E-Procurement in Government of Andhra Pradesh, India

Abstract

The Government of Andhra Pradesh (GoAP) has implemented many statewide e-Government applications since the year 2000, when the Central Government of India enacted the IT Act of 2000 to provide legal recognition to electronic transactions. As a part of these initiatives, GoAP has set up an E-Procurement Marketplace, linking government departments, agencies and local bodies with their vendors. The main objectives of the e-Procurement initiative are to: reduce the time and cost of doing business for both vendors and government; realize better value for money spent through increased competition and the prevention of cartel formation; standardize the procurement processes across government departments/agencies; increase buying power through demand aggregation; provide a single-stop shop for all procurements; allow equal opportunity to all vendors; bring transparency and ultimately reduce corruption.

Application context

The GoAP procures goods, services, works and turnkey contracts worth $2.0 billion every year. This procurement is done centrally through a single unit, as well through individual Government agencies who manage their own procurement needs. Many different mechanisms are used for procurement such as tenders (open, limited, single), rate contracts and catalogue purchases. Procurement processes are governed by the guidelines of the GoAP and sometimes of external agencies like the World Bank, which may be funding a project. Tenders are announced in newspapers through paid advertisements, and suppliers were expected to buy tender documents at a price of $250.

Prior to the introduction of an e-Procurement platform, procurement in Government departments was carried out through a manual tendering process. This process involved obtaining internal approval of the project, publishing a Notice Inviting Tenders (NIT) in several media outlets, bid submissions (voluminous sheaths of paper) by suppliers, bid evaluations by buyers, and finally, the awarding of the procurement order and signing of agreements. The complete process required a long chain of internal authorizations and scrutiny (at times involving several departments), several visits by suppliers to departments, and the generation of reams of paper-based statements and evaluations. The manual tender system was suffering from the following deficiencies:

i. **Discrimination and delay in issue of tender schedules to suppliers:** Govt departments control the issuance of tender documents to the bidders, after verifying their applications. There existed an element of subjectivity and discrimination in this process, in addition to delays in the preparation of tender schedules due to shortages of paper and related stationary items in the Government Departments. As a result, on occasion the tender documents were not issued to the bidders on the announced dates, putting some of the bidders in disadvantageous positions.

ii. **Cartel formation to suppress competition:** Through dubious means, the participating prospective bidders would gather the list of prospective bidders for a procurement request. They would use this information to lobby for formation of syndicates or cartels and bid at higher quotations.

iii. **Physical threats to bidders:** In regions plagued by factions and/or Mafia groups, genuine bidders were physically threatened and prevented from submitting their bids.
bidder or his agent had to risk their physical safety to submit bids in the tender box placed in the office of the tender inviting authority. The media often reported such incidents, showing the Government in a bad light.

iv. **Tender Boxes at Multiple locations**: To counter the menace of contractors’ cartels and physical threats to bidders, some Government Departments started keeping the tender boxes at multiple locations. Instead of yielding the desired results, however, this practice was putting departmental officials who had to collect the tender boxes after closure of tender submission time at risk. Physical transportation of tender boxes from multiple locations to a central point also proved to be a risky proposition in such an environment.

v. **Tampering of tender files**: For the purposes of evaluation, the bid documents are transported across the administrative hierarchy, which introduces the risk of tampering or loss along the way. The transportation of bid documents, manually and through surface mail, is also a time consuming activity.

vi. **Delays in finalization of tenders**: Red tape, lack of transparency, and manual movement of files across the administrative hierarchy was resulting in inordinate delays in the finalization of tenders. Typically, tenders for major projects would take 90 days to 150 days to process. These delays were contributing to cost and time overruns for the projects.

vii. **Human interface at every stage**: The manual system exposed the departmental personnel to the bidders at every stage of the process viz., sale of tender schedules, issue clarifications, bid submission, bid evaluation. Such repeated contact between bidders and departmental staff could lead to subjectivity, favoritism and other undesirable practices.

viii. **Lack of Transparency**: Procurement is considered a sensitive function, with all related information tightly controlled and closely guarded by government departments, resulting in a severe lack of transparency in the entire process. This lack of transparency leads to misinformation and a lack of trust in the system by the bidders, media and the citizens.

**A New Approach**

The severe shortcomings in the manual tender system had an adverse effect on the reputation of Government departments. Delays in the finalisation of suppliers for materials and services for government projects had crippling impacts on the completion of projects and delivery of services to the citizens. A cabinet subcommittee on tender reforms instituted by GoAP in the year 2000 recommended the creation of an e-Procurement marketplace. This would facilitate online tendering based on Internet technology to provide ‘anywhere any time’ access to the bidders for participating in tendering. This would also eliminate the non-value-adding activities like manual sale of tender documents, manual opening and reading of bids, preparation of comparative statements (as they are automatically available), audit/cross check of comparative statements, time spent in movement of files from one person to another, manual creation of purchase order and delivery schedule etc. **Automation of the procurement transactions reduces human error, enhances the integrity of the data, brings in transparency to the Government procurements and facilitates standardisation of processes.**

The entire e-Procurement process was designed to avoid human interface i.e., supplier and buyer interaction during pre bidding and post bidding stages. The application ensures total anonymity.
of the participating suppliers, even to the buyers, until the bids are opened on the platform. The e-Procurement application provides automatic bid evaluation based on the evaluation parameters given to the system. These improved processes have eliminated subjectivity in receipt and evaluation of bids and has reduced corruption to a significant extent.

To bring in transparency in e-Procurement, tender documents containing all details are hosted on the web site. The documents can be downloaded by the interested suppliers free of cost, from the day of publication of a tender. Suppliers are no more dependent on the officials for various details. At any time in the procurement cycle, any person associated with the transaction can check and know the status of the transaction. This saves time and effort involved in finding out the status of a purchase order, besides enabling better planning of inventory.

At the outset, an effort was made to standardize the procurement processes and forms followed by various departments especially for public works tenders. Today, all the departments follow common tendering process and forms for works tenders. These processes have been re-engineered to further improve the efficiency and curtail subjectivity in tender evaluation on the part of the department users. A similar exercise is underway for products as well.

Implementation Challenges

- The first challenge was to arrive at a sustainable business model with proper implementation strategy. The GoAP considered the following three alternative business models for implementation of e-Procurement.
  1. Government owned – government operated
  2. Government owned – operated by a private operator
  3. Public Private Partnership model

The first two models required fresh Government investment in an area where there was no prior experience in AP or any other state. These models were dropped from consideration as senior government functionaries were apprehensive about the return on investments and possible criticism in case of failure of the system. It was therefore decided to implement e-Procurement in a Public Private Partnership (PPP) model wherein the private partner would bring expertise in technology, invest upfront in setting up the exchange and recover the costs by charging the user departments for completed transactions. The PPP model was selected because the private partner takes on the risks related to changes in technologies, and return on investment. This model combines accountability with efficiency, as the services are governed by strict service level contracts. Moreover, GoAP had experienced success with the PPP model in some other projects.

In view of the unique nature of the project, the GoAP engaged M/s PricewaterhouseCoopers as consultant for assisting GoAP in drawing project requirements, developing Request for Proposal (RFP) documents to select a partner and to advise in the selection process for establishing an e-Procurement exchange. Only vendors with an existing e-procurement software or platform were considered for the project. Ground-up development of the exchange was avoided to expedite the implementation and also to benefit from the experience that the vendor was expected to bring from earlier implementations of similar projects. A consortium lead by M/s C1 India Pvt. Limited was selected as the private partner, based on competitive bidding to implement the project through PPP model.
The PPP model is of the Built Owned and Operated (BOO) type. In this case, M/s C1 India owns the system. The GoAP registers the Web site domain name and it is the absolute owner of data. As per the agreement, the GoAP reserves the right to buyout the software and hardware at a pre-specified written down value at the end of the present contract period i.e., March 31, 2007. The GoAP has not guaranteed any specific revenues on this model but has assured that all procurements costing above Rupees one million by government departments, PSUs and local Government bodies will be done exclusively through this Portal.

Though the ultimate objective of GoAP is to have a government-wide e-Procurement solution, considering the complexities involved, a strategy was evolved to approach implementation in a phased manner. A pilot was conducted in four selected departments to prove the new system and then roll out to other departments. Over a period of 9 months, the pilot was used to create templates for various types of procurement practices prevalent in Government departments to set the stage for rollout across other departments. In order to effect a gradual transition from the conventional tender system to e-Procurement, the GoAP issued executive orders and made e-Procurement mandatory in the pilot departments for all procurements exceeding a value of $250,000 in the first instance. This threshold limit was subsequently lowered to $125,000 at the end of the Pilot phase. After the success of the pilot phase, e-Procurement was immediately rolled out in all the remaining departments, for all procurement above $25,000. *Within 30 months, the platform was servicing 8 Government departments, 13 Public sector Units, 51 Municipalities and 5 Universities with a cumulative turnover crossing $ 8.5 billion from 12,441 transactions.*

- **The second challenge was to ensure interdepartmental coordination**, as e-Procurement centralizes the processing of tenders and touches several departments located in different parts of the state. A high level *Steering Committee (Project Implementation Committee)* chaired by the Chief Secretary of the state, comprising the Secretaries, Heads of all the participating departments and representatives of the private partner was formed to promote coordination. The Steering Committee dealt with issues related to Business Model, selection of private partner, interdepartmental coordination, Business Process Reengineering and other important issues in the implementation of the project. The Information Technology and Communications Department of the GoAP was made the nodal agency to oversee the implementation of the project.

- **The third challenge was Change Management** as the implementation involved adoption of new ways of doing things for a variety of stakeholders. Setting up the e-Procurement exchange was not difficult in terms of its technology components, but getting stakeholder buy-in to adopt the platform was a big challenge. The various steps taken to manage change with the Stakeholders are enumerated below:
  - To ensure buy-in of the top management and to resolve procedural issues, the Steering Committee chaired by the Chief Secretary of GoAP met once every month during the Pilot stage. The committee considered in great detail all issues that arose during implementation and the problems were resolved then and there without loss of time.
  - Meetings were held by the Chief Minister on regular basis to monitor the progress. Procurement targets were fixed for each participating department and were monitored closely. These targets were made a part of the Performance Indicators that were used to measure the performance of key officials in the pilot departments.
  - Project Champions were identified within each department. Core groups were formed in the user departments to chalk out a strategy for implementation within the departments.
Fortunately, the Indian Institute of Management, Ahmedabad (IIM-A), had trained the key functional officials from the target departments that were associated with the e-Procurement project as Chief Information Officers (CIO). They worked closely with the Project Manager, GoAP and C1 India project team.

- The CIOs functioned as a bridge between the user departments and the technology experts i.e., service provider. The CIO’s assisted the Steering Committee in bringing in necessary regulatory changes, and helped in reengineering the departmental procurement process. The CIOs acted as project champions within their department driving the implementation and the change management process.

- The stakeholders were involved in the detailed ‘As-Is’ and ‘To-Be’ process studies. Feedback was taken from the Builders Association of Andhra Pradesh and Small Scale Industries Manufactures Associations on the ‘As Is’ and ‘To Be’ processes. The gaps thrown by the ‘To-Be’ process study were addressed through appropriate customisations, and the agreed upon process by the stakeholders were mapped on the software.

- To effectively communicate the objectives and benefits of the project, training and workshops were conducted for both the department users and the suppliers. At least 400 department users and 1000 suppliers were given hands-on training during the Pilot phase. Training and workshops are a regular feature even in the roll out phase whenever a version change of software is introduced.

- Detailed training kits and FAQs were prepared and hosted on the web site for the benefit of users. These workshops also served as good forums to receive user feedback on the application. This feedback was always analysed and appropriate changes were made in the process of the application.

- The service provider runs a strong and committed call centre type help desk on a 24X7 basis to record and address all the issues of the users.

- The Fourth challenge was resolving the security and authentication issues of the platform. Stakeholders have to be completely convinced that the transactions on the platform are secure. The identity of the participating bidders, and the quotations that the bidders make, are very sensitive information in the entire tendering process. The eProcurement solution was designed with extensive security features to help ensure that all activities are logged, no unauthorized person has access to data, all sensitive data is encrypted, and that the system can be restored in a minimal time in case of a disaster or system crash. A sound security policy for eProcurement has been implemented using the following features to ensure security in the platform.
  - Two-factor authentication
  - Digital signatures to ensure non-repudiation
  - Bid encryption at the database
  - Online Antivirus scanning
  - 128 bit SSL encryption
  - Audit trail of each activity
  - Privilege-based user access
  - Time stamping
  - Firewall for screening system access
  - Access control system
  - Intrusion detection system (network and host)
  - Regular back up of data
  - Disaster recovery site
The e-Procurement software was audited for security by a third party during the Pilot phase in August 2003. The security audit recommended better functional controls. There were no major security lapses identified by the auditors. M/s C1 India complied with the recommendations within a suitable time frame to the satisfaction of the GoAP.

**Activity Level on the eProcurement Platform**

The GoAP’s annual expenditure on procurement through normal programs is to the tune of $2 billion a year. This figure has now risen, as the GoAP is investing around $10 billion over a five year period in creating irrigation sources through a special program named ‘Maha Jala Yagnam’. The following table shows that nearly 90% of all procurement worth $4 billion was carried out on the eProcurement platform in 2005-6.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Departments / agencies</th>
<th>Value of transactions completed $ (Million)</th>
<th>No. of transactions processed</th>
<th>Percentage of eProcurement out of total Government spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
<td>8</td>
<td>447</td>
<td>564</td>
<td>20%</td>
</tr>
<tr>
<td>2004-05</td>
<td>7 Departments 9 PSUS 17 Municipalities</td>
<td>3,522</td>
<td>3746</td>
<td>80%</td>
</tr>
<tr>
<td>2005-06</td>
<td>8 Departments 13 PSUS 51 Municipalités 5 Universities</td>
<td>3,740</td>
<td>7931</td>
<td>90%</td>
</tr>
</tbody>
</table>

**Benefits and Costs**

The initiative has transformed the procurement process in government departments. The automated processes and work flows have **improved internal efficiency within the departments; shortened tender cycle times, eliminated subjectivity in the evaluation of tenders with system based auto bid evaluations, and have reduced corruption.**

- **Reduction in tender cycle time:** In the pre e-Procurement era, the departments used to take 90-135 days for finalization of high value tenders. *The tender cycle time has gradually come down to an average of 42 days over a period of one year and further reduced to 35 days at the end of the second year.* This improvement is due to automated workflows, the ability to track and monitor file movements through a function called ‘tender tracker and tender monitor’, which pictorially displays the tender file status, indicating the number of days each government worker has taken to clear the file. These software features have made the procurement processes transparent. There is greater accountability since the electronic records/documents can be retrieved at any given time and all the activities of a system user are logged in the system. The works departments has been able to divert surplus resources from procurement wings to other needy wings like works execution.
Reduction in opportunities for corrupt practices: the e-Procurement system allows a supplier to view the NIT, download bid documents and Bill of quantities, free of cost on ‘any where’ and ‘any time’ basis from the Internet. This has empowered the supplier as he is no more dependent on the government workers for issue of RFPs, clarifications on the bids, bid submission, information on tender evaluation status, etc. The entire e-Procurement process has been designed to eliminate the human interface i.e., supplier and department interaction during pre bid and post bid processes has been minimized. The automatic tender evaluation functionality introduced in the version 2 software, launched in March 2005, has reduced subjectivity in tender evaluation and helped to curb opportunities for corrupt practices to a significant extent and increased the accountability of procurement officials.

In terms of transparency, any supplier or an ordinary citizen can get information about tenders which are live on the platform through a search engine on the home page. The NIT, Corrigendum, bid documents, Bill of Quantities are available to a citizen for free downloads. A supplier participating in a tender knows the list of other participating suppliers, the documents furnished by his competitors, price quotations and the evaluation result, as soon as a stage is completed by the departments in the system. Short information on the status of tenders and award values will also be available to any citizen accessing the web site.

Cost Savings: One way to estimate cost savings is to compare the percentage discount of Tendered Contract Value over the Estimated Contract value for service contracts awarded before and after the implementation of the e-Procurement system. The following table shows comparative savings in costs for works departments based on historical data available with the Commissionerate of tenders, which is the nodal agency for finalization of tenders costing above $0.45 million value for works departments, like the Roads & Buildings department and Irrigation department. Tenders processed through the e-Procurement platform in the pilot phase during 2003-04, the first year of the initiative, yielded a reduction of 16% in the quotations in comparison to the previous years when the procurement was manual.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mode of procurement</th>
<th>No of tenders</th>
<th>Estimated Contract Value in $(Million)</th>
<th>Tendered Contract Value in $(Million)</th>
<th>Percentage discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>Conventional Mode</td>
<td>188</td>
<td>177</td>
<td>166</td>
<td>-2.65</td>
</tr>
<tr>
<td>2002-03</td>
<td>Conventional Mode</td>
<td>125</td>
<td>126</td>
<td>115</td>
<td>-8.65</td>
</tr>
<tr>
<td>2003-04</td>
<td>Conventional Mode</td>
<td>53</td>
<td>83</td>
<td>75</td>
<td>-9.00</td>
</tr>
<tr>
<td>2003-04</td>
<td>eProcurement Mode</td>
<td>107</td>
<td>166</td>
<td>124</td>
<td>-25.00</td>
</tr>
</tbody>
</table>

The project encourages bidders to participate in government tenders. Supplier participation has increased from an average of 3 per tender in conventional mode to 4.5 in e-Procurement mode. The cartels are eliminated and even small and medium suppliers are now able to bid, as the platform facilitates any-where any-time bidding. The departments have reaped significant cost savings of an average reduction of 20% in cost for the procurement transactions done through the exchange during the year 2003-04 and 12% in 2004-05 due to a competitive environment.

There is also a substantial reduction in the advertisement costs in the press media, as e-Procurement tender notices were shortened to contain only basic information on the name of
work, estimated costs and the URL of the e-Procurement site. There has been a 25% saving in the column space used, resulting in savings of approximately $0.56 million in a year. Transparency in the bidding process and in the system of automated tender evaluation through smart forms with parameterized qualification criteria has reduced subjectivity in the tender award process and reduced corruption. The MIS feature in the system reveals data on government procurements instantaneously to the bureaucrats and ministers. Besides, it has made a visible social impact, as the citizens are assured that government procurement is conducted in a transparent manner, saving taxpayers’ money.

- **Costs of implementing the system:** A lean project team consisting of a Project Manager and an Asst. Project Manager (both trained as CIOs by IIM-A) reporting directly to the Secretary of the IT&C Dept. has overseen the implementation. The IT&C Department spent Rs 0.55 million on training and Rs. 7.2 million for purchase of Desktops, printers, UPS and Internet connections (ISDN connections, Modems) for the departments in which the project was piloted. The GoAP had engaged PwC to prepare an e-Governance road map and blueprint for 50 major departments, identify 5 core projects, and implement these 5 core projects for a fee of Rs 16.2 million. About 15% of this expenditure can be apportioned for the e-procurement project.

As per the agreed business model, the private partner has invested upfront in hardware and software for establishing an e-Procurement exchange for GoAP and there are no costs to the government on this project. It is estimated that the private partner has incurred a capital expenditure of $1.12 million on software and hardware, and an operational expenditure of $0.54 million per annum on the e-Procurement platform. In order to incentivize the suppliers using the platform, no charges were collected from the bidders participating in tender related transactions on the e-Procurement platform.

The government has incurred expenditures of $0.62 million on hosting charges @ $101.6 per tender, and transaction fees @0.24% on the completed transaction fee to the Private partner during the pilot period. However, in the rollout phase a new business model was evolved to shift the burden from the government to bidders, with every participating bidder paying a transaction fee @ 0.04% of tender value, with a maximum cap. The transaction fee structure payable by a bidder is set up to be less than the tender fee charged in the manual tender system.

**Key Lessons**

- **The support of political leadership and the formation of a high-powered steering committee** (project implementation committee) with a mandate to take decisions on all issues were important factors for successful implementation of the e-Procurement project.
- Insistence on a **single mode of bid submission through the e-Procurement platform** was a decisive factor in the adoption of the system by suppliers.
- A **participative design process** that involved workshops attended by department users, suppliers/contractors was used to draw user requirements. Subsequent training of users was a major factor in developing the application to the satisfaction of users.
- The pool of CIO’s from various government departments trained at IIM-A, acted as **change agents in implementing e-Procurement**. The pace of implementation accelerated with Chief Information Officers from different domains taking over as project champions.
o Implementation needed **enormous efforts in change management**. The users were slow to adapt to the changes in initial period but the project ramped up once the users became comfortable with the new system.

o The selected Application Service Provider (ASP) **business model under Public Private Partnership** was helpful in scaling up the transactions during roll out, as the private partner has resources to meet the challenge.

o A **rational and affordable Pricing model** based on value and number of bids per tender is also very important for sustaining the e-Procurement initiative. Cost to government with ‘No Cost’ to supplier in the Pilot phase, and Cost to supplier with ‘No Cost’ to government departments in the roll out phase, facilitated easy acceptance from suppliers in the early stages and speedy roll outs to government departments in the later stages.

o **Committed project teams from both the service provider and the Government**, 24X7 help desk, strong security features, deployment architecture and MIS have contributed to the overall success of the e-Procurement platform in AP.

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