanism of the projects more effective, a second level review mechanism under Steering Committee was formed by constituting a Project Review and Monitoring Committee[22]. The Punjab Information and Communication Technology Corporation[23] (Punjab Infotech) was designated as the implementing agency of IFMS and IWDMS projects which selected (April 2010) a professional Project Management Consultant for providing technical, functional and architectural inputs in selection of System Integrator and implementation of the projects. A System Integrator was selected in December 2010.

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[20]   Finance Department; Directorate Treasury & Accounts; Treasuries and Sub-treasuries; Accountant General (Punjab); Reserve Bank of India; Government of India; financial market; Public Sector Undertakings and Local Bodies; Heads of Departments; Nationalised Banks; National Bank for Agriculture and Rural Development; Drawing and Disbursing Officers; Citizens; Pensioners; Employees; Tax and Revenue Officers; etc.

[21]   Chief Secretary, Principal, Secretary (Finance), Secretary (General Administration), Principal Secretary (Planning), Secretary (Expenditure), Director (T&A), Nodal Officers (IWDMS and IFMS), Managing Director Punjab Infotech and representative of Project Management Consultant.

[22]   Managing Director (Punjab Infotech) and Project Directors (IWDMS and IFMS).

[23]   Punjab State Public Sector Undertaking.

2.2.3   Audit objectives

A performance audit was conducted to assess the efficiency and effectiveness of implementation of the 'Integrated Financial Management System'[24] project with regard to IT controls, mapping of business processes and functioning of the modules[25] of the system. The main objectives of the audit were to assess whether:

➢ the project management and implementation was effective;

➢ the Integrated Financial Management System met the envisaged requirements; and

➢ reliable controls were in place to ensure data security and the system control mechanism was adequate and effective.

2.2.4   Audit scope and methodology

The audit covered the period 2011-16 and was conducted between April and September 2016 by test check of the records of four[26] out of 21 treasuries by using a tool, namely, Interactive Data Extraction and Analysis (IDEA). The records of the Implementing Agency (IA) were also examined to assess the deliverables of System Integrator (SI) and Project Management Consultant (PMC) as per the agreements.

Audit proposed (May 2016) for holding an entry conference with the Finance Department to discuss the audit objectives, criteria and scope of audit. However, the Finance Department requested (May 2016) for the IT Audit to be directly started. The audit findings were discussed with the Secretary (Expenditure), Finance Department, Punjab and the Implementing Agency in the exit conference held in November 2016. The replies of the State Government (Finance Department) received in November 2016 have been suitably incorporated in the report.

2.2.5   Audit criteria

The audit criteria were derived from the following sources:

➢ Agreements entered with the Project Management Consultant and System Integrator;

➢ Punjab Budget Manual;

➢ Punjab Treasury Rules, 1985 and Standing Orders on Treasuries;

➢ Punjab Financial Rules; and

➢ Instructions/guidelines issued by Government of India and the State Government with regard to IT systems.

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[24]   Since both the projects (IFMS and IWDMS) were taken up together as single RFP, the points which cannot be separated have been discussed in respect of both the projects jointly in the report.

[25]   (i) Debt Management, (ii) Pension, (iii) Treasury Operations, (iv) Plan and Budgeting, (v) Off-budget Expenditure and (vi) Office Accounting.

[26]   (i) Chandigarh, (ii) Fatehgarh Sahib, (iii) Mohali and (iv) Ropar (selected with Simple Radom Sampling method).

Audit findings

2.2.6   Project management and implementation

The Integrated Financial Management System (IFMS) project was designed and implemented as a web enabled application. The network back-bone of Punjab State Wide Area Network (PAWAN) was used and remote users were provided connectivity through Secure Sockets Layer of Virtual Private Network/internet. The IFMS and IWDMS projects were to be implemented in two stages[27]. Audit noticed the following:

2.2.6.1   Non-implementation of project through nodal agency

Government of Punjab (GOP) declared (January 2009) the Punjab State e-Governance Society[28] (PSeGS) under the Department of Information Technology (DoIT) [29] as the only nodal agency for all IT products, services and e-Governance activities. Accordingly, all administrative Secretaries were communicated (March 2009) to avail its technical and related services which *inter alia* included providing support in connection with any aspect of IT including hiring of professionals, consultancy services and procurement of hardware/software without any additional cost over and above the acquisition value for IT products and resources.

Audit observed that despite the instructions of GOP to avail IT related services from the nodal agency (PSeGS) without additional cost, Punjab Infotech was designated (November 2009) as implementing agency (IA) for implementation of IFMS and IWDMS projects on payment basis i.e. service charges[30] at the rate of four *per cent* of the project cost against which an amount of ` 1.59 crore had been paid as of June 2016.

The Finance Department stated (November 2016) that due to lack of capacity to deal with the project by PSeGS, the project was assigned to Punjab Infotech. It added that the payment of service charges was unavoidable as any organisation which would have undertaken execution of such a large scale and complex project would have to incur management and administrative costs. Further, PSeGS also levied service charges for all non-National e-Governance Plan (NeGP) projects and the charges had recently been revised to 10 *per cent*.

The reply of the Department was not tenable as at the time of execution of the project, PSeGS was executing various large scale IT infrastructural and Mission Mode projects[31]. Further, as per instructions (March 2009) of DoIT, technical and related services of PSeGS could be availed without any

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27	First stage : Design, development and implementation stage (to be implemented in further four phases); and Second stage: Managed IT/ Service Delivery stage.
28	A society registered under Societies Registration Act 1860 under Administrative Control of Department of Governance Reforms, Punjab.
29	Now Department of Governance Reforms (DoGR) w.e.f. March, 2012.
30	As per notification dated 03.12.2009 of the Department of Industries and Commerce.
31	(i) PAWAN, (ii) State Data Centre (SDC), (iii) Common Service Centres (CSC), (iv) State portal, State service delivery gateway (SSDG) and (iv) e-District.

additional cost over and above the acquisition value for IT products and resources.

Thus, selection of Punjab Infotech as IA instead of opting for the services of PSeGS (free of cost) for implementation of the projects resulted in avoidable expenditure of ` 1.59 crore.

2.2.6.2 *Avoidable extra expenditure*

As per the Request for Proposal (RFP), the System Integrator (SI) provided (February 2012) 8,500 licenses for five years (Proprietary Solution) in respect of Single Sign-On (SSO) to utilise username/password to authenticate multiple applications at a cost of ` 0.45 crore. The requirement of SSO solution had evidently not been thoroughly examined as the number of users increased during implementation to 14,700 i.e. by more than 50 *per cent*. Audit observed that the Technical Committee had recommended (March 2013) to have SSO solution either Proprietary (on payment basis) or Open Source (free of cost). However, the RFP did not include the option of considering Open Source SSO at all. Since SI had already procured (February 2012) 8,500 licenses of Proprietary SSO, IA had to procure (December 2014) additional 6,200 licenses of Proprietary SSO annually at a cost of ` 0.42 crore.

The Finance Department stated (November 2016) that RFP had allowed both proprietary solution and open source solution for SI to provide the best fit solution in terms of technology, scope, support and cost. It added adopting only open source solution would have been against the principle of competitive bidding. The reply of the Department was not tenable as the RFP did not include the option of Open Source SSO solution though the Technical Committee recommended (March 2013) to have either of the two solutions. Thus, adoption of Proprietary SSO solution (on payment basis) instead of Open Source solution (free of cost) resulted in an avoidable recurring expenditure of ` 0.87 crore towards licensing cost.

2.2.6.3 *Partial implementation of modules by SI*

As per RFP, the design, development and implementation stage of the IFMS project was to be effected in four phases which were signed off between April 2013 and June 2013. Audit noticed the following:

(i) *Treasury operations*

(a) In order to compensate banks for handling transactions for Government, Reserve Bank of India (RBI) fixed agency commission payable to banks (July 2012) at the rate of ` 50 and ` 12 per transaction for physical receipts and e-mode receipts respectively. As per RFP, IFMS would have one treasury receipt module to enable the depositors/tax payers to deposit money online through payment gateway/ Electronic Clearing System (ECS)/prepaid cards. The system for receipt of money through online mode was to save money paid to agency banks for various transactions.

Audit observed that receipts pertaining to two[32] major heads were being received in banks through their respective applications (e-mode). Though the payments to beneficiaries were being made through ECS under IFMS, 27,46,877 out of 1,22,82,116 transactions pertaining to Government receipts (barring above two major heads) were received (July 2013-March 2016) in physical mode i.e. through challans in banks thereby not achieving the objective of IFMS module to save money paid to agency banks for various transactions.

The Finance Department stated (November 2016) that a comprehensive approach to implement the Cyber Treasury Portal for all the departments was being deliberated with the SI and efforts would be made to switch over to online tax payment system by all the administrative departments in a time bound manner. However, no timeline in this regard was furnished (December 2016).

(b) Non-plan expenditure of the State Government mainly constitutes the salary of its employees. The pay bills of State Government employees were being prepared by the respective DDOs and details such as name, bank account number and also instances of salary amount of the employee were being entered at the time of preparation of pay bill as IFMS did not have any provision for capturing master data of employees.

An analysis of data (January 2013-March 2016) of 1,05,592 pay bills entered in IFMS in respect of four test-checked treasuries revealed 1,058[33] discrepancies of duplicate bank account numbers and instances of salary of two or more employees being credited to the bank account of one employee through a single pay bill. This indicated that IFMS did not have validation checks to ensure one to one mapping of salary with account number of employee which raises the risk of fraudulent/double drawl of pay.

The Finance Department stated (November 2016) that Human Resource Management System (HRMS) implementation was in progress and till then, validation for uniqueness of bank account in accordance with the bill type would be incorporated in IFMS so as to avoid system vulnerabilities.

(ii)   Pension (management and monitoring) module

Audit noticed the following inconsistencies in pension (management and monitoring) module:

(a) One of the business functional requirements for Pension Payment Order (PPO) generation in respect of pension module was that the system should generate alert requesting the concerned employee to apply for pension. The PPO was to be generated online after processing of the application by Accountant General, Punjab (AG) so that Treasury Officer (TO) could ensure regular payment to pensioners apart from sending their payment details to the

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[32]   (i) 0040-Transport Department and (ii) 0041-Excise and Taxation Department.
[33]   (i) Chandigarh (529); (ii) Fatehgarh Sahib (76); (iii) Mohali (150); and (iv) Ropar (303).

payee bank, generating reports and maintaining individual pensioner's ledger.

Audit observed that TOs were only entering the details of pensioners from the PPOs issued by AG due to non-integration of the system with the AG and banks. Further, the pension payments made by payee banks could not be reconciled electronically due to non-availability of pensioners' ledgers.

The Finance Department stated (November 2016) that PPOs were being manually uploaded in IFMS and efforts would be made for integration of IFMS with AG office and SI would provide necessary support for the same. As regards employees' data, it was stated that the Government had taken up implementation of Human Resource Management System (HRMS) which would be integrated with IFMS. It added that SI had developed a mechanism to update the data provided by the banks via Cyber Treasury Portal (CTP) and banks would provide treasury-wise monthly pension payment scroll which would be uploaded in IFMS for faster and error free treasury-bank reconciliation.

(b) The Punjab Treasury Rules (PTR) provides that the pension, not drawn for three years, ceases to be payable at treasury without prior sanction of AG. Further, the treasury officer shall sort out cases of pensions which have ceased to be payable at treasury by examining the files of civil PPOs every month and shall return halves of those PPOs to AG.

Audit observed that the system was not capturing any data pertaining to pensioners who had not submitted life certificate during the last three years so as to cease their pensionary benefits. The system also did not have any provision to capture details of PPOs which had ceased to be payable at treasury, reporting the date of death of the pensioner/family pensioner. Consequently, the actual number of active pensioners could not be ascertained.

The Finance Department stated (November 2016) that all the data of pensioners was being maintained by banks and relevant process for obtaining life certificate was being carried out by them. Since data pertaining to pensions not drawn for three years was not available in IFMS, the treasury officer could not sort out cases of pensions which had ceased to be payable. The reply of the Department was not convincing as the issue raised by audit was not addressed.

2.2.7 System design deficiencies

2.2.7.1 *Inappropriate mapping of heads of accounts*

Analysis of database in respect of four test-checked treasuries for the period 2011-16 exhibited 70 cases of misclassification of accounts in major heads 8009-State Provident Funds and 8011-Insurance and Pension Funds. Corroboration with manual records of two bills (2014-15 and 2015-16) pertaining to DTO Ropar showed that in the Statement of Expenditure (SOE) of Major Head 8011-Insurance and Pension Fund, 'pensionary benefits' was showing as 'GPF final payment'. This indicated that the six tier classification in a head of account had not been adequately mapped in the system up to

Statement of Expenditure (SOE) level.

The Finance Department stated (November 2016) that the said cases were the exempted heads for which no SOE level mappings had been defined and the same could be incorporated in the system.

2.2.7.2 Adjustment of Abstract Contingent bills

The PTR provides that every DDO is required to submit Detailed Contingent (DC) bills within one month after drawl of Abstract Contingent (AC) bills. Further, while submitting AC bills, a certificate shall be re corded by DDO that there is no DC bill pending for submission.

Audit noticed that IFMS was accepting AC bills without checking any details relating to pending DC bills. The rule was not adequately mapped in the system for effective monitoring of pending DC bills. Further, there was no provision in the system to select relevant AC bill before making entries in respect of the corresponding DC bill to rule out any input error. Due to this design deficiency, the treasury officer could not monitor the pendency of DC bills nor check the veracity of the certificate given by DDO with the AC bill. An analysis of data (2011-16) of IFMS showed huge difference in number of unadjusted AC bills with those depicted in the Finance Accounts (2015-16). As per IFMS, 49,277 AC bills amounting to ` 7,400.91 crore were pending for adjustment for want of DC bills whereas as per the Finance Accounts (2015-16), only 976 AC bills amounting to ` 2,044.97 crore remained unadjusted as of March 2016.

The Finance Department stated (November 2016) that one to one mapping of AC-DC bills would be monitored considering the impact on current functionalities. It added that necessary instructions to prepare DC bills only through the provision in IFMS had been issued to all the administrative departments and strict compliance in this regard would be monitored.

2.2.7.3 Absence of validation checks

(i) The PTR provides that Government employees declared as DDOs may draw money by bills on account of charges falling under the minor head/sub-heads in respect of which they are competent and have been placed in account with the treasury by the Accountant General.

Audit noticed that the requisite validation checks did not exist in the system between DDOs and the head of accounts which they were authorised to operate. For instance, DTO Fatehgarh Sahib (as DDO) could also operate the Major Heads 2202-General Education and 2055-Police whereas DDO was authorized to operate Major Head 2054-Treasury & Accounts Administration. Absence of validation check pos ed a risk of unauthorised operation of head of accounts by DDOs which could lead to fraudulent drawl of funds.

The Finance Department stated (November 2016) that the validation check was not envisaged during the implementation of the system but was subsequently incorporated in view of its requirement and that the suggested

case must be related to the early period of system implementation. The reply was not acceptable as Audit observed the discrepancy in the system in July 2016.

(ii)   The bills for payment are presented in treasury in the form of pay bill, travelling allowance (TA) bill, medical bill, contingent bill, General Provident Fund (GPF) bill, pension bill, PD/PLA Bill, etc. These types of bills have been assigned different codes in the application.

Audit observed that proper validation checks were not in-built in the application to restrict the transactions in a particular head of account to its respective bill type. Data analysis for the period 2011-16 in respect of four test-checked treasuries showed that:

➢   Major Head '8011-Insurance and Pension Fund' wrongly accepted contingent bill and refund bill;

➢   Major Head '2071-Pension and Other Retirement Benefits' wrongly accepted pay bill and GPF advance bill; and

➢   Major Head '8009-State Provident Fund' wrongly accepted gratuity bill and advance bill.

In the absence of proper validation checks in the application, there was risk of payments being drawn against unauthorised bills resulting in incorrect booking of expenditure/drawls in excess of budget provisions.

The Finance Department stated (November 2016) that additional checks would be incorporated in the system.

2.2.7.4   Data inconsistencies

Analysis of IFMS data for the period 2011-16 in four test-checked treasuries revealed the following inconsistencies:

➢   An integrity check was designed in the system for auto generation of voucher number of bills sequentially. It was, however, observed that voucher numbers were not in sequence and 1,45,854 number of gaps in voucher numbers were noticed in 3,516 instances. One of the reasons for gaps in voucher numbers was rectification of misclassification of the head of account at a subsequent date by SI on the request of treasury whereas this rectification should have been carried out through a transfer entry. The Finance Department stated (November 2016) that this issue existed till 2013 but was later resolved by revising certain checks and validations and no such incident was encountered after that. The reply was not acceptable as the case analysed (July 2016) by Audit pertained to the year 2015-16 and the issue was still persisting.

➢   The master data in the database should be complete and accurate as transaction–data is validated against the master data. All 895 DDOs in four test-checked treasuries were flagged as active but the column for validity of

DDO powers was blank. There were 54 dummy DDO codes in the database which were also active. Existence of dummy records and non-deactivation of temporary DDOs was fraught with the risk of possible fraudulent payments by using dummy DDOs. The Finance Department stated (November 2016) that validity period of DDO would be incorporated in the system.

2.2.8	**System control mechanism**

2.2.8.1 Logical access control

Logical access control through computer hardware and software enables prevention or detection of unauthorised access. Logical access control is exercised through individual login-identifiers and passwords for authentication of users. User identification ensures accountability for user activities. Analysis of data and test check of records for the period 2011-16 in respect of three test-checked treasuries (Chandigarh, Fatehgarh Sahib and Ropar) brought out the following lapses in application of logical access controls:

➢ In three test-checked treasuries, transactions were carried out using IDs of eight users[34] who were on leave. There were also instances of sharing of user IDs and passwords amongst the staff which defeated the purpose of exercising logical access controls.

➢ Transactions were recorded/updated using IDs of seven users who had retired from service from the respective treasuries in three instances[35]. As a result, the system was devoid of correct login information as to who entered a particular data. Thus, responsibility for user activities performed with user IDs of retiree could not be enforced through the system.

The Finance Department stated (November 2016) that periodic awareness workshops and sessions would be organized for the users to educate them of the importance of security measures. It added that SI had devised a process to create or block the user in case of retirement or leave but the same needed to be revamped and enforced strictly and assured to do the needful.

2.2.8.2 Application controls

Application controls are specific to an application and may have a direct impact on the processing of individual transactions. These controls are used to provide an assurance that all transactions are valid, complete, authorised and recorded. Audit tests of these controls revealed the following:

(i) Revalidation of bills after expiry of currency period

The Punjab Treasury Rules relating to currency of payment orders provides that the payment orders are valid only for a time not exceeding ten days. In case bills are not presented for payment within the currency period of pay orders, these are to be re-validated by the treasury officer.

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[34]   (i) Chandigarh (3); (ii) Fatehgarh Sahib (3); and (iii) Ropar (2).
[35]   (i) Chandigarh (4); (ii) Fatehgarh Sahib (1); and (iii) Ropar (2).

Analysis of data for the period 2011-16 in respect of four test-checked treasuries showed that cheques/ECS of 37,515 bills[36] amounting to ` 1,958.31 crore were prepared after the period of more than 10 days of their passing without re-validating the currency period as there was no provision in the software for this purpose. The Finance Department stated (November 2016) that the delay mentioned in the payment pertaining to certain cheques was due to financial exigencies. It added that SI would be asked to incorporate necessary checks in the system.

2.2.8.3 Third Party Audit

As per GOI's guidelines (January 2009) for Indian Government websites, each website/application must undergo a security audit from empanelled agencies and clearance prior to hosting and also after addition of new modules. Further, as per RFP, Third Party Audit (TPA) of project was to be performed for every phase and SI was responsible for conducting and getting the third party certification.

Audit observed that the Steering Committee decided (August 2011) to carry out third party testing at the end of all phases of the project. However, TPA was conducted only in December 2014 although the system was first made live in July 2011. The report of TPA (December 2014) pointed out eight vulnerabilities which were classified as High Risk in the web application and under OWASP[37] compliance. Four sensitive data exposure tests were carried out (July 2014-October 2014) on these vulnerable areas and the compliance was only 25 *per cent* though huge number of sensitive transactions had already been processed through the application between July 2011 and December 2014.

The Finance Department stated (November 2016) that it was decided that TPA would be carried out only once all the modules were completed for an effective and speedy implementation. The reply of the Department was not in accordance with RFP and GOI guidelines *ibid*.

2.2.9 Conclusion

The objective of the State Government to bring transparency and high responsiveness in public financial management through IFMS was not achieved in full measure. Instead of availing the services of Punjab State e-Governance Society, a designated agency of the State Government, at no extra cost, services of Punjab Infotech were taken for implementation of the project at four *per cent* of the project. Treasury operations and pension (management and monitoring) modules were not fully implemented. Punjab Treasury Rules in respect of monitoring of Abstract/Detailed Contingent bills were not adequately mapped. The requisite validation checks for processing of bills and unauthorised operation of heads of accounts by DDOs were not

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[36] Cheques–of 34,984 bills: ` 1912.86 crore and ECS of 2,531 bills: ` 45.45 crore.
[37] Open Web Application Security Project is a non-profit organization dedicated to providing unbiased, practical information about application security.

available in IFMS to ensure adherence to the extant rules. Non-application of various controls and non-conducting of third party audit at the prescribed time, indicated weak system control mechanism in IFMS.

2.2.10 Recommendations

In the light of audit findings, the State Government may consider:

(i)   Reviewing the management and implementation of IFMS project;

(ii)   Ensuring implementation of all the modules of IFMS;

(iii)   Ensuring mapping of requisite rules/provisions and availability of various validation checks to ensure adherence to the extant rules in IFMS; and

(iv)   Strengthening of system control mechanism by applying various controls in the System and conducting third party audit at the prescribed time.