2.3 Information Technology Audit of "e-Procurement system" implemented by Punjab Information and Communication Technology Corporation Limited

Executive Summary

Punjab Information and Communication Technology Corporation Limited (Punjab Infotech) implemented 'e-Procurement system' in the state. The application software 'Tender Wizard' was implemented for various user departments/ organisations on Application Service Provider model.

'e-Procurement system' has been implemented in 36 out of 45 departments in the State. Four out of nine modules have not been implemented even after elapse of more than two years of contract. Non implementation of the full software affected the transparency and efficacy of procurement and optimal benefits could not be achieved.

(Paragraphs 2.3.6.1 and 2.3.6.2)

Punjab Infotech assigned the work of e-Procurement project to M/s ITI Ltd without inviting any open competitive bids in contravention of the guidelines of Central Vigilance Commission (CVC). The departure from the standard practice of inviting competitive bids deprived the Punjab Infotech from getting competitive rates.

(Paragraph 2.3.7.1)

Input and Access Controls in system were weak, thereby, affecting the accuracy and completeness of data.

(Paragraphs 2.3.8.1 and 2.3.9)

Lack of Business Continuity/ Disaster Recovery Plan resulted in non availability of parallel database at a location other than the primary server location to ensure uninterrupted availability of the system.

(Paragraphs 2.3.10.3)

Introduction

2.3.1 Electronic Procurement (e-Procurement) is the process wherein the tendering activity is carried out online using the internet and associated technologies. e-Procurement provides transparency, monitoring and control of procurement process.

Punjab Information and Communication Technology Corporation Limited (Punjab Infotech) entered (July 2010) into an agreement with M/s ITI Ltd, for implementation of e-Procurement system in the State. As per agreement, the role of Punjab Infotech was to ensure coordination, and provide necessary support for system study and design implementation of e-Procurement for user departments of the State through a Company/ Department designated nodal officer. The application software namely Tender Wizard was implemented (September 2010) for various user departments/ organisations on Application Service Provider[1] model. It further entered into (November 2010) another agreement with Sify Technologies Limited (Sify) to procure and provide Public Key Infrastructure (PKI) based security for all its users for authentication, integrity, non-repudiation[2] and confidentiality. Sify issued and managed Digital Signature Certificates (DSC) to the end-users of Departments/ Organisations. The vendors were required to obtain the DSCs from any of the Certifying Authority for on-line transactions of tendering business. Punjab Infotech also entered (October 2010) into an agreement with HDFC Bank Limited and Axis Bank (January 2011) for obtaining the services of e-Payment gateway as part of e-Procurement system for collection of all type of fees by user departments through internet payment gateway.

Objectives of Audit

2.3.2 Audit objectives were:
  ➢ To evaluate the effectiveness of e-Procurement system;
  ➢ To analyse the data for completeness, integrity, reliability and accuracy; and
  ➢ To evaluate the security controls built into the system.

Scope of Audit

2.3.3 The present IT Audit review covers the e-procurement data of six departments[3] and two companies[4] for the period from September 2010 to September 2012.

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[1] The Government organisation wishing to do e-tendering controls all the core tendering activities of its organisation carried out on the portal, but the ownership and control of the portal infrastructure is with the Service Provider.

[2] Non-repudiation refers to a state of affairs where the purported maker of a statement will not be able to successfully challenge the validity of the statement or contract.

[3] Bathinda Development Authority (BDA), Director General School Education (DGSE), Director of Sports (DoS), Director Research and Medical Education (DRME), Department of Local Government (16 Nagar Panchayats), Department of Industries & Commerce (State Geologist).

[4] Punjab Information and Communication Technology Corporation Ltd and Punjab Agro Foodgrains Corporation Limited (PAFCL).

Audit Methodology

2.3.4 We explained audit objectives to the representatives of two companies and six departments during an entry conference (January 2013). Further scrutiny of records of 612 cost opened tenders including 58 auctions related to selected units was carried out by interaction with the auditee personnel and data analysis with reference to audit criteria. Audit findings were reported to the Government of Punjab. Reply received from the two companies have been considered while finalising the audit findings. The reply from Government of Punjab was, however, awaited. Audit findings were discussed with the management of Punjab Infotech in an exit conference (December 2013).

Audit Criteria

2.3.5 The audit criteria adopted for assessing the achievement of the audit objectives were derived from the following sources;

> Agreements entered by Punjab Infotech with service providers;
> Guidelines on e-Procurement by Central Vigilance Commission (CVC)/State Government;
> e-Procurement guidelines issued (August, 2011) by Standardisation Testing and Quality Certification (STQC) Directorate, Department of Information Technology, Ministry of Communication and Information Technology, Government of India; and
> Competition Act, 2002 as amended.

The audit findings are discussed in succeeding paragraphs:

Meeting of business objectives

Non implementation of the modules of e-Procurement
2.3.6.1 The modules of Supplier Registration, e-Tendering, Catalogue Management, e-Payments and Management Information System (MIS) reports were to be implemented in Phase-I, whereas modules of Contract Management, e-Auction, Indent Management, SMS Gateway were to be implemented in Phase-II within 21 weeks of signing agreement with M/s. ITI Limited.

Audit observed that only five of nine modules were implemented. Four modules i.e. Indent Management, Catalogue Management, Contract Management and SMS Gateway were not got deployed by Punjab Infotech, resultantly, the benefits like the workflow automation for handling the flow of documents during the tender preparation process in case of Indent Management, access to easier rate contract information with Catalogue Management, the processes involved in between issuance of work order and completion of the work handled in Contract Management and finally benefits of SMS module for intimation of the status of tender to all the vendors could not be availed.

During exit conference Punjab Infotech informed that all nine modules have now been deployed.

Delayed implementation of e-Procurement system

2.3.6.2 The Empowered Committee and Steering Committee chaired by the Chief Secretary, Punjab monitored the implementation of the e-Procurement system. The agreement entered between Punjab Infotech and M/s ITI Ltd provides that M/s ITI Ltd will implement the entire system in a phased manner i.e. six[5] departments were to be covered in Phase-I within 60 days and the remaining departments/Boards/Corporations within 120 days of the entering of the agreement. The Steering Committee fixed (January 2011) the threshold value of ₹ five lakh for e-Procurement.

Audit noticed that out of 45 departments only 36 departments have implemented e-procurement solution so far (November 2013) though the scheduled time for the same had already elapsed in November 2010. Audit also noticed that no empirical study to justify the cost vis-a-vis benefits was conducted by Punjab Infotech. The information on reduction of procurement cost in 30 units of various departments indicating savings ranging between one and 33 *percent* of the estimated cost of ₹ 1,678.11 crore in respect of 4,448 processed tenders was subjective and was not based on any scientific methodology.

Further non implementation of the e-Procurement system in other departments deprived them of the benefits of transparency and efficiency in procurement.

The management explained that e-Tendering has been implemented in 36 out of 45 departments. However, there were technical bottlenecks, such as server down time etc affecting its acceptance/ reliability. Further, the threshold value was not followed by Local Government department.

Audit observed that Punjab Infotech despite being the owner of the e-Procurement system did not improve its efficacy to make it reliable. In case of any exception to the threshold value such cases were not brought to the notice of the Steering Committee.

Non entering of tender award detail

2.3.6.3 Once a tender is opened, department can award the tender to the qualified lowest quoted vendor by clicking on a specified icon. Similarly, the e-Procurement system has the facility to take backup of opened /awarded tenders by department user after completion of tender related activities performed on a particular tender.

An analysis of database showed that in all 612 cost opened and processed tenders, award detail of tenders were not available in the database as the functionality of award of tender was not included in the role format supplied by Punjab Infotech to user departments resulting in incompleteness of the data as well as affecting transparency of procurement system. Similarly, the backup of all the 612 cost opened and processed tenders was also not taken as the role format supplied by Punjab Infotech did not include the activity of backup.

In exit conference it was intimated that initially the primary focus was on the implementation of e-Tendering. However, adequate training was being

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5   Department of Industries & Commerce, Power, Urban Development, Water Supply & Sanitation, Department of Health and Department of Education.

imparted to officers/ officials of user departments to make use of the features like tender award detail and archival of tenders.

Requisitioning of hard copies of technical bids

2.3.6.4 e-Procurement intends to eliminate the human intervention in tendering process and avoids hard copies of the same. Director Research and Medical Education (DRME), had requisitioned the hard copies of technical bids and in seven out of eight tenders the technical bids were even accepted in 'unsealed covers'. During exit conference Punjab Infotech assured to issue the circular to the user departments to stop practice of receiving the unsealed hard copies of technical bids.

Non evaluation of tenders through e-Procurement system

2.3.6.5 The e-Procurement system is designed to evaluate the bids for generation of comparative statement. Further the pre-bid meeting can also be held on-line through the system, however, all pre-bid meetings were held, manually. An analysis of log table showed that 505 out of 554 cost opened tenders (excluding 58 auctions) representing 91 *percent* were not evaluated by using the e-Procurement system. Audit observed that though the system provides comparative statement of technical bids, yet technical evaluation, due to subjectivity of the matter, was carried out manually. It was further observed that owing to inadequate training of users of departments, the templates for uploading of cost bids were neither standardised nor designed appropriately to generate evaluation sheets, automatically. Thus non enforcement of evaluation of the tenders through e-Procurement system defeated the objective to automate the entire tendering process.

During exit conference, the Management stated that henceforth the department users have to make use of the HTML template in place of the excel sheet. Further, it was assured that the said HTML template would be made available to user departments by January, 2014 for automated evaluation of the bids/comparative statement.

Partner & Service issues

Arbitrary allotment of work

2.3.7.1 Punjab Infotech assigned the work of e-Procurement project to M/s ITI Ltd without inviting open competitive bids in contravention to the guidelines of the CVC.

Punjab Infotech while accepting the facts stated (July 2012) that CVC guidelines referred to were not available with them. During exit conference, the Managing Director, Punjab Infotech stated that Empowered Committee instructed Punjab Infotech to enter into an agreement with M/s ITI Ltd. which is a Central PSU providing e-Procurement solutions, so the clarification regarding allotment of work to M/s ITI Ltd without tendering will be sought from the CVC through State Government.

The reply was not acceptable as the said guidelines of CVC were circulated (June 2010) by the Finance Department to all the Financial Commissioners/ Principal Secretaries/ Secretaries of the State Government. The departure from the standard practice of inviting competitive bids for implementation of

e-Procurement system deprived Punjab Infotech from getting competitive rates.

Non provision of penalty clause

2.3.7.2 M/s ITI Ltd was to pay 15 *per cent* of all receipts[6] to Punjab Infotech within a period of seven days of receipt on back to back basis, without any penal clause for delayed payment.

An analysis of transactions (tender processing fee and registration fee of vendor) related to May 2012 showed that there was no proper mechanism such as generation of reports through Service Dashboard to monitor the receipt of share of Punjab Infotech and there was delay ranging between 83 and 112 days (after allowing margin of 10 days) in receipt of ₹ 3.51 lakh related to May 2012. It was intimated in exit conference that by issue of an addendum the requisite penal clause would be inserted in the agreement. It was also stated that all the due payments after verification from a Chartered Accountant have been received from M/s ITI Ltd.

Application issues

Lack of input controls

2.3.8.1 Input controls are designed into the system to ensure the authorisation, accuracy and completeness of data input to, processing by and output from computer applications. During analysis of the 612 cost opened tenders following deficiencies in input controls were noticed:

> In the 'date of opening of the cost' field, year was entered as a hypothetical figure (9998 or 9999) in 12 cases;
> The period of validity of quotation is very important in a tender. In 295 cases it was noticed that the period of validity of quotation was mentioned as zero or null;
> An analysis of log table showed that in 8,338 cases remote IP field was "blank" or "null" and in 416 cases user ID field was "blank";
> In 355 cases, vendors had digitally signed and uploaded the bids but the certificate expiry date was blank and in 46 cases relating to State Geologist the digital certificate user and digital certificate issuer name was blank.

During exit conference, the management of Punjab Infotech stated that necessary instructions will be issued to the departments to stop the practice of using '9999' in the cost open date field. Regarding non-capturing of remote IP of e-Payment and related activities and Certificate expiry date, it was informed the same is being captured in the system from September, 2013 and June, 2013 respectively.

The reply was not acceptable as the tendering process has to be finalised in a time bound manner in accordance with the CVC guidelines. The system was non compliant to the applicable CVC guidelines and vulnerable to misuse. It

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[6]   Yearly Registration Fee and Tender Processing Fee.

was due to lack of input controls, incorrect and invalid data resided in the database. The lack of validation checks led to non capture of crucial data.

Non inclusion of digital signature certificate expiry clause

2.3.8.2 There should also be a clause in the tender document stating that tender will not be considered for evaluation if the digital signature certificate has expired (except for verification). Audit, however, observed that the above clause was not mentioned in tender notice documents issued by six departments and two Companies.

In exit conference it was intimated that instructions to include the above clause in NIT would be issued to all the user departments.

Multiple bid

2.3.8.3 The STQC guidelines provided that after having submitted the 'original' bid for each bid-part, a bidder has a right to submit: 'Modification' bid and 'Substitution' bid for all his bid-submissions. The e-Tendering system must effectively cater to all these possibilities without compromising security and transparency in any manner at any stage, for any bid part (such as Pre-qualification, Technical, and Financial). The system was designed to have both the options either to allow or disallow these rights to the bidders.

Data analysis showed that in 534 out of 554 tenders uploaded on e-Procurement website, the above said business rule of modification or substitution of bid was not available as default to the bidders.

During exit conference Punjab Infotech intimated that multiple bid option has been made mandatory in the system from March, 2013.

Allotment of work on a single tender basis

2.3.8.4 Audit noticed that 159 tenders were awarded on single tender basis without any detailed justification. The e-procurement system did not have a mandatory provision for embedding detailed justification for selecting of single tender.

The management admitted that acceptance of single tender in the first instance is acceptable only with detailed justification. It was further stated that instructions in this regard would be issued to user departments.

Opening of financial bids contrary to the established procedure

2.3.8.5 Financial bids need to be opened only after confirmation of receipt of required fees (Tender/RFP Fee, Processing Fee & EMD). If the required fees is not received then the bid is to be disqualified.

In the case of award of tenders for construction of approach road to Phase-IV&V, Bathinda, BDA, in the month of December, 2010, EMD of two bidders was not authorised at the time of technical opening of bid and the work was allotted to one of the bidders. Audit observed that EMD in the system could be verified even after opening of the cost bids. Thus, the system was deficient as it allowed opening of cost bid without authentication of receipt of the EMD.

During exit conference, the Managing Director, Punjab Infotech while admitting the lapse, stated that discrepancies in the system have been rectified now.

Uploading of blank bid sheet

2.3.8.6 The fields of the cost bid sheets required that bidder should quote the rates in percentage of figures with respect to estimates. There were three options in the bid sheet viz; percentage below, percentage above and at par. In the first two options numeric values could only be entered and in the third option, the value at par was to be filled by the vendor in characters, if the vendor quoted at par.

An analysis of file folder of database and manual records of a tender relating to Nagar Panchayat, Naya Gaon showed that bid sheet uploaded by a vendor was blank. The vendor in this case did not enter the data in any of the columns and the buyer i.e. Nagar Panchayat, Naya Gaon considered the option as 'at par' in contravention to the terms and conditions of the bid sheet/ tender. This shows inadequate validation checks in the system.

The management stated that hence-forth the department users have to make use of the HTML template in place of the excel sheet. Further, it was assured that the said HTML template would be made available to user departments by January, 2014 by incorporating the requisite check of not accepting blank bid sheets.

Access controls

Segregation of duties

2.3.9.1 Multi Level authorisation for opening of prequalification bids, technical and commercial bids should be defined and mapped in the system at the time of creation of tender so that at least three members of the Committee can open technical and commercial bids as per the applicable rules to the BDA, DRME, DGSE, DoS and 16 Nagar Panchayats. Each of the members of the Committee could exercise its power by using Digital Signature Certificate and the role of each authorised member of the Committee should be mapped into the e-Procurement system.

In the case of BDA, DRME, DGSE, DoS and 16 Nagar Panchayats, it was observed that single users opened technical/cost bids or both in these departments in violation of applicable rules.

The management stated in exit conference that mandatory instructions for having three officers in Purchase Committee would be reiterated by issuance of instructions to the user departments.

Unauthorised Access

2.3.9.2 The STQC guidelines as well as the IT Act 2000 provided that any holder of a Digital Signature, is responsible for protecting the corresponding private key should not re-assign/ abdicate their roles and responsibilities to a few tech-savvy technicians or the personnel of the service-provider of the e-Tendering system. Some cases of unauthorised access alongwith risks involved have been illustrated below:

- Data analysis showed that in 38 tenders, the tender date was modified by officials of the service provider and the matter was reported to the three departments and two companies. Data analysis of Punjab Infotech further showed that though the closing time for acceptance of bids for developing Technical Education Policy in Punjab was 01:00 PM of 3 June 2011, the tender time was modified by the officials of service provider without approval of competent authority for extension. The bid of one bidder uploaded at 16:33 hrs on 03 June 2011 was selected and work allotted.

  Punjab Infotech stated (March 2013) that it will communicate these STQC guidelines to all on board user departments and assured to issue necessary instructions to user departments in this regard. It was further assured that an authorised person will be nominated as an overall coordinator and representative in case of Punjab Infotech.

- In respect of BDA, closing date for submission of an e-Tender was 10 February 2011 at 3:00 P.M. One of the bidders submitted the EMD and performed different activities till 10 February 2011 at 20:56:36. The last date for submission of bid was changed, unauthorisedly, from 10 February 2011 to 11 February 2011 in the system but manual compensatory control to ensure approval of the competent authority for corrigendum was not found on the record. Further no dialogue box was available in the system to record the approval of competent authority in case of any modification in tender.

Thus non segregation of duties, weak access controls and absence of logs rendered the system vulnerable to unauthorised modifications. During exit conference, the Managing Director, Punjab Infotech stated that during initial phases, the officials of the service provider made changes on the request of the user departments and further stated that hence-forth only the authorised officer of the concerned department would be able to carry out changes and the officials of the Service Provider have been instructed not to interfere in the tendering activities of the departments. For audit trail of the changed data, it was stated that it has already been incorporated in the system since October 2012.

Security issues

Third party audit

2.3.10. 1 The agreement provided that State Government shall conduct third party audit of the system with prior intimation to M/s ITI Ltd, through approved GOI agency, as and when required, at the cost of State Government. Further, guidelines issued (September 2009) by CVC on implementation of e-Tendering solutions recommended that implemented solution be audited by a competent third party at-least once in a year to mitigate vulnerabilities. Audit, however, observed that no such third party audit was got conducted by Punjab Infotech.

The management informed that M/s Netmagic Solutions Pvt. Ltd, CERT-In empanelled IT Auditor has been conducting the third party security audit for the past three and half months.

Allotment of role/ activity and absence of audit trail

2.3.10.2 As per the STQC guidelines, there should be one authorised person as an overall coordinator and representative of that organisation in the e-Tendering system, with powers to delegate different roles such as tender creator, tender authoriser, fee authorisation, issue of corrigendum, evaluation sheet generation and disqualification of bids, etc; to different users from time to time, and all such role changes must be audit trailed in the application. The credentials of this overall coordinator must be verified. The guidelines further provides that there should be a provision for having separate authorised user at the corporate level of each buyer organisation, i.e. external to its tendering departments who can access the application level audit trail reports. However, other users of the organisation should not have access to these reports.

Audit noticed that activity of 'Dept Admin' was performed by officials of the service provider in all the companies and departments selected for IT Audit. Audit observed that there was no separate audit trail in the application for recording of changes in the roles made from time to time. Audit further observed that no officer was authorised for monitoring the other audit trail reports to check deviation in access trends of users as the functionality, though available in the system, was not included in role format supplied by Punjab Infotech to strengthen the monitoring by user departments.

The management informed that now the activity of 'Dept Admin' is being performed by the officers of the concerned user departments. Punjab Infotech further stated that letter to the departments in this regards has been issued.

Business Continuity/ Disaster Recovery Plan

2.3.10.3 The agreement with M/s ITI Ltd provides that M/s ITI Ltd shall maintain a parallel dedicated database at a different location other than the primary server location so that data can be kept safe and stored in case of any disaster at primary location to ensure uninterrupted availability of e-Procurement services to the State.

It was observed that no parallel dedicated database at a different location other than the primary server location existed. The management stated that right from the beginning of the project the Disaster Recovery site should have been there and instructed the representative of M/s ITI Ltd to ensure that disaster recovery site be set up by December 2013.

Conclusion

The implementation of e-Procurement system by the State Government since September 2010 has been a step forward towards automation of the process of obtaining and processing tenders/ auction bids. e-Procurement system has been implemented in 36 out of 45 departments of the Government of Punjab. Non implementation of all modules hampered the activity of the e-Procurement system by the end user departments. Weak input and access controls adversely affected the reliability of the system.

In the absence of a proper Business Continuity Plan, parallel database at a different location other than the primary server location was not maintained thereby making the system susceptible to high risk in the event of a disaster.

Recommendations

➢ All the modules may be fully deployed and the migration to e-Procurement system by all the departments of Government of Punjab should be ensured;

➢ Input and Access Controls should be strengthened to enhance the reliability and utility of the e-Procurement system;

➢ The Business Continuity Plan may be drawn and implemented to obviate the high risk of loss of database in the event of natural or manmade disasters.