Chapter – III

Information Systems Audit of Integrated Financial Management System

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Information Systems Audit of Integrated Financial Management System

3.1 Background

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 Financial Management System (IFMS) project in the State. IFMS was initially implemented in the State of Punjab by a System Integrator (SI) namely M/s. Tata Consultancy Services (TCS) in the year 2011. The contract period of SI ended on 31 March 2020. The Finance Department, GoP decided (September 2019) to bring National Informatics Centre (NIC) as the new vendor and adopted IFMS already implemented in the State of Haryana on "as is where is" basis with effect from 01 April 2020, which was subsequently kept on modifying as per State specific requirements (March 2023).

The System was designed to bring efficiency in financial planning and expenditure control in the State and to bring various stakeholders[1] on a single platform with role based Smart Dashboards for providing a better Decision Support System. It has three main modules, namely eBudget, eTreasury and eReceipt, besides two additional modules *viz.* Management Information System (MIS) and Audit Management System (AMS).

3.2 Technology

All the modules were developed using Micro-Service Level Architecture where one backend can serve many frontends like WebApp and Mobile App. The portal was developed using the following technologies:

Technology	Description
Frontend: Angular 11 with Material Design	Angular is an application-design framework and development platform for creating efficient and sophisticated single-page apps.
Backend: Node.js 14 with Express 4 and NET Core 3.1	Node.js is a backend JavaScript runtime environment, runs on V8 JavaScript Engine, and executes JavaScript code outside a web browser. Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

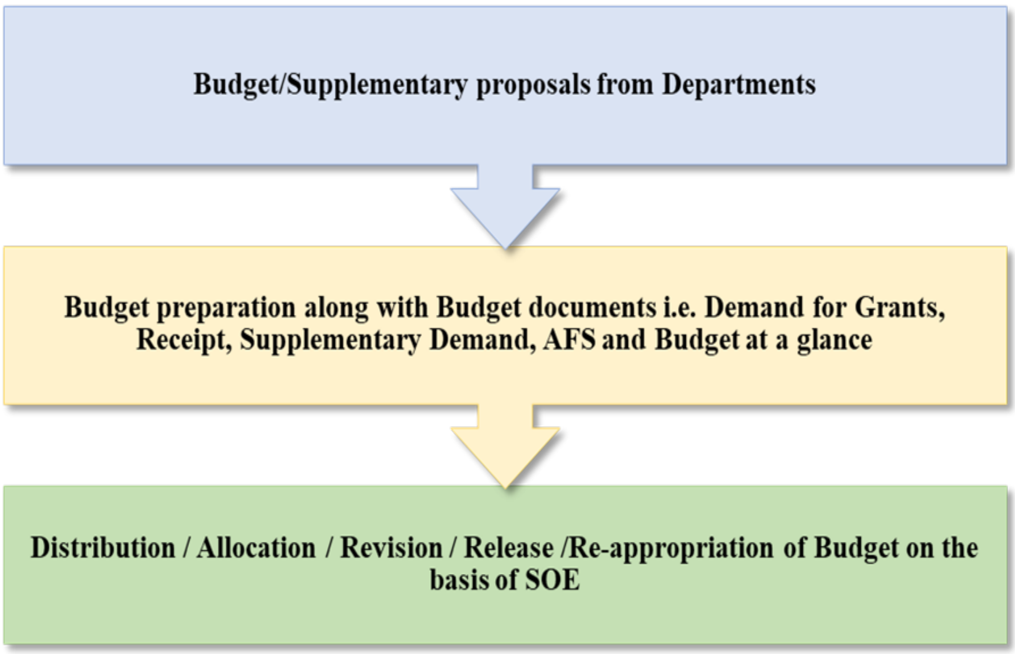
[1] Department of Finance, Treasuries, Administrative Departments, Accountant General, Reserve Bank of India (RBI) and Banks.

Technology	Description
	.NET Core is a new version of .NET Framework, which is a free, open-source, general-purpose development platform maintained by Microsoft.
Database: SQL Server 2019, PostgreSQL 11	SQL Server is a relational database management system (RDBMS) developed and marketed by Microsoft. PostgreSQL is a powerful, open-source object-relational database system.

3.3 Process flow of three main modules

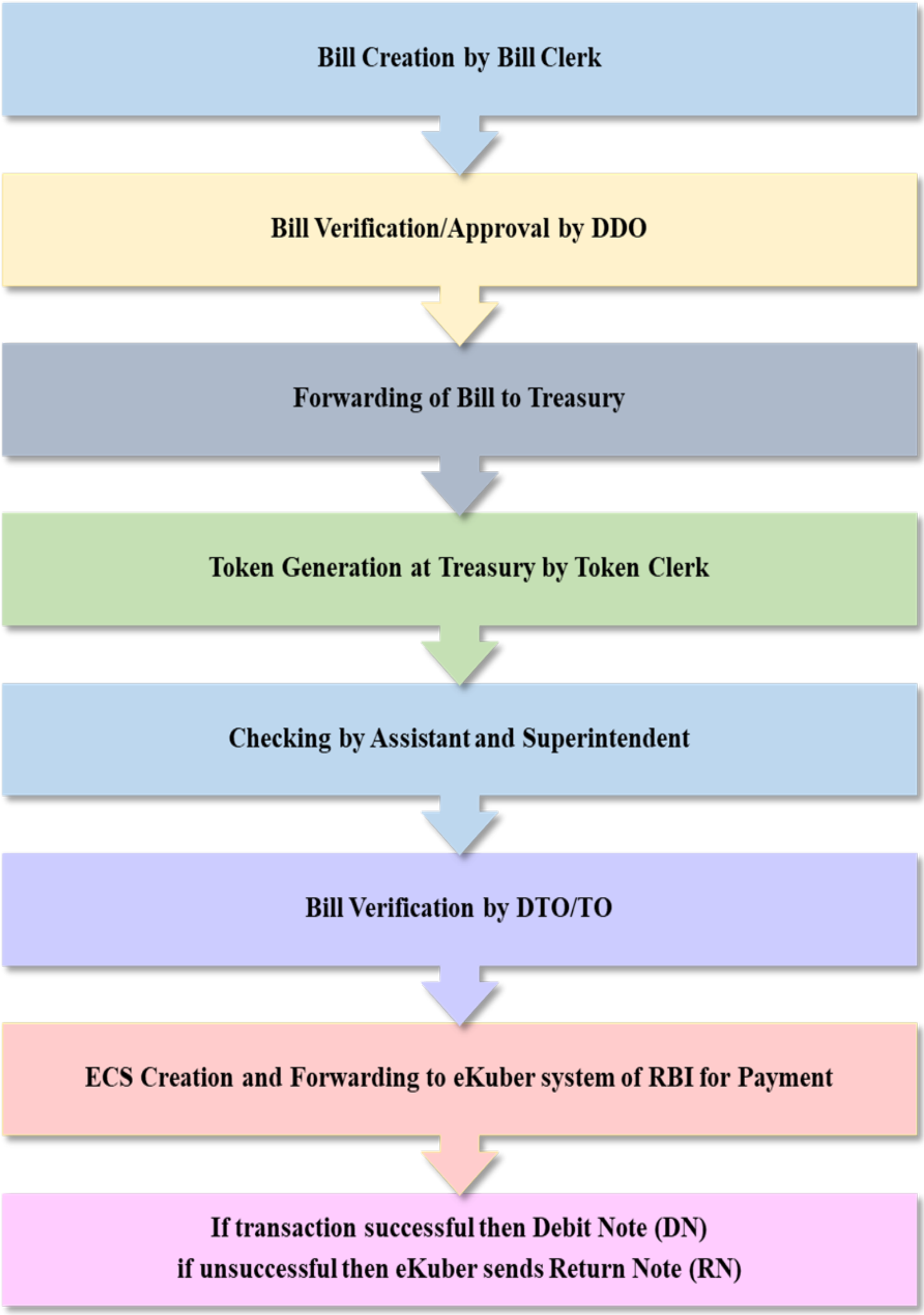
The process flow of three main modules *viz.* eBudget, eTreasury and eReceipt is depicted in **Charts 3.1 (a, b and c)**:

Chart 3.1(a): eBudget



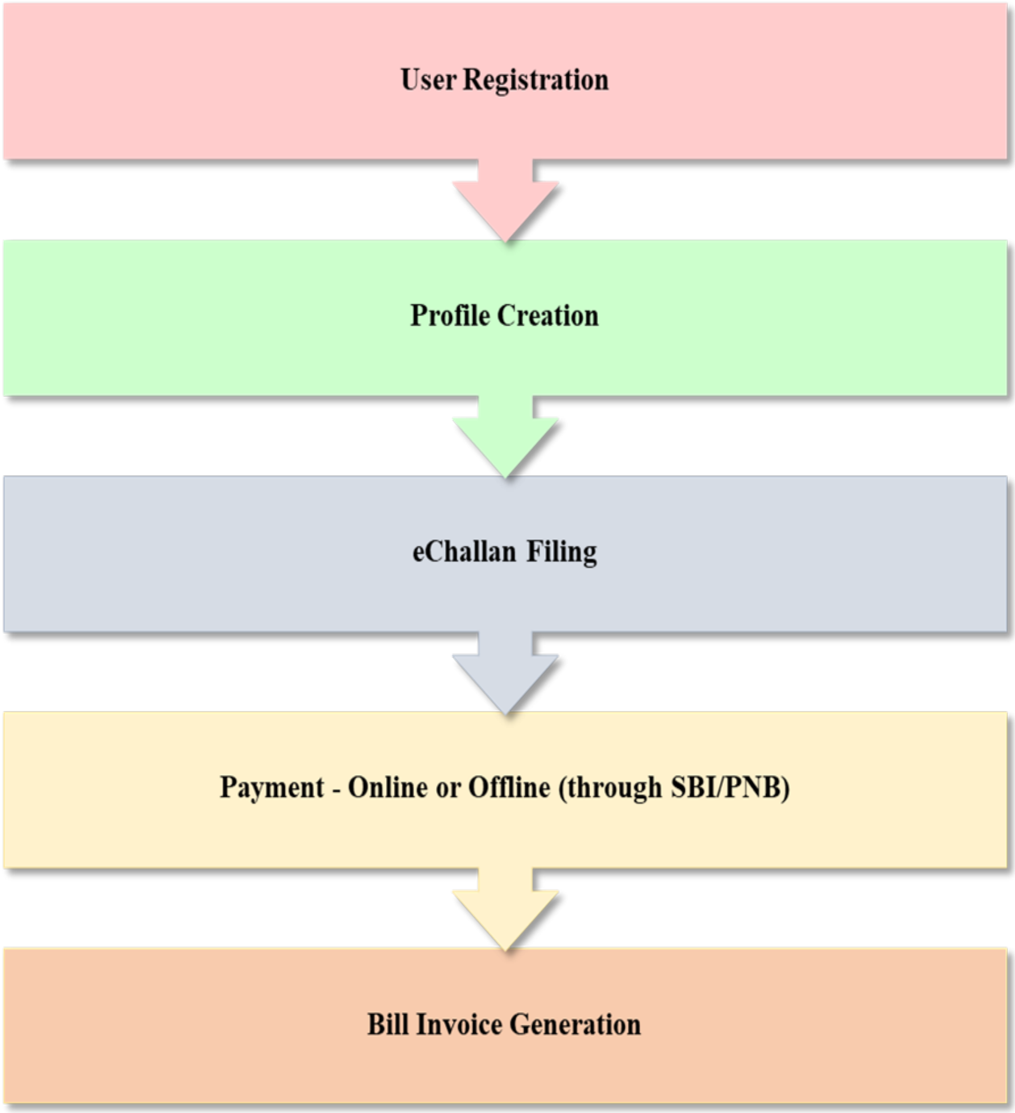
Source: Departmental information

Chart 3.1(b): eTreasury



Source: Departmental information

Chart 3.1(c): eReceipt

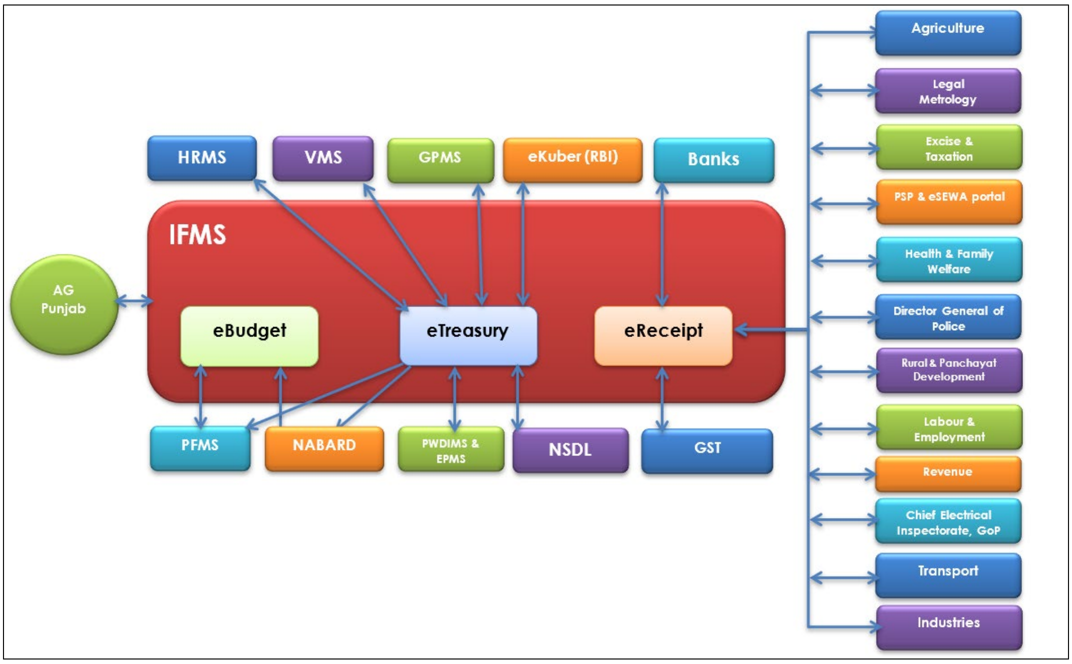


Source: IFMS User Manual

3.4 Integration of IFMS with other systems

IFMS is integrated with various other systems/related applications being run in the State of Punjab. The proposed integration of IFMS with other systems has been depicted in **Chart 3.2.**

Chart 3.2: Integration of IFMS with other Systems



Source: Departmental information

Integrated Human Resource Management System (iHRMS): It is developed by NIC Punjab for looking into various aspects of the manpower planning, easy availability of information to the Government, employees and other such stakeholders. It attempts to provide better services in the form of employee record, salary, GPF, GIS, leave, income tax information, property returns, annual confidential progress, posting, promotion, arrears management, etc.

All the bills generating through iHRMS are proposed for submission to IFMS for payments.

Vehicle Management System (VMS): It facilitates a check on POL bills of State Government vehicles. Every Government official (earmarked) or Vehicle (Pooled) has a POL Limit (on Fuel and Maintenance) assigned by the Department of Finance, Government of Punjab. VMS is keeping track of each limit. Besides, expenditure relating to POL and maintenance of official/transport vehicles shall be incurred only against those sanctioned vehicles which have been correctly enrolled and duly verified in VMS.

All the Bills related to Vehicle Management are submitted directly from VMS to IFMS.

Government Property Management System (GPMS): GPMS is a web-based application for creating a single database of properties (Land/Buildings) owned by the Government, in its various Departments. This makes a ready database of infrastructure available with the Government and assisting the Government in making better policy decisions for optimal utilisation of the infrastructure. The application has been launched and the process of enrollment is underway.

IFMS is proposed to be integrated with GPMS so that the State Government can check availability of vacant office space at a particular location and reduce office expense.

e-Kuber: e-Kuber is Core Banking Solution (CBS) of Reserve Bank of India (RBI) for processing of payments and receipts. It is the standardised ePayment model of RBI that envisages straight-through-processing of electronic payments of the State Governments.

All the bills cleared in treasuries are getting processed in the form of payment files through e-Kuber without any intervention of banks. However, integration of eReceipt module (IFMS) with e-Kuber system is not yet implemented.

Banks: Banks are integrated with eReceipt module of IFMS for deposit of revenue receipts by various Departments of the State Government and other related agencies/persons, both in Online mode via Net Banking, Debit/Credit Card, UPI payments (Google Pay, PhonePe, Bhim App, PayTM and Amazon Pay) as well as Offline mode by generating challans through aggregator banks *viz.* State Bank of India (SBI), Punjab National Bank (PNB), etc.

Public Financial Management System (PFMS): It is a unified web-based platform of the Government of India that ensures end-to-end monitoring of funds disbursed to various programme/scheme implementing agencies of the Central Government and State Governments in respect of Central Sector and Centrally Sponsored Schemes. Consequently, it envisages the real-time disbursal of funds and a comprehensive Financial Management Information System.

Details pertaining to budget allotment, grant released and expenditure incurred against the Centrally Sponsored Schemes are getting shared with PFMS portal from IFMS via Extensible Markup Language (XML) file. Integration with PFMS is limited to transfer of funds by sharing XML file. However, trail of scheme-wise expenditure is not available as mapping in respect of Central Schemes has not been completed.

NABARD (National Bank for Agriculture and Rural Development): It is a development bank of the nation for fostering rural prosperity and to promote sustainable and equitable agriculture and rural development through participative financial and non-financial interventions, innovations, technology and institutional development for securing prosperity. It monitors funds released under NABARD sponsored schemes.

IFMS is proposed to be integrated with NABARD for better monitoring of releases and expenditure under NABARD Scheme.

Public Works Department Integrated Management System (PWDIMS): It is a fully integrated off-the-shelf product for engineering works oriented Government organisations and Public Sector Undertakings. It helps in managing the entire cycle of planning, procurement, execution and monitoring of infrastructure projects. It includes Estimation, Tendering, Project Management, Billing, Budgeting and Accounts, Store and Purchase Management, Personal and Payroll Management and Asset Management.

All bills related to Public Works are proposed to be submitted directly from PWDIMS into IFMS.

NSDL Portal: The portal provides for subscribers' registration, subscribers detail modification/updation and other Permanent Retirement Account Number (PRAN) related services, such as contribution, etc.

It is completely integrated with NSDL portal for processing of NPS related activities like PRAN generation, PRAN modification, SCF file validation and submission at NSDL portal and automatic generation and submission of contribution bills of Punjab Government employees.

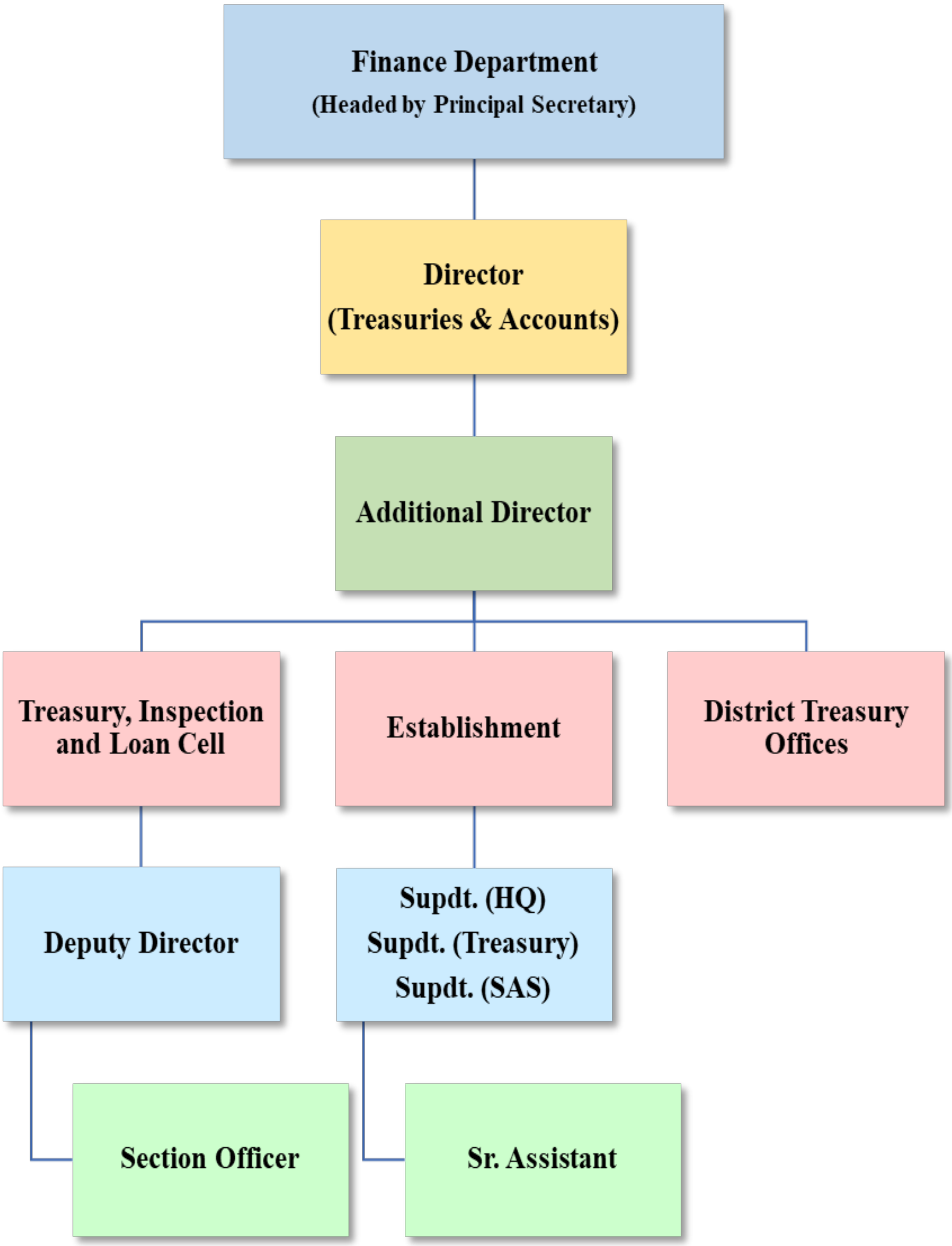
GST Portal: The common GST portal developed by GSTN has been functioning as the frontend interface of the overall GST IT eco-system and provides for filing of registration application, filing of return, creation of challans for tax payment, payment of GST, settlement of IGST payment, and generation of Business Intelligence (BI) and analytics. M/s Infosys has been engaged as the system developer and Managed Service Provider (MSP).

All the receipts collected through GST portal are reported and accounted for in the IFMS.

3.5 Organisational Structure

The Principal Secretary, Department of Finance is the administrative head, assisted by the Special Secretary Expenditure-cum-Director (Treasuries & Accounts, which is the nodal authority for implementation of the new Integrated Financial Management System (IFMS) being developed by NIC in the State. The organisational structure of the Directorate of Treasuries and Accounts is depicted in **Chart 3.3.**

Chart 3.3: Organisational structure of Directorate of Treasuries and Accounts



Source: Departmental information

3.6 Audit objectives

The audit objectives for carrying out the Information Systems Audit of IFMS were to ascertain:

- Whether project management for implementation of IFMS was effective and efficient; and business process re-engineering was done for synergy of processes in the IT environment;
- Whether adequate functionalities and controls were available in IFMS and the IT system objectives were aligned with business objectives;

- Whether integration of IFMS with other systems was effective and efficient; and
- Whether the information security system was adequate and effective.

3.7 Audit scope and methodology

The Information Systems Audit of earlier TCS-IFMS covering the period 2011-2016 was included in the Report of the Comptroller and Auditor General of India on Social, General and Economic Sectors (Non-Public Sector Undertakings) for the year ended 31 March 2016.

The Information Systems (IS) Audit of the new IFMS (being developed by NIC) for the period April 2020 to March 2022 was conducted between May 2022 and January 2023 in the office of Director (Treasury and Accounts) – nodal authority.

Broadly two modules *viz.* eBudget and eTreasury were covered during IS Audit with focus on project management, implementation, application and security controls. As regards envisaged integration of IFMS with other systems/related applications being run in the State of Punjab, three external systems i.e. Integrated Human Resource Management system (iHRMS), Vehicle Management System (VMS) and integration with Accountant General (A&E), Punjab were covered under IS Audit.

The following methodology was adopted for the IS Audit:

- Document analysis related to project management and implementation;
- Analysis of database using data dumps provided to Audit through computer-assisted IT techniques;
- Analysis of Application Controls and User Interface; and
- Analysis of security controls.

An entry conference was held (August 2022) with the Special Secretary Expenditure-cum-Director (Treasuries & Accounts) wherein the audit objectives, scope, methodology and criteria were explained. The audit findings were discussed with the Department in the exit conference held in March 2023 and the replies furnished by them have been suitably incorporated in the Report.

3.8 Audit criteria

The audit criteria were derived from the following sources:

- IFMS User Manuals;
- Punjab Treasury Rules and Government of India guidelines on computerisation of treasuries;
- Punjab Financial Rules and Punjab Budget Manual;
- Information Technology Act, 2000; and

- National e-Governance policies and standards like Guidelines for Indian Government Websites (GIGW), WGITA[2], Software Development and Re-engineering Guidelines, Guidance notes for selection of Implementation Agencies, Guidelines for Usage of Digital Signatures in e-Governance, etc.

Audit findings

3.9 Project Management

3.9.1 Project Planning

The contract period of the earlier System Integrator[3] (SI) running the Integrated Financial Management System (IFMS) in the State of Punjab since July 2011 came to an end in March 2020. No consensus could be made to extend the contract period of the then SI. Thus, in order to obviate any disruption of the critical financial activities of the Government of Punjab, which were dependent on the IFMS in use at that time, a committee consisting of Additional Secretary (Finance), Director, Governance Reforms, Representative of National Informatics Centre (NIC) and an official from Punjab Infotech was constituted to analyse various IFMS solutions running in different States and to ferret out best practices which could be incorporated in the future IFMS of the State of Punjab. The Committee was also required to come up with the probable way forward bringing out the tentative timelines, cost and other requirements for a smooth transition from the existing vendor to the new vendor.

3.9.1.1 Selection of new vendor (System Integrator)

The Committee consisting of the members *ibid* studied the IFMS solutions of four other States *viz.* (i) Haryana (developed by NIC-Haryana); Maharashtra (developed by NIC-Pune); Assam (developed by KRAN – a private company); and Odisha (developed by TCS - a private company), besides holding talks with the officials of the Department of Finance of the respective States to know their experiences and to get the Government's perspective on the ongoing IFMS solutions there. The Committee after considering the pros and cons[4] of going for the new tender, recommended the NIC as a choice for the new vendor for IFMS and found the IFMS Solution of the State of Haryana (developed by NIC) to be the best amongst others. Accordingly, it was decided (October 2019) that the first task of NIC would be to adopt the currently

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2 Working Group on IT Audit and IDI Handbook for Supreme Audit Institutions.

3 M/s. Tata Consultancy Services (TCS).

4 (i) The tendering process would be a time-consuming process. The preparation of DPR, RFP and related documents and the bidding process would consume considerable time; (ii) Success could not be ensured at the first instance. Lukewarm or no response to the RFP would mean rebidding which would stretch the process further; and (iii) considering the fact that fintech projects are dynamic in nature and no agreement can freeze the entire gamut of future requirements, bringing new private player would involve frequent Change Requests. These Change Requests, as the experience with the current vendor tells, are a costly affair.

working IFMS in the State of Haryana on "as is where is" basis in Punjab by 15 February 2020 and any subsequent modification would be made after stabilisation of the adopted system. Accordingly, NIC kept modifying the adopted system per State specific requirements (March 2023).

3.9.1.2 Exit Management

As a best practice[5], the Implementation Agency shall provide the Purchaser or its nominated agency with a recommended "Exit Management Plan" which deals with various aspects[6] of the exit management in relation to the Master Services Agreement (MSA) as a whole and in relation to the Project Implementation, and the Operation and Management Service Level Agreement (SLA).

Audit observed that the requisite Exit Management Plan was part of the RFP (March 2011) in respect of the TCS-IFMS solution, which broadly consisted of the key components relating to infrastructure/network and software applications along with timelines for each activity. Considering the fact that the TCS-IFMS project period would be coming to an end in March 2020, Punjab Infotech (IA for TCS-IFMS) approached (December 2019) TCS (earlier SI) for execution of the Exit Management Plan. However, TCS declined to sign the Exit Management Plan due to disagreement on pending payments between the State Government and TCS, arising from issues related to calculation of base project cost, Change Request for e-Kuber at increased rates, SLA achievement calculations, payment against the transition phase[7], etc. It was decided (March 2020) in the meeting of the Project Monitoring and Review Committee that the Apex Steering Committee would act as the Issue Resolution Authority (IRA) to resolve the issues as per RFP, but the same came into action in February 2021 and the issues had not been resolved till August 2022. Though the Department had reduced the net percentage payables (45 *per cent*) to TCS due to shortfalls in Exit Management, its non-execution hampered the migration of legacy data inclusive of knowledge transfer, as discussed in Paragraph 3.9.4.

It was further noticed that there was no such Exit Management Plan in respect of the new IFMS, as no formal Memorandum of Understanding (MoU) or any agreement was entered into with NIC, as discussed in the succeeding paragraph.

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5 Guidance Note for Selection of Implementation Agencies issued by Ministry of Electronics and Information Technology (MeitY), GoI.

6 includes inter alia a detailed program of the transfer process that could be used in conjunction with a Replacement Implementation Agency including details of the means to be used to ensure continuing provision of the services throughout the transfer process or until the cessation of the services and of the management structure to be used during the transfer.

7 Exit Plan, Data Transfer and Knowledge Transfer.

The Director (Treasuries and Accounts) stated (March 2023) that an Exit Management Plan would be incorporated in the draft MoU which was under process.

3.9.2 Non-execution of Memorandum of Understanding

Software Development and Re-Engineering Guidelines of Ministry of Electronics and Information Technology (MeitY), GoI provide that the solution architecture is the key differentiator for product like solutions. A well-architected solution gives it robustness for reusability (in code, configurations, databases, services, etc.), enhancements and interoperability. Thus, a well-established Service Contract should be adopted as a good architecture principle and accordingly a contractual agreement between the Application Owner (Government Department at Centre/State or any Private Player) and the Application Provider (Government Department or independent entities which host and provide services through eGov AppStore) over the period of Application Lifecycle (for example: Productisation + Replication + Hosting + Operation and Maintenance) is essential. The contracts related to licenses, source code, etc., will also be a part of such agreements.

Audit observed that no formal MoU or agreement was entered into with NIC (SI) for implementation of the new IFMS in the State of Punjab, even after lapse of more than two years of commencing the work by the SI from November 2019 onwards. Besides, no documentation with regard to URS/SRS/SDLC was formulated on the pretext that it was based on a prototype model implemented in the State of Haryana. Nevertheless, a project proposal submitted by NIC was duly accepted by the Department in May 2021. Audit noticed that the timelines of a few activities (**Appendix 3.1**), as per the project proposal for the development/execution period (November 2019-March 2022), could not be adhered to as the system was still in development phase (March 2023). Besides, payment of ₹ 6.75 crore had been made to NIC as of July 2022, as discussed in the succeeding paragraph, without execution of any formal agreement with them.

The Department did not take cognisance of the shortcomings/problems regarding payment, Source Code, Exit Plan, etc. faced in TCS-IFMS despite execution of MoU with the previous SI (TCS), whereas, in the instant project, non-execution of a formal agreement having legal sanctity could put the Department in a situation of having to face serious repercussions in case of any disparity/dispute with the SI.

The Director stated (January 2023) that no agreement was entered into with NIC being a Government agency and the draft MoU had been prepared/was under finalisation. It was added that the timelines for modules in progress and those yet to be developed along with clauses for extension of timelines would be incorporated in the MoU.

3.9.3 Project cost

As per the project proposal of NIC, the estimated cost for development and implementation of the new IFMS for the first two years up to March 2022, was ₹ 5.25 crore, as detailed in **Table 3.1.**

Table 3.1: Details of project cost for development of new IFMS by NIC

(₹ in crore)

Sr. No.	Item	2020-21 (1st Year)	2021-22 (2nd Year)	Total project cost
1.	Development and Operational Team Cost	2.63	2.41	5.04
2.	Security Audit	0.08	0.07	0.15
3.	Contingencies	0.04	0.02	0.06
Total		**2.75**	**2.50**	**5.25**

Source: Departmental records

Audit observed that as of July 2022, against the envisaged project cost of ₹ 5.25 crore, payment of ₹ 6.75 crore[8] had been made to NIC for the purpose. Besides, expenditure of ₹ 14.90 crore had also been incurred on procurement of requisite infrastructure (hardware/software), thereby incurring total expenditure of ₹ 21.65 crore as of July 2022. It was noticed that though the timelines for development and implementation of the new IFMS by NIC (i.e. by March 2022) could not be adhered to and the system was still in the development phase, payment for the extended period (April 2022 onwards) was being made to NIC without any revised proposal or signing of MoU.

The Director stated (March 2023) that the issue regarding payment to NIC would be incorporated in the draft MoU (under process) and the revised proposal would be formulated accordingly.

3.9.4 Migration of legacy data

Software migration means moving a system into a new technical environment, potentially involving data management, communication and programming environment.

The Department of Governance Reforms and Public Grievances (DGRPG), Government of Punjab was authorised (January 2020) to hire resources/manpower/hardware as may be required to ensure smooth transition to the new NIC system by forming a transition team with appropriate role mapping. Audit noticed that as of June 2022, only 40 *per cent* of the data had been migrated from TCS-IFMS to NIC-IFMS. The migration of data was very slow, as is evident from the position of January 2023, when 72 tables[9] were still to be migrated to the new IFMS.

8 Includes ₹ 1.50 crore for development and operational team cost by NIC during 2022-23.

9 43 tables were partially migrated and 29 tables were still to be migrated.

The Department attributed (June 2022) the reasons for delay in migration of legacy data to working of two systems on different RDBMS[10].

Audit, however, noticed that though gap analysis between both the systems was done for making necessary modifications in the adopted system, migration of data was not given due diligence, in spite of the data being critical in nature, as determined by the Department. As a result, even after more than two years of implementation of the new IFMS solution with effect from April 2020, the requisite data could not be migrated fully from TCS-IFMS to NIC-IFMS and even the knowledge transfer was not shared by the previous SI, for the reasons/constraints. Thus, without proper data migration and backup strategies, critical information may be at risk of being permanently damaged or lost.

In the exit conference, the Department while attributing the delayed migration of legacy data to some disputes with the earlier vendor (TCS), stated (March 2023) that the pending data would be migrated soon under intimation to Audit. The final compliance of the Department was awaited (July 2023).

3.9.5 Change Management

In IT organisations, the change management process is normally used to manage and control changes to assets, such as software, hardware, and related documentation. Change controls are needed to ensure that all changes to system configurations are authorised, tested, documented and controlled so that the system continue to support business operations in the planned manner and that there is an adequate trail/record of changes.

Audit observed that no Change Management Policy was available with the Department with regard to changes/modifications being made in the new IFMS solution. It was noticed that modifications were being made in the system during its rolling out period but were not documented. Although user inputs were taken (December 2019) as per Gap Analysis Document, User Acceptance Testing (UAT) was not done. In the absence of any policy or relevant documents with regard to changes/modifications being made in the system, its effectiveness/authenticity would not be ascertained. Besides, it could result in poor communication with regard to the reasons for change, expected impact and the benefits. Without a clear process for managing changes, there is a higher likelihood of project delays. Further, unplanned or uncontrolled changes can disrupt project timelines and deliverables.

In the exit conference, the Department stated (March 2023) that the Change Management Policy would be incorporated in the draft MoU.

[10] TCS-IFMS (Oracle based); and NIC-IFMS (MS-SQL based).

3.9.6 Capacity building

As a best practice[11], training is considered a "Soft Deliverable" and measuring the quality of a training is a challenging task. Some of the key tasks defined in the training includes preparation of training plan and materials; delivery of training; collect feedback from trained participants; deployment of infrastructure; etc.

Roles and Responsibilities of the User Department defined in the project proposal envisaged that training infrastructure along with logistics would be provided by the Department/agency concerned and NIC would provide faculty for the same.

Audit noticed that the Department/NIC provided user manuals/YouTube videos on various functionalities of IFMS modules, but the relevant documents/information with regard to preparation of any training plan, collection of feedback from trained participants, etc. were not maintained/provided to Audit. In the absence of relevant records, effectiveness of training or fulfilment of users' requirements could not be ascertained. Besides, no in-house capacity building was envisaged to identify and train responsible resource persons. Further, the Department relied on NIC support for performing all petty activities, as is evident from the fact that the requests relating to correction of bills/challans e.g. updating bank account number/IFSC Code/Payee Name (1,290 requests) and modification of Account Heads in challans (269 requests) were made to NIC, whereas these modifications could have been done in-house after imparting requisite training to the users.

Without proper training, employees may struggle to use IT solutions efficiently. Besides, lack of capacity building can impede the transformation efforts, making it challenging for the organisation to adapt to new business models and processes.

The Director stated (March 2023) that a training module for the purpose was being prepared. It was added that the Department was already working to deploy its own IT team for immediate redressal of all IT-related issues.

3.9.7 Helpdesk Management

As a best practice for e-solutions[12], the provision of helpdesk is an important activity, reports thereof are considered by the management and compared to resolution requests, and critical issues are noted for buying decisions and for periodic review.

It was observed that in accordance with the Finance Department's circular (July 2020), the IFMS portal was displaying various contact numbers and

[11] Guidance Note for Selection of Implementation Agencies issued by Ministry of Electronics and Information Technology (MeitY), GoI.

[12] As per Working Group on IT Audit and IDI Handbook for Supreme Audit Institutions.

email addresses of persons concerned for help desk solutions in respect of eBudget, eTreasury and eReceipt modules. But there was no complaint monitoring system in place as no report was being generated/maintained for the purpose. Though a 'Ticket Management System'[13](TMS) platform was introduced in June 2022, critical issues (as discussed in the preceding paragraph 3.9.6) may have gone unnoticed prior to June 2022 for management decisions which would have facilitated refinement of the IFMS solution.

In the exit conference, the Department stated (March 2023) that after implementation of TMS, all the requests (Tickets) were marked to the solution provider concerned for redressal and it would now be supervised by them to assess the risk/requirement for future modifications in the system.

3.9.8 Business Process Re-engineering for synergy of processes in IT environment

Rule 1.1 of Punjab Financial Rules (PFR) provides that the power of interpreting, changing and relaxing rules mentioned in PFR is vested in the Department of Finance.

The guidelines of Mission Mode Project – Treasury Computerisation recognised that a large part of the Treasury Computerisation would become possible only after the relevant codes are amended by the State and hence provided for Business Process Re-engineering (BPR) for re-engineering of the existing processes and introduction of new processes, wherever necessary, to ensure synergy of these processes with electronic systems. Each State/UT was required to prepare an action plan covering *inter alia* the changes required in procedures, practices, codes, manuals, etc. such as provision for use of digital signatures, file formats, transfer of funds electronically, etc. with explicit timelines to ensure achievement of these objectives.

Audit observed that various financial functions of the State Government had been shifted from the manual platform to eSolutions (IFMS) with effect from July 2011. However, even after a lapse of more than 11 years, neither the requisite changes in procedures, practices, codes, manuals, etc. to align and transform the business processes to leverage the computerisation were undertaken nor was any BPR action plan in this regard prepared by the State Government.

In the exit conference, the Department stated (March 2023) that the draft Punjab Treasury Rules had been prepared and the same would be shared for the suggestions of various stakeholders including AG (A&E), Punjab office. It was added that best efforts were being made to modify the Financial Rules and Budget Manual for incorporating therein the requisite IFMS processes.

[13] Ticket Management System (TMS) is a single platform for interaction between DDOs, DTOs, HODs, Treasury & Accounts, Budget Branch and NIC Team where any user can forward their concern (31 types of tickets/issues for all the modules *viz.* eBudget, eTreasury and eReceipt).

3.10 Project Implementation

3.10.1 Status of modules

In the new IFMS being developed/implemented by NIC with effect from April 2020, ten modules under three main modules, besides two separate modules *viz.* Management Information System (MIS) and Audit Management System (AMS), were planned to be implemented. The status of these modules (May 2022) is detailed in **Table 3.2** and **Appendix 3.2.**

Table 3.2: Status of implementation of modules under NIC-IFMS

Sr. No.	Module	Status
1.	eBudget	Partially implemented
2.	eTreasury	Implemented
3.	eReceipt	Implemented
4.	Management Information System (MIS)	Implemented
5.	Audit Management System	Developed and rolled out

Source: Departmental information

In addition to the above, two more modules/refinements *viz.* eSanction and eReconciliation were also proposed (October 2019) to be included in the new IFMS. It was, however, noticed that these two additional modules were not developed as these were under preliminary stage of discussions with the stakeholders[14].

In the exit conference, the Department stated (March 2023) that an updated list of CCOs and DDOs had been shared with AG (A&E) Punjab office for necessary mapping, and the workflow on DDO Reconciliation module would be finalised after discussion with them. As regards eSanction module, it was stated that modalities for linking this module with eOffice would be explored for the purpose. It was added that iHRMS team had been directed to study the process/workflow for eSanction of employee related matters like Salary, GPF, etc. and its integration with IFMS.

3.10.2 Implementation of modules

3.10.2.1 Depiction of budget provisions in IFMS

Paragraph 14.1 of Punjab Budget Manual (PBM) provides that no expenditure shall be incurred which may have the effect of exceeding total grants or appropriation authority by the Appropriation Act for a financial year, except after obtaining additional funds by re-appropriation, supplementary grant or appropriation or an advance from the Contingency Fund of the State. Further, Paragraph 14.2 of PBM states that in cases where additional expenditure is necessitated in a grant by a change in the accounts classification, the Department of Finance will authorise the expenditure to be incurred and a supplementary appropriation will be presented to the Legislature, if it is found

[14] AG (A&E) Punjab, DDOs/COs, DTOs, Budget Branch, etc. for e-Sanctions; and AG (A&E) and DDOs for eReconciliation.

that savings under the grant concerned are not sufficient to meet the additional expenditure under the head of account concerned.

NIC provided to Audit the staging environment to examine the front-end functionalities of bill preparation. Audit noticed the following inconsistencies in depiction of budget provisions in the new IFMS:

(i) Data analysis for the year 2021-22 showed that budget provisions were not made under 24 Detailed Heads of Account pertaining to 15 grants though the Finance Department had released ₹ 943.04 crore thereunder, against which expenditure of ₹ 933.66 crore was also incurred (**Appendix 3.3**).

Audit observed that though IFMS was depicting the position of total budget (inclusive of additional budget provided by the Finance Department) and budget available for a particular Head of Account with a DDO, it was neither depicting head-wise details of amount pending for reappropriation nor were the copies/details of eSanctions available in the system. It was, however, noticed that the MIS report, access of which was given by the Department, was not showing the requisite details[15], thus, impairing the transparency of financial transactions.

In the exit conference, the Department stated (March 2023) that necessary flag would be incorporated in the system so that an MIS could be generated to ascertain the funds pending for approval of the Legislature.

(ii) In the staging environment, it was observed that a bill can be initiated only on the availability of budget under a particular Head of Account[16]. While preparing a bill (Form-1:Abstract Contingent Bill) for SOE-93 (Electricity Charges) from bill maker's account, where the system was showing budget allocation of ₹ 6,00,000 and expenditure incurred up till then as ₹ 1,80,245, it was noticed that when details of bills were saved, it displayed a message *"The bill amount, leading to breach of released by HoD, cannot be approved/cleared by the treasury",* as depicted in **Picture 3.1.**

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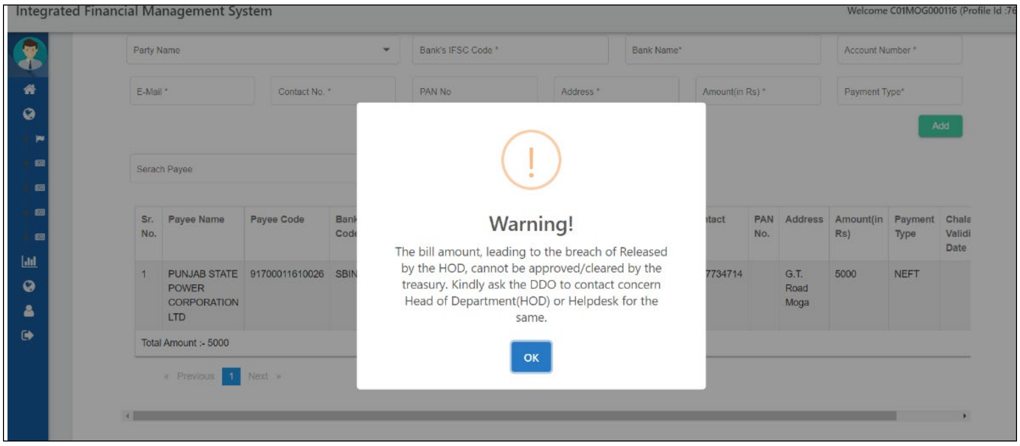
15 Requisite information in this regard was available in back-end data only.

16 Except for exempted Head of Accounts e.g. 8009-General Provident Fund; 8011-Insurance and Pension Funds; 2071-Pensions and Other Retirement Benefits; 8342-Other Deposits; 8443-Civil Deposits; etc.

Picture 3.1: Discrepancy in preparation of bill under SOE-93 (Electricity Charges) despite availability of budget



Source: Staging environment of IFMS

Thus, despite availability of budget, the system was restricting preparation of the bill.

The Director stated (March 2023) that such checks were imposed from the backend till the revised budget estimates were approved by the Hon'ble Governor. It was assured that such action would be documented in future. However, the facts remained that the IFMS was not depicting the correct status of available budget provisions.

3.10.2.2 Generation of duplicate bill number

T_P_BillProcessing Table (eTreasury database) stored all the transactions from bill preparation to bill payment cycle and bill number as a unique field for any transaction in this table.

During analysis of T_P_BillProcessing Table, duplicate bill numbers were found generated in two cases (Bill Nos. 202800062613049 and 211500103957), as detailed in **Table 3.3**, which showed that requisite validation checks were not available in the system to restrict generation of duplicate bills.

Table 3.3: Details of generation of duplicate bills

Sr. No.	Bill No	Date	DDOID	DTO	Amount (in ₹)	Status
1.	202800062613049	26-03-2021	17481	Chandigarh	30,758	Discarded
2.	202800062613049	26-03-2021	17481	Chandigarh	2,221	
3.	211500103957	20-01-2022	19867	Bathinda	3,31,793	Direct voucher posting
4.	211500103957	20-01-2022	19867	Bathinda	500	

Source: IFMS database (eTreasury)

The Department attributed (September 2022) the reasons for generation of duplicate bill numbers to single user login on multiple devices. In the exit conference, it was added (March 2023) that necessary checks had been incorporated in the system in June 2022 and after that no such case came to notice. The Department, however, did not provide any document for the changes initiated in this regard in the system.

Instances regarding generation of duplicate bills due to discrepancies in integration of IFMS with VMS have also been discussed in **Paragraph 3.10.3.1.**

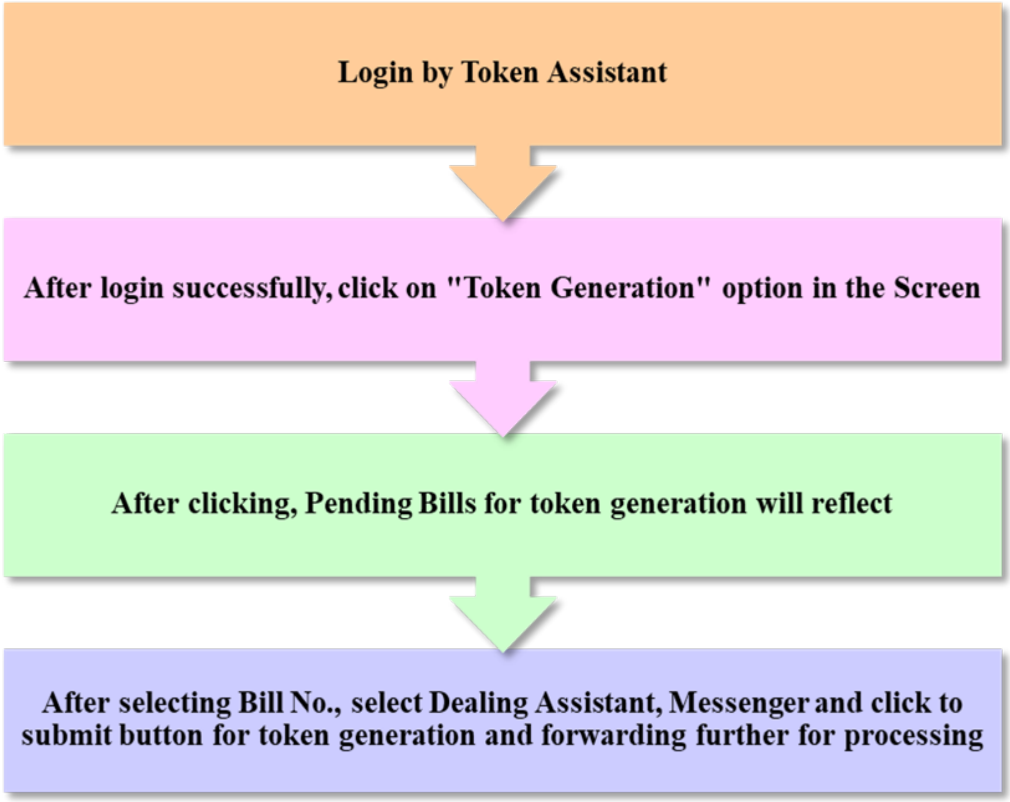
Generation of duplicate bill numbers could lead to risk of double/fraudulent payments.

3.10.2.3 Non-generation of token number for paid bill

eTreasury module includes two sub-modules *viz.*(i) 'Online Bill Processing' which caters to 39 types of bills available in the system that DDOs can generate and submit to the treasury online; and (ii) 'Treasury Bill Processing' which is one of the core modules for any financial management system. It involves the entire bill approval process starting from receiving the bill from the authorised DDO messenger to successful bill passing, cheque/ECS generation and cheque dispatch to the authorised DDO messenger.

Process flow, after the bill is forwarded by the DDO to the Treasury, for "Bill Inward/Token Generation" is given in **Chart 3.4**.

Chart 3.4: Process flow, after bill is forwarded by the DDO to Treasury, for "Bill Inward/Token Generation"



Source: IFMS Overview (User Manual 1.1)

During analysis of data, it was noticed that bill No. 201503025110044 dated 21.04.2020 for ₹ 86,003 was paid without assigning a token number, whereas the token number was to be generated at the time of processing of the bill by the Token Assistant, as shown in **Chart 3.4**.

Absence of token number could lead to unauthorised payments. Therefore, to mitigate these risks, it is crucial to establish and enforce a robust system for generating and assigning token numbers to validate bills.

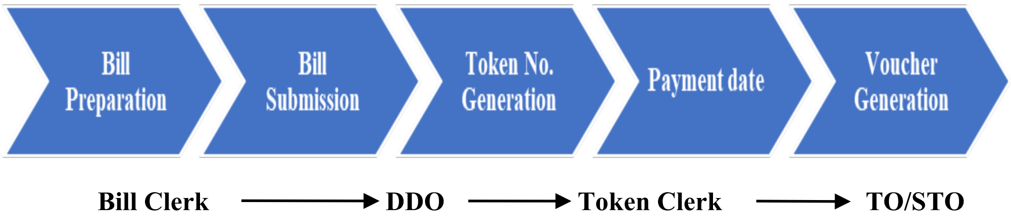
In the exit conference, the Department while admitting the audit observation stated (March 2023) that the requisite checks had been incorporated in the system to rule out such discrepancy and no such case was noticed afterward. In the absence of any documentation, Audit could not draw assurance for the rectification initiated in the system.

3.10.2.4 Delay in processing of bills

Rule 2.10(b)(3) of Punjab Financial Rules (Volume-I) provides that all charges incurred are drawn and paid at once and are not held up for want of funds and allowed to stand over to be paid from the grant of another year; that money indisputably payable should not, as far as possible, be left unpaid; and that all inevitable payments are ascertained and liquidated at the earliest possible date.

The process flow of a bill from bill preparation to voucher generation in IFMS is given in **Chart 3.5.**

Chart 3.5 Process flow of a bill from Bill Preparation to Voucher Generation



Source: IFMS Overview

Audit observed that neither were any timelines specified in IFMS for processing of the bills at various stages nor were any provisions made in the system to prioritise the bills. Audit adopted the timeline of 15 days for processing the bills as a benchmark, as specified by Central Vigilance Commission[17].

Data analysis of 19,23,701 bills processed through IFMS during 2020-2022 (2020-21: 9,27,510 and 2021-22: 9,96,191) showed that there had been considerable delay in processing of bills, as detailed in **Table 3.4**.

Table 3.4: Delay in processing of bills during 2020-2022

Year	Period of processing	No. of Bills			
		Bill Preparation to Token Generation* (DDO Level)	Gross amount (₹ in crore)	Token Generation to Bill Payment (DTO Level)	Gross amount (₹ in crore)
2020-21	**Within 15 days**	8,47,817	65,509.75	7,93,940	56,098.74
	16 days to 30 days	51,367	2,468.53	64,602	5,984.47
	31 days to 180 days	27,858	1,069.80	68,929	6,966.61
	Beyond 180 days	468	4.66	39	2.92
	Bills processed beyond 15 days	**79,693**	**3,542.99**	**1,33,570**	**12,954.00**
	Total	**9,27,510**	**69,052.74**	**9,27,510**	**69,052.74**
2021-22	**Within 15 days**	9,14,582	77,332.54	9,72,178	77,082.39
	16 days to 30 days	49,356	2,703.64	22,927	2,856.10
	31 days to 180 days	31,552	997.49	1,086	1,103.05
	Beyond 180 days	701	7.87	0	0.00
	Bills processed beyond 15 days	**81,609**	**3,709.00**	**24,013**	**3,959.15**
	Total	**9,96,191**	**81,041.54**	**9,96,191**	**81,041.54**

Source: IFMS data-base (eTreasury)

** Token is generated after DDO sends hard-copy of the bills/documents through a messenger to DTO.*

[17] O.M No. PVC/18/01 dated 14 August 2018.

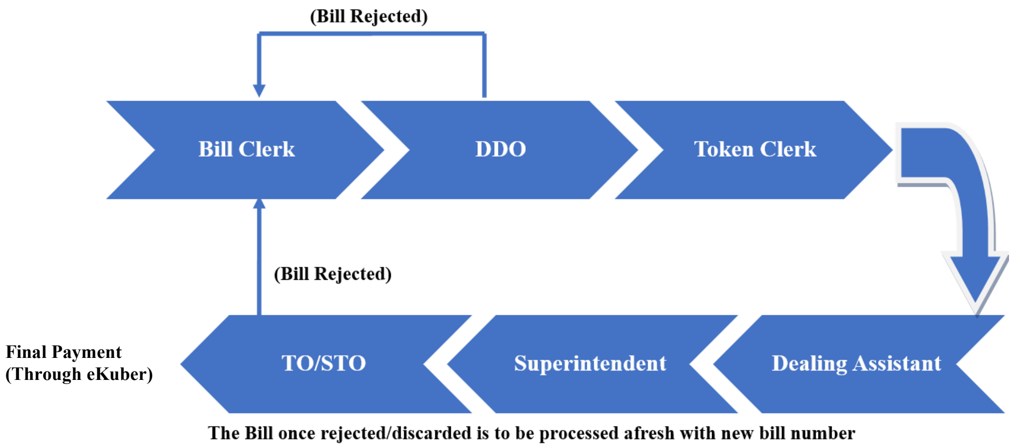
Table 3.4 shows that 1,61,302 bills for ₹ 7,252 crore (2020-21: 79,693 for ₹ 3,543 crore and 2021-22: 81,609 for ₹ 3,709 crore) and 1,57,583 bills for ₹ 16,913 crore (2020-21: 1,33,570 for ₹ 12,954 crore and 2021-22: 24,013 bills for ₹ 3,959 crore) were processed beyond 15 days at DDO and DTO levels respectively, during the period 2020-2022. As many as 1,169 bills for ₹ 13 crore (2020-21: 468 for ₹ 5 crore and 2021-22: 701 for ₹ 8 crore) were processed beyond 180 days at DDO level during the same period. It was further observed that because of delayed processing of bills, personal claims got affected in 706 cases[18].

The Department stated (March 2023) that the payment of bills in the treasuries were made on the basis of financial resources available with the State and the priority for payment of bill was decided by the Finance Department keeping in view the ways and means (overdraft) position of the State. Audit, however, did not find any checks/flags in the system depicting priorities set for passing/payment of bills.

3.10.2.5 Passing of bills flagged as rejected

The process flow of a bill in IFMS is as given in **Chart 3.6.**

Chart 3.6: Process flow of a bill in IFMS



Source: IFMS Overview

During data analysis, it was noticed that 27 bills flagged as rejected were found passed for payments which were also successful (**Appendix 3.4**).

The Department stated (March 2023) that in the beginning, the rejected column was taken to capture the rejected bills status, but later this field was not used, as the rejected bills were getting handled in status field with code '21' (discarded). The reply of the Department was not convincing, as out of above 27 bills, eight bills pertained to the period 2021-2023[19], which showed that the discrepancy was persisting in IFMS.

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[18] Arrear Bills (222); Medical Bills (149); Medical Bills of retirees (216) and NPS arrears (119).

[19] 2021-22 (07) and 2022-23: (01).

3.10.2.6 Non-mapping of head of accounts with types of bills

Mention was made in the Report of the Comptroller and Auditor General of India on Social, General and Economic Sectors (Non-Public Sector Undertakings) for the year ended 31 March 2016 (Paragraph 2.2.7.3(ii)) regarding absence of validation checks in the system (old IFMS) to restrict the transactions in a particular head of account to its respective bill type.

The Finance Department restructured (January 2018) the list of Standard Object Head of Expenditures (SOE). During examination of the new IFMS system being developed by NIC, Audit noticed that SOEs had not been mapped with the respective types of bills and the bill maker can choose any object head from any type of bill. Non-mapping of heads of account with type of bills may result in misreporting of expenditure for the respective object heads, besides making the reconciliation process difficult. Some of the instances thereon are discussed as under:

(i) As per the revised list of SOEs (January 2018), Grant-in-aid (GIA) should be booked under three SOEs i.e. 31 (Salary), 35 (Creation of Capital Assets) and 36 (Non-Salary). Accordingly, these three SOEs should be mapped with Bill Form 12, which is meant for preparation of GIA bills.

It was, however, noticed that all SOEs provided to a DDO could be selected for Form 12 (GIA bill), which otherwise should be linked to SOEs pertaining to GIA only and there was no check in the system to restrict the bill maker from choosing object heads other than GIA. Data analysis of the year 2021-22 showed that 850 bills pertaining to SOEs other than GIA, *viz.* Salaries (SOE-01), Social Assistance (SOE-06) Other Charges (SOE-50) and Major Works (SOE-53) had been prepared through Form 12.

(ii) Similarly, though 'Form 11' was meant for preparation of bills for 'GPF Advance/Withdrawal under Major Head of Account '8009', there were 680[20] bills where Bill Forms other than Form 11 were used for preparation of bills pertaining to Major Head of Account "8009". Of these, 608 bills of GPF withdrawals/advances were rejected mostly on account of selection of wrong bill type, whereas payment was made in respect of the remaining 72 bills.

Thus, the fact remained that despite being pointed out in earlier CAG's Report for the year ended 31 March 2016, *ibid*, requisite checks had not been incorporated in the new system

The Department stated (March 2023) that the matter had been taken up with the treasury for making necessary changes in the system.

3.10.2.7 Invalid Permanent Account Numbers

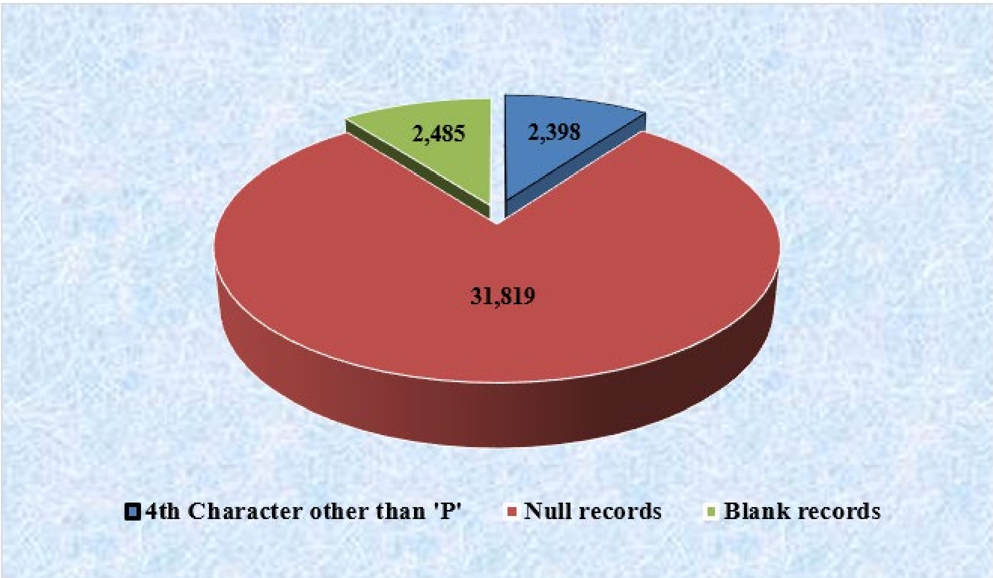
In order to deduct TDS, it is mandatory for all Government employees to provide their Permanent Account Numbers (PAN) to the DDO.

[20] 2020-21: 363; and 2021-22: 317

During analysis of IFMS database, Audit observed that out of 3,50,206 employees records[21], PANs of 36,702 employees were invalid[22] (as depicted in **Chart 3.7**), which showed that the system had no validation control to capture valid PAN (ten-character alphanumeric) of the employees. In the absence of valid PAN, deduction of due amount of TDS from the payees' bills and deposit thereof in Government account by the DDO could not be ensured.

The Department stated (March 2023) that there might be possibility of errors in PANs due to data entry. Therefore, data cleaning process by both NIC-IFMS and iHRMS teams was in process. Further, a functionality had been implemented to capture PAN of all employees where data was missing. In the exit conference, it was added that iHRMS database had the required checks and only one case of non-compliance was identified and that too was rectified. The Department should, however, ensure that the IFMS system should also have requisite validation checks to avoid invalid PANs.

Chart 3.7: Details of invalid Permanent Account Numbers



Source: IFMS database

3.10.3 Effectiveness and efficiency of integration with other systems

Various inconsistencies in the integration of IFMS with other systems, noticed during the course of IS audit are discussed in the succeeding paragraphs.

3.10.3.1 Integration with Vehicle Management System (VMS)

(i) Generation of duplicate bills numbers

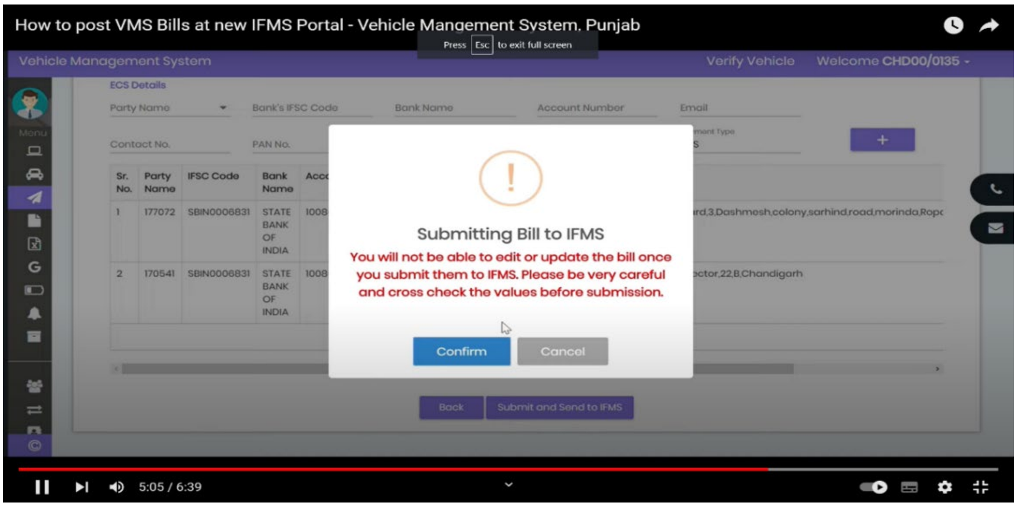
VMS module is meant to process vehicle related claims only. When a bill is submitted from VMS to IFMS successfully, a bill number is

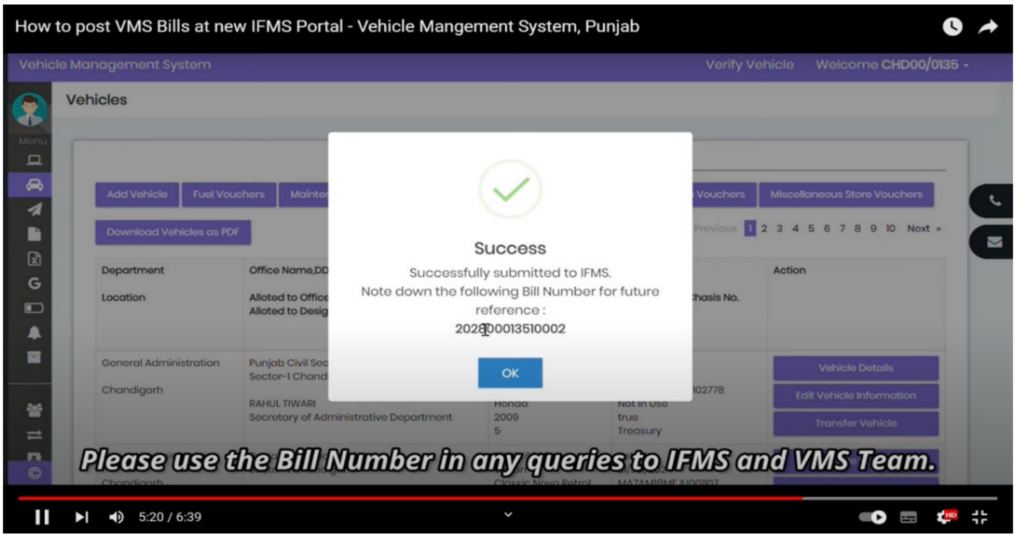
21 Worked out after matching the IFMS data with employees' data of iHRMS.

22 4th character of PAN was other than 'P' (Individual) (2,398 records); Null (31,819 records); and Blank (2,485 records).

generated/allotted, which is a unique field for any transaction. The process of submission of bills from VMS to IFMS is depicted in **Picture 3.2.**

Picture 3.2: Process of submission of bills from VMS to IFMS





Source: VMS (User Manual)

During data analysis in IFMS and VMS, it was noticed that status of 13 POL bills (2020-21: 6 and 2021-22: 7) having been allotted bill numbers (unique field) were found as 'Discarded'/'Pending' in VMS. However, the same bill numbers were generated/re-allotted to some other claims/bills (Electricity Charges, Telephones, etc.) in IFMS (**Appendix 3.5**). This showed that requisite validation checks were not available in the IFMS system to restrict generation of duplicate bill numbers.

The Department stated (March 2023) that initially there was a technical issue for generation of bill number for a DDO, but now after implementation of a solution by NIC, where next bill numbers were stored in 'T_P_BillNumber' table, no such cases came to notice. However, in the absence of any documentation for rectification made in the system, Audit could not draw any assurance in this regard.

(ii) Preparation and passing/payment of POL bills

As per guidelines on management of financial resources issued (April 2021) by the Finance Department (FD), expenditure against SOEs 9, 10, 58 and 59 relating to POL and maintenance of official/transport vehicles shall be incurred only against those sanctioned vehicles which have been correctly enrolled and duly verified in VMS.

During analysis of data in IFMS and VMS, following discrepancies were noticed:

(a) As many as 626 POL bills pertaining to SOEs 9, 10, 58 and 59 were prepared from IFMS instead of VMS during the year 2021-22, of which 539 bills were passed for payment. This showed that IFMS was lacking the requisite controls to restrict preparation of POL bills from the system under the said SOEs. Moreover, non-preparation of POL bills from VMS escaped its various validation checks.

The Director stated (March 2023) that bills for SOEs 58 and 59 could be prepared from both IFMS and VMS. However, bills of other SOEs (8, 9 and 10) prepared from IFMS were Abstract Contingent bills. The reply of the Department was not in line with the FD's guidelines *ibid*.

(b) Before preparation/passing of POL bills, all vehicles are required to be registered/enrolled in VMS, particulars of which are got verified in the system.

It was, however, noticed that there were 102 records, where payment was made against 24 unverified vehicles during 2021-22. This showed that requisite validation checks were not available in both the systems *viz.* VMS and IFMS to restrict preparation/processing of bills of unverified vehicles.

In the exit conference, the Director stated (March 2023) that vehicles transferred from one office to another was restricted to be verified again by the recipient authority; and no bill could be drawn for unverified vehicle. However, no logs were provisioned in the VMS to verify the facts/reply of the Department.

3.10.3.2 Integration with iHRMS

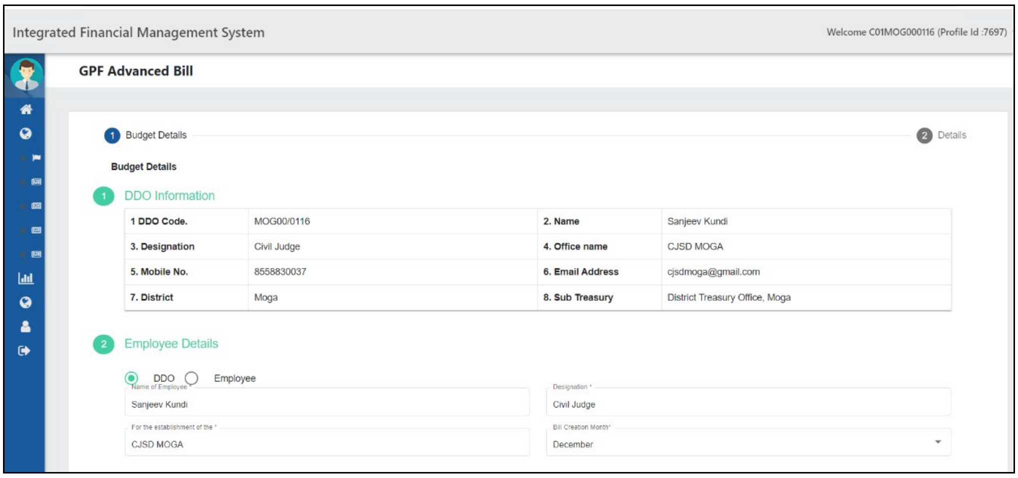
iHRMS attempts to provide better services in the form of employee record, salary, GPF, GIS, leave, income tax information, property returns, annual confidential progress, posting, promotion, arrears management, etc.

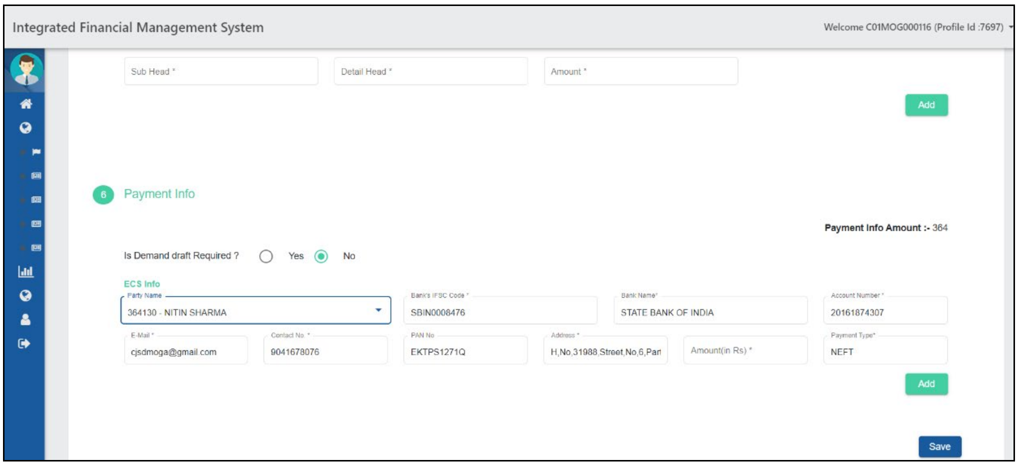
(i) Non-integration with GPF module (iHRMS)

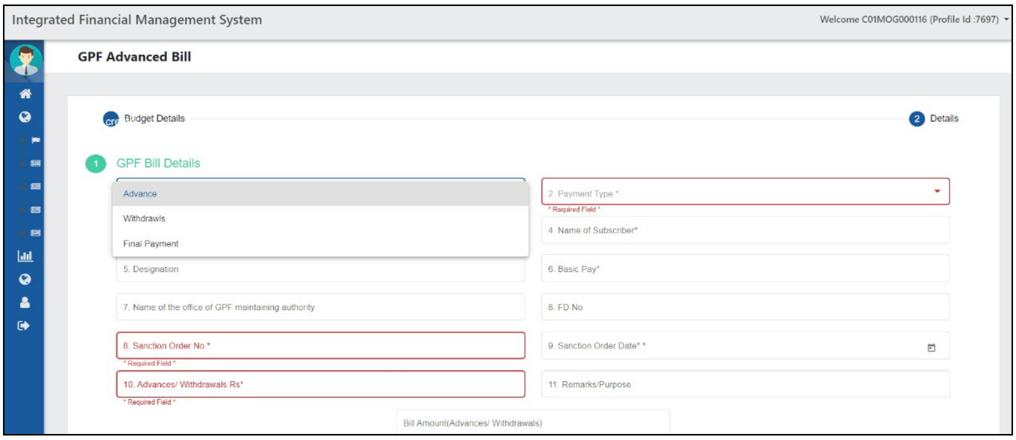
Mention was made in the Report of the Comptroller and Auditor General (CAG) of India on Social, General and Economic Sectors (Non-PSUs) for the year ended 31 March 2016 (Paragraph 2.2.6.3(i)(b)), highlighting non-provision of capturing master data of employees in IFMS to ensure one to one mapping of salary with account number, thus, raising risk of fraudulent/double drawal of pay. Further mention was made in the Report of the CAG of India on Social, General, Revenue and Economic Sectors (Non-PSUs) for the year ended 31 March 2019 (Paragraph 3.7) and Compliance Audit Report for the year ended 31 March 2021 (Paragraph 7.2), pointing out suspected fraudulent drawal and disbursement of pay and allowances amounting to ₹ 1.16 crore and suspected misappropriation of pay and GPF amounting to ₹ 0.71 crore respectively, due to absence of requisite validation checks/non-integration between IFMS and iHRMS.

During data analysis, it was observed that the case of GPF advance was being processed through iHRMS and sanction order thereof was also being generated from the system itself. However, GPF module (iHRMS) was not properly integrated with IFMS, as on the bill preparation form in IFMS, only the payee's basic data was being populated and critical data such as GPF Account Number, GPF Account Balance, Sanction Order details were not available in the system for validation of the sanction order issued under iHRMS; rather it was required to be updated manually, as shown in **Picture 3.3**.

Picture 3.3: Preparation and passing of GPF Advance bill in IFMS







Source: Staging Environment of IFMS

Audit noticed that during the period 2020-2022, 65,263 GPF bills[23] were passed for payment. However, even after being pointed out by Audit time and again through various Audit Reports *ibid*, requisite validation checks were not introduced in IFMS and adequate integration of IFMS and iHRMS was also not done, thereby raising the risk of fraudulent/double drawal of pay/GPF, etc.

In the exit conference, the Director stated (March 2023) that a workflow for integration of IFMS and iHRMS would be decided soon with NIC.

3.10.3.3 Integration with Accountant General (A&E), Punjab

(i) Integration with Voucher Level Computerisation

In order to generate Monthly Civil Accounts and Annual Accounts of the Government of Punjab, the Accountant General (A&E), Punjab has been using Voucher Level Computerisation (VLC) since January 2000. To keep the accounts of the State Government and to generate various reports, VLC embodied with 14 modules[24].

Audit noticed that:

- There was no interface (API) between IFMS and VLC system. Treasury Accounts were being received in a digital file (.csv file) along with physical vouchers[25]. Further, budget data was also being entered manually in the VLC system.
- There was no interface between IFMS and VLC system to capture challan-wise detailed data in VLC, rather abstract of receipts was being posted manually.

In absence of required integration, data reconciliation between IFMS and VLC could not be automated.

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23 2020-21 (35,723 bills); and 2021-22 (29,540 bills).

24 (i) Master Module; (ii) Budget Module; (iii) DC Module; (iv) Forest Module; (v) Grant in aid Module; (vi) Loan Module; (vii) Deposit Module; (viii) Account Current Module; (ix) Audit Module; (x) Book Module; (xi) GPF Module; (xii) HBA/MCA Module; (xiii) Enumeration Module; and (xiv) Security Module.

25 eVouchers (Salary) were being supplied to AG w.e.f. October 2022.

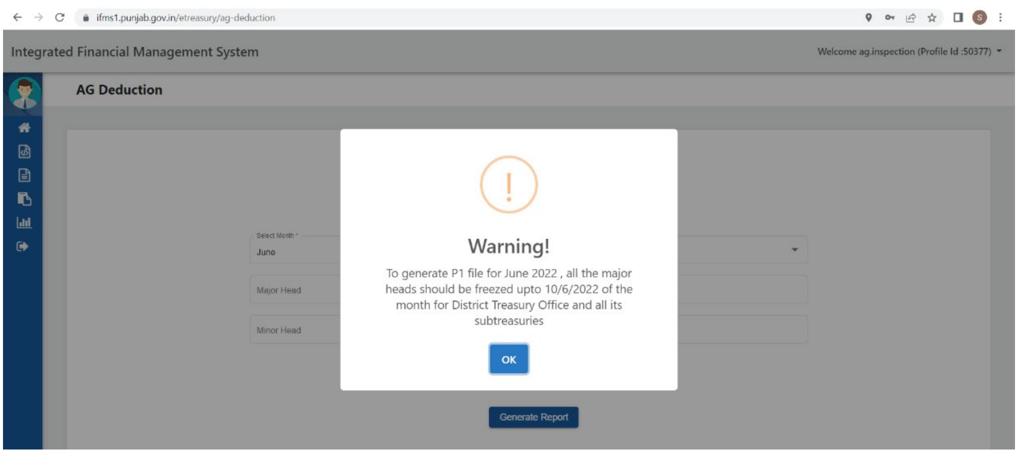
The Director stated (March 2023) that the desired interface suggested by the AG (A&E) office was being developed and would be sent for User Acceptance Testing by April 2023.

(ii) Non-closing/non-freezing of monthly accounts

Rule 61 of the Punjab Treasury Rules, 1985 (PTR) provides that the cash account, the list, schedules of payment and other returns prepared in the forms and manner specified in Chapter 4 of Account Code, Volume-II, shall be submitted to the Accountant General punctually on the dates laid down therein. As per Note 1 under Rule 61, the first list of payment with connected vouchers and a Memorandum in Form TA-48 shall be sent to the Accountant General (A&E) between 13th to 15th day of the month. The cash account and the second list of payments with supporting Schedules and the connected vouchers together with the Memorandum in Form TA-48 shall be submitted by the District Treasury Officer to the Accountant General (A&E) on the 7th day of the following month. Further, Rule 62(1) of PTR states that the Treasury figures shall never be altered after they have been communicated to the Accountant General (AG), but if after submission it is discovered that an error has been made, the error shall be pointed out, in order that he may correct, not the accounts of the treasury, but the accounts which he draws upon their basis.

The State had provided access to the AG for generating payment files, AG vouchers, AG deductions and MIS reports. Audit tried to generate one report on AG deductions (first list) for the month of June 2022, but the system displayed a warning/error message – "*To generate P1 file for June 2022, all the major heads should be freezed up to 10/06/2022 of the month for District Treasury Office and all its subtreasuries*", as shown in **Picture 3.4.**

Picture 3.4: Warning/error message while generating report on AG deductions (first list) for the month of June 2022 in IFMS



Source: IFMS MIS

The officials concerned of AG (A&E) stated (March 2023) that after submission of accounts to AG, the Department instead of making transfer entry for a misclassification or correction in accounts, reopened the previous month's accounts for making these corrections, which was not in line with the accounting standards and codal provisions.

The Director stated (March 2023) that a committee in this regard had been formed at DTA level consisting of Treasury Officers and representatives from AG (A&E) office to address the issue.

3.10.4 Other inconsistencies

Other inconsistencies noticed during IS Audit of IFMS are discussed as under:

(i) Empty tables in database

As a Data Base Administrator, it is a best practice[26] to periodically review unused tables in the databases, to keep the production databases clean and contain only useful data and objects. These tables could be related to obsolete projects, temporary objects that were created or tables created for specific purposes and are now no longer needed.

Analysis of database related to Budget, Treasury and Receipt modules, however, revealed that 24 tables[27] (**Appendix 3.6**) in the database were not containing any data.

On this being pointed out, the Department stated (March 2023) that the tables which were redundant and were not required had been deleted, and a few tables which were temporarily being used while processing, were kept in the system.

The Department may periodically review unused tables in the databases, to keep production databases clean and contain only useful data and objects.

(ii) Data inconsistencies

During analysis of IFMS, it was noticed that in 710 instances, mobile numbers were found 'null' or less than ten digits, despite it being a mandatory field.

The Department stated (March 2023) at the time of implementation of iHRMS, some of the Departments ported data using excel sheets and that the data could have these inconsistencies. However, a pop-up message had been added in the System so that the DDO may correct the mobile number, wherever required.

The fact remained that requisite input validation checks were not available in both the systems (IFMS and iHRMS).

(iii) Deposit of challan after expiry of validity period

As per IFMS manual, a user or a DDO can deposit Government receipt online through payment portal or offline by generating a challan through eReceipt

[26] https://www.mssqltips.com/sqlservertip/4191/identify-unused-sql-server-tables/

[27] eBudget: 11; eTreasury: 01; and eReceipt:12.

module on IFMS portal. A Government Reference Number (GRN) is generated as and when the challan is generated for receipt. The receipt can be deposited with any branch of State Bank of India or Punjab National Bank within seven days from closing date of application i.e. the date of generation of challan (GRN), as depicted on the challan itself.

During data analysis of IFMS, it was noticed that receipts in two cases were deposited with the bank after expiry of the validity period (seven days) as detailed in **Table 3.5**.

Table 3.5: Details of receipts deposited in bank after expiry of validity period

GRN	Amount (in ₹)	Challan Date	Validity (7 days)	Bank deposit date	Days used for deposit	Delay in deposit (Days)
11074	2.00	11/04/2020	18/04/2020	04/11/2020	207	200
84028	600.00	11/06/2020	18/06/2020	06/08/2020	56	49

Source: IFMS database

The Director stated (March 2023) that provision in this regard would be incorporated in PTR, besides considering the possibility of its inclusion in MoUs with the respective e-Banks.

3.11 Information Systems Security

3.11.1 Non-implementation of Digital Signatures for authentication

The Guidelines for Usage of Digital Signatures in e-Governance issued (December 2010) by Government of India encourage efficiency, transparency and reliability in e-Governance projects. Further, the Information Technology Act, 2000 gives legal recognition to the use of Digital Signatures for authentication in e-Governance.

Audit noticed that instead of using Digital Signatures, authentication at DDO level was being done by OTP generation.

On this being pointed out in the Audit, the Director stated (March 2023) that eSign had now been implemented by the State. However, in the absence of any documentation for implementation of eSign/digital signatures, Audit could not draw any assurance in this regard.

3.11.2 Non-adherence to Password Policy

The password policy (June 2020) of the Department provides that all user-level passwords shall be changed periodically, i.e. before the beginning of every quarter of a financial year. The scope of these instructions includes all the end users and personnel who have or are responsible for an account on IFMS.

During analysis of data, it was noticed that 1,636 out of 17,554 users updated their passwords after lapse of more than 90 days[28]. This showed that business rules were not mapped in the system**.**

In the exit conference, the Director stated (March 2023) that NIC team had designed and implemented a new scheduler for implementation of password policy. However, in the absence of any documentation for implementation of the password policy, Audit could not draw any assurance in this regard.

3.11.3 Security Audit

Guidelines (January 2009) for Indian Government Websites (GIGW) stipulate that each website/application must undergo a security audit from empanelled agencies and clear the same, prior to hosting and after addition of new modules.

Mention was made in the Report of the CAG of India on Social, General and Economic Sectors (Non-PSUs) for the year ended 31 March 2016 (Paragraph 2.2.8.3) regarding delayed conducting of security audit of TCS-IFMS.

Audit, however, noticed that although all three modules *viz.* eBudget, eTreasury and eReceipt of the new IFMS were rolled out with effect from 1 April 2020, the security audit of these modules was conducted between May and November 2022, i.e. after more than two years of hosting the modules, especially when the financial transactions of the State were being made through the system, and in spite of this being pointed out through earlier Audit Report *ibid*.

Due to delayed/non-conducting of security audits, the Department may remain unaware of vulnerabilities in its systems and networks leading to potential security breaches, data leakages and unauthorised access.

The Director stated (March 2023) timely conducting of security audit would be taken care of in future.

3.11.4 User login access

During analysis of database table USER_LOGIN_HISTORY in eBudget database, the following issues were noticed:

- In 3,389 out of 44,081 instances, IP_Location was not captured/stored by the system.
- In 49 instances (46 COs, two HoDs and one DDO), IP_Location of the device was found out of India.The Director stated (March 2023) that NIC had been directed to implement country policy on IFMS to disallow the user login access outside India.

[28] Cut-off date has been taken as last login date.

3.11.5 Disaster Recovery and Business Continuity Plan

Business Continuity Planning (BCP) is the process an organisation uses to plan and test the recovery of its business processes after a disruption. It also describes how an organisation will continue to function under adverse conditions that may arise (for example, natural or other disasters). The Data Recovery Best Practices issued by Ministry of Electronics and Information Technology (MeiTY), GoI *inter alia* provide that the readiness assessment will help in evaluating the current status of Disaster Recovery. The replicated resources are to be reviewed at least twice a year (six months), to ensure that resources are effectively replicated and identified resources are in alignment with the business priorities and goals.

Audit observed that the Department was neither having any Disaster Recovery Policy nor was any Disaster Recovery site available in case of any exigency. It was noticed that a major fire accident occurred (September 2021) in the building where the IFMS development team was housed and the whole work came to a standstill. Security incidents and disasters could lead to financial losses, potential legal actions, loss of business opportunities, etc.

In the exit conference, the Department stated (March 2023) that the Department of Governance Reforms and Public Grievances (DGRPG) had already issued Letter of Intent to L1 vendor and signing of contract was under process for the purpose. It was assured that they would provide relevant response along with corroborative documents on Disaster Recovery Policy by 29 March 2023, which was awaited (July 2023).

3.12 Conclusion

Exit Management Plan in respect of earlier IFMS could not be executed due to disagreement on pending payments between the State Government and M/s. Tata Consultancy Services (TCS) – the earlier System Integrator (SI). Further, there was no such Exit Management Plan available in respect of the new IFMS being developed by the National Informatics Centre (NIC) i.e. the new System Integrator.

No formal Memorandum of Understanding (MoU) or agreement was entered into with NIC for implementation of new IFMS in the State of Punjab, even after lapse of more than two years of commencing the work by SI from November 2019 onwards. Though the timelines for the new IFMS (i.e. by March 2022) as per the project proposal could not be adhered and the system was still in the development phase, payment for the extended period (April 2022 onwards) was being made to NIC without any revised proposal or signing of MoU.

In spite of financial data being critical in nature, even after more than two years of implementation of the new IFMS solution with effect from April 2020, the requisite data could not be migrated fully from TCS-IFMS to

NIC-IFMS and even the knowledge transfer was not shared by the previous SI due to some disputes on pending payments. Without proper data migration and backup strategies, critical information may be at risk of being permanently damaged or lost.

No Change Management Policy was available with the Department with regard to changes/modifications being made in the new IFMS solution. Absence thereof could result in poor communication with regard to the reasons for change, expected impact and the benefits. Without a clear process for managing changes, there is a higher likelihood of project delays. Further, unplanned or uncontrolled changes can disrupt project timelines and deliverables.

In-house capacity building was not envisaged to identify and train responsible resource persons and the Department relied on NIC support for performing even petty activities. Without proper training, employees may struggle to use IT solutions efficiently. Besides, lack of capacity building can impede the transformation efforts, making it challenging for the organisation to adapt to new business models and processes.

Even after a lapse of more than 11 years of shifting various financial functions of the State Government from manual platform to eSolutions (IFMS) from July 2011 onwards, the existing financial codes *viz.* Punjab Financial Rules, Punjab Treasury Rules and Punjab Budget Manual were not amended to ensure synergy of business processes in the system.

Though three main modules of IFMS *viz.* eBudget, eTreasury and eReceipt were implemented, three important sub-modules thereunder i.e. Debt Management, eReconciliation and eSanction were still to be developed/ implemented.

During data analysis in IFMS, instances of generation of duplicate bill numbers, non-generation of token number during processing of bill, absence of flags to prioritise the processing/passing of bill, passing of bills flagged as rejected, mapping of head of accounts with types of bills, invalid Permanent Account Numbers, etc. were noticed. Generation of duplicate bill numbers and non-generation of token number could lead to the risk of double/fraudulent payments or unauthorised payments. Non-mapping of heads of account with type of bills may result in misreporting of expenditure for the respective object heads, besides making the reconciliation process difficult.

The integration of IFMS with other systems/applications being run in the State was inadequate, as is evident from various instances, such as generation of duplicate bill numbers in respect of POL bills prepared in Vehicle Management System (VMS), preparation of POL bills in IFMS instead of VMS in contravention of guidelines of the Finance Department, inadequate integration of IFMS with iHRMS, non-integration with Voucher Level

Computerisation (VLC) of AG (A&E) Punjab office, unfreezing of previous months' accounts for making corrections therein after submission of the monthly accounts to AG office, etc. Besides, data inconsistencies with regard to mobile numbers were also found in the database. Requisite validation checks were lacking in the system to restrict such discrepancies.

Security audit of the implemented modules was conducted after more than two years of their hosting, which is a risk in view of the fact that the financial transactions of the State were being made through the system. Due to delayed/non-conducting of security audits, the Department may remain unaware of vulnerabilities in its systems and networks leading to potential security breaches, data leakages and unauthorised access.

In 3,389 out of 44,081 instances, IP_Location was not captured/stored by the System; and in 49 instances, IP_Location of the device was found to be outside India.

The Department was neither having any Disaster Recovery Policy nor was any Disaster Recovery site available in case of any exigency. Security incidents and disasters could lead to financial losses, potential legal actions, loss of business opportunities, etc.

3.13 Recommendations

In light of the audit findings, the State Government/Department may ensure:

(i) signing of MoU with NIC incorporating therein requisite clauses with regard to stage-wise timelines including extension therein (if required), project cost, exit management plan for hindrance-free and smooth development and implementation of the system in the State;

(ii) migration of all legacy data into the new System, besides ensuring adequate change management controls and documentation thereof to avoid/track any risk of accidental or wrong changes to the system and data;

(iii) imparting adequate training to staff/users to minimise dependency on the System Integrator for routine activities;

(iv) requisite amendments in the existing financial codes to safeguard synergy of business processes in the system;

(v) implementation of all the modules of IFMS for running the financial functions of the State in an effective, efficient and transparent manner;

(vi) availability of requisite validation checks to prevent discrepancies in the system to avoid any risk to the financial transactions;

(vii) adequate integration of IFMS with other systems/applications being run in the State for its effective and efficient use;

(viii) timely conducting of security audit from empanelled agencies prior to hosting and after addition of new modules; and

(ix) putting in place a Disaster Recovery and Business Continuity Plan to ensure safety and smooth functioning of the IFMS.

The matter was referred (January 2023) to the State Government; their replies were awaited (February 2024).