CREATING PROSPERITY AND TRANSPARENCY THROUGH INNOVATIVE USE OF ICT—A CASE STUDY OF E-PROCUREMENT PROJECT OF ANDHRA PRADESH, GOVERNMENT OF INDIA. THE BEST PRACTICE

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Abstract

Electronic-Procurement Project of “Andhra Pradesh, Government of India” is an innovative project of Information & Communication Technology capable of funding all e-Governance projects of India. It is an e-Governance Project with a direct Return On Investment (ROI). Even if one Billion Dollar of purchase goes through e-Procurement and we save just 10% of the cost of purchase, that works to savings of $100 million. It would be enough to justify all the e-Governance Projects of India. Andhra Pradesh is the third largest state in India. It has a population equal to Germany’s 80 million and an annual procurement budget of about US$2 billion, excluding special developmental projects. The state aspired for a CARING (Committed, Accountable, Responsive, Inspiring, Nationalistic, Genuine) Government. The obvious solution was to computerize the entire procurement process. This project has bagged the prestigious United Nations Public Service Award for 2007 for improving transparency, accountability and responsiveness in the public service. The paper analyses the business model, technology, financing, risk associated, cost benefit analysis of India’s most successful e-Governance project. The parameters behind its success has also been exhaustively dealt with facts and figures.

Keywords: eGP → electronic government procurement; PPP → public-private partnership; ROI → return on investment

JEL Classification Codes: O31; O38; R42.

1. Introduction

E-Procurement is one of the attractive quick-wins in e-government plans of the countries which have taken the initiative of introducing the e-governance. E-Procurement has started growing in most European Union countries and is being driven by a renewed focus on cost cutting, different sourcing practices, and quantifiable benefits of implementations. E-Procurement is related to different aspects of the procurement function supported by various forms of electronic communication.

In fact, e-Procurement is the value-added application of Internet and e-commerce solutions to facilitate, integrate and streamline the entire procurement process, from buyer to supplier and back. E-Procurement might be interpreted as the procurement macro-process developed with the help of Internet Technologies. E-Procurement is one of the highlights under Core Integrated Services Projects in the National e-Governance Action Plan of India [2003-2007].

Source: e-Governance Division

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2. Literature review

*Deployed For Social Context*

World Bank Country Procurement Assessment Report, 2002 on performance of public procurement in India

The study was carried out in three phases by World Bank. The first phase covered the Central Government and its agencies, second phase covered three State (Tamil Nadu, Karnataka, Uttar Pradesh) Governments selected as representative of all the States and UT; the third phase covered the 250 plus Public Sector Enterprises under the Central Government. The report presents a total picture of public procurement in India, its strengths and weaknesses and the recommendations for improvement and modernization.

**Key findings**

- The total value of public procurement by ministries, departments, municipal & other local bodies, statutory corporations & public undertakings both in center and in state put together is of the order of US $100 billion representing 13% of the national budget and over 20% of the Gross Domestic Product (GDP).

- Going by a conservative estimate even 10% savings through e-Procurement can boost the economy by about 2% of GDP.
  - [exchange rate of US $1 = Rs45.00 at the time of study]

*e-Procurement benchmark report-04 by *ABERDEEN*

**Key findings**

- Reduced requisition-to-order cycles by 66%
- Reduced requisition-to-order cost by 58%
- Cost Reduction : up to 25% or more
- Anti-corruption tool: promotes transparency
- Better Access: Any firm (small/medium) may participate in national or international markets.
- Prevents formation of cartels in bidding for tenders
  -  Real Time Monitoring

**Key findings of White Paper dated 06.08.03 on e-sourcing by International Association of e-Government professionals in association with US-ASEAN Business Council:**

**Estimated level of savings –**

- 10% – minimum level of savings expected
- 16% – average level of savings expected
- 35% – maximum level of savings expected

The study was based on the impact of e-Procurement in five Asian countries (Indonesia, Malaysia, Philippines, Singapore & Thailand)

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* AberdeenGroup is the technology driven research destination of choice for the global business executive. Through its continued fact-based research, benchmarking, and actionable analysis, it offers global business and technology executives a unique mix of actionable research, KPIs, tools, and services. The sample consisted of 42% from North America; 10% from Asia-Pacific region; 6% from Latin and South America; 2% from Middle East and Africa; 40% from Europe.
3. Data and methodology

The study utilizes the primary data gathered from ICT Department of Andhra Pradesh and secondary data from the Private party (C1 India) in the year 2006. Questioners were issued to the Suppliers as well as the buyers to study the impact of the project on the users. The data was thoroughly studied and analyzed based on various parameters like supplier participation for better competition, anti corruption tool, better transparency and accountability, paperless office, tremendous cost saving, reduced project cycle etc.

In most of the cases it was realized that this innovative step by the government in terms of public private partnership is yielding much better results beyond expectations.

Implementation challenges

The Government of Andhra Pradesh’s annual expenditure on procurement through normal programs is to the tune of $2 billion a year. This figure has now risen, as the government of Andhra Pradesh is investing around $10 billion over a five year period in creating irrigation sources through a special program named as ‘Maha Jala Yagnam’. The challenge before the government was to select a sustainable business model. There were several options available such as :Government owned – Government operated, Government owned – operated by a private operator ,Public Private Partnership.

- Ensure Interdepartmental Coordination
- Change Management Adoption
- Security and Authentication

Technology Used

The project has been built on n-tier architecture:

- **Presentation Tier** - The presentation tier is supported by two load-balanced Web servers running the Microsoft Windows® 2000 Advanced Server operating system and Internet Information Services version 5.0. The Web servers are hosted on two HP ProLiant DL580 dual-processor computers with 2GB of RAM and RAID 5 features. The Web servers are isolated by external and internal firewalls, creating a perimeter network. It provides the front end for the e-procurement portal.

- **Business Logic Tier** - The business logic is encapsulated using Microsoft Com+ technology and handles a range of tasks, including authentication, authorization, and workflow management. The business logic tier is cohosted on the same servers that support the presentation tier.

- **XML Data Layer Tier** - The XML data layer handles communication with Web services. The XML data layer is cohosted on the business logic tier.

- **Database Tier** - the 60-GB relational database runs on Microsoft SQL Server™ 2000 Enterprise Edition, part of Microsoft Windows Server system ™ integrated server software, and Windows 2000 Advanced Server. The database is hosted on two HP ProLiant DL 580 dual-processor computers with 2GB of RAM and RAID 5 features. The servers are configured in a two-node active/passive cluster to ensure high availability. Storage is on a System Area Network. The Hyderabad production site is backed by a disaster recovery site in Delhi. It also runs on two hardware servers, configured in a two-node active/passive cluster to ensure high-availability.

Application of technology

The business logic has been kept separate from the presentation logic by design. This makes the system more scalable allowing new departments to be incorporated into a system. All workflow and navigation code has been abstracted from the user interface for achieving this. Being online system where users are logging in, getting authenticated and filling tenders the system needs to have proper security. For this, two factor authentication, digital signatures and 128-bit SSL encryption have been incorporated. This architecture can even be extended to other devices beyond the desktop, such as the mobile devices.

Financing:

It is based on Public-Private Partnership (PPP) model. C1 India (Private party) invested in developing the web-based electronic procurement software, hardware, security and hosting of the solution. C1 India is also
responsible for administration, operation and maintenance of the complete e-Procurement market place. C1 India operates the e- Procurement market place as an application service provider, saving the government the cost of deployment, administration and maintenance. The Private party(C1 India) is compensated through a small transaction fee paid by vendors using the system. C1 India receives 0.24% as transaction fees on the total volume of each project besides which it charges Rs4,500 as hosting fee for each tender.

<table>
<thead>
<tr>
<th>Table 1: Andhra Pradesh: e-Procurement status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
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<tr>
<td>No of agency</td>
</tr>
<tr>
<td>Value of transactions completed</td>
</tr>
<tr>
<td>No of transactions completed</td>
</tr>
<tr>
<td>Average tender discount</td>
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<tr>
<td>Average no of bids per tender</td>
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<tr>
<td>Savings due to tender discounts</td>
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</tr>
</tbody>
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4. Results and discussion

Benchmarking/evaluation of the project

In fact, so successful has been the e-procurement practice that the total amount spent by the Andhra government on 1,212 projects amounting to an estimated Rs 2,801 crore is 22% lower than its own estimations.

This project has been awarded the PC Quest’s award for India’s Best IT Implementation of the year 2005 under Maximum Social Impact Category.

- Awarded “Standardization, Testing and Quality Certification” by the Department of Information Technology, Government of India. STQC provides cost-effective International level Assurance Services in Quality and Security on a national level to Indian industry and users, 2004.
- Awarded “Golden Icon Award” for “Exemplary Implementation of e-Governance Initiative” by the Department of Administrative Reforms & Public Grievances, Government of India, 2003
- The e-Procurement project of the Andhra Pradesh Government has bagged the prestigious United Nations Public Service Award for 2007 for improving transparency, accountability and responsiveness in the public service.

Benefits to the government

Reduction in tender Cycle Time: The tender cycle time used to be 90 to 135 days in manual system. After the implementation of e-Procurement portal the tender cycle time has come down to an average of 42 days over a period of one year of its implementation and further reduced to 35 days at the end of the second year.

Cost Saving

The huge cost saving is due to reduction in process cycle, advertisement cost, **reverse auction. There was 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.

**Reverse Auction: Before the closed bids are opened, an online reverse auction is conducted and the bidders have a choice of revising their closed bids. During the reverse auction process, the bidders get to know only the prevailing lowest bid at any given point of time, and the identity of the other bidders, including the one with the lowest bid, is kept a secret. The reverse auction process starts from a floor price fixed by buyer, and bidders can quote rates lower than the floor price. The bidders can enter their bids from any place of their choice. The user name & password given to them regulate their entry into the auction rooms. After the online reverse auction is completed, the lowest bid therein is determined.
Table 2: Year wise e-Procurement details of GOAP

<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>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>Conventional Mode</td>
<td>188</td>
<td>177</td>
<td>166</td>
</tr>
<tr>
<td>2002-03</td>
<td>Conventional Mode</td>
<td>125</td>
<td>126</td>
<td>115</td>
</tr>
<tr>
<td>2003-04</td>
<td>Conventional Mode</td>
<td>53</td>
<td>83</td>
<td>75</td>
</tr>
<tr>
<td>2003-04</td>
<td>eProcurement Mode</td>
<td>107</td>
<td>166</td>
<td>124</td>
</tr>
</tbody>
</table>

Source: Commissionerate of Tenders, GOAP

Reduction in the advertisement costs as Notice Inviting Tenders contains 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.

No risk

Entire risk was covered by the private party as it bore the cost of deployment, administration and maintenance of the infrastructure. Moreover, no specific revenue was guaranteed to the Private Party. The Private Party had an assurance from the government that all procurements above $25,000 will be done through this portal only. Government is absolute owner of the data and it also reserves the right to buyout the software and the hardware at a pre-specified written down value at the end of the present contract period (31/3/2007).

Advantages to the private party

The Private party (C1 India) is compensated through the transaction fee paid by vendors using the system. The Private Party receives 0.24% as transaction fees on the total volume of each project besides which it charges $100 as hosting fee for each tender. All procurements above $25,000 by Government departments, Public Sector Undertakings and Local Government bodies done exclusively through this portal.

Source: Commissionerate of Tenders, GOAP, 2006
Advantages to the suppliers and bidders
In Pilot Phase no charges was levied on the suppliers but in rollout phase every participating bidder has to pay 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. Online updation of bid available till the closing date of the bid is inbuilt feature of the infrastructure. There is also provision of real time availability of tender status which results in Supplier Empowerment. The suppliers get information of all tenders available at one place. Thus the bidder could decide which tender they need to participate.

Approximate spending
Approximate Government Spending
The government had spent around Rs0.55 million on training, Rs7.2 million on hardware and Rs16.2 million on Project Study. About 15% of expenditure on Project Study can be apportioned for the e-procurement project as PriceWaterhouseCoopers was engaged to study the e-Governance road map and blue print for 50 major departments, identify 5 core projects. However, during the pilot phase the government had spent $0.62 million as hosting charges (@$101.6 per tender). Transaction fee @0.24% on the completion of the transaction. In the Rollout phase(July 2004) burden was shifted from the government to bidders, with every participating bidder paying a transaction fee @0.04% of tender value, with a max cap.

Approximate Expenditure of the Private Party
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.

5. Conclusion
Technology cannot be the only strategy. One must have a procurement strategy in place and utilize e-Procurement to support it. Cost optimization and process efficiency offered by e-Procurement is not sufficient to assure success. As with new business initiative, companies have to overcome process, technical and cultural blocks to be able to implement a successful e-Procurement solution. Though the government of India has made mandatory publishing of tender details on the Websites of the organizations/departments, the support of employees to e-Procurement is crucial to its success. The departments are even expected to publish monthly summary of contracts/purchases made above a threshold value on the website, the details of all such cases regarding tenders or out of turn allotments or discretion exercised in favor of an employee/party, details regarding actual date of start of work, actual date of complete and reasons of delays if any to promote transparency and to curb corruption.

The Multilateral Development Banks viz- the World Bank, the Asian Development Bank and the Inter-American Development Bank have granted permission to award tenders through e-Procurement and have come out with detailed document “E-Bidding Requirements for MDB Loans, Grants and Credits” in May 2005.

The Berlin wall crumbled to make Germany one. The Srinagar-Muzzafarabad bus service has brought together either sides of the Line of Control. The world is moving in the direction where the walls are collapsing, allowing all to mingle freely. Similarly all Indian government departments are moving towards sharing data and technologies freely across terrain, beyond all barriers of language and infrastructure. The government, NGOs and the private parties are joining hands together to reap the best of the technological advantages.

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