

# A Critical Analysis of E-Procurement Software Design & Implementation



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## Abstract

This research paper results in address the current state of e-procurement design technologies and their implementations. The advent of the Internet as a business systems stage has been an importance for significant changes in the operation and status of authoritative procurement. In Early e-procurement literature forecast significant improvements in procurement costs, an enhancing status of the acquiring capacity, and changes to the structure of supply markets. Our investigation seeks to evaluate the legitimacy of these forecasts through the development of a basic model of the 'e-procurement effect'. This critical view is intended to define the progression of the e-procurement process in an association and provides an establishment for a research stream into the transformational effect of e-procurement deployment. Our examination suggests that the e-procurement effect is comprehensively applicable and that a significant number of the previous claimed benefits in the literature can be realized. We likewise contend that a critical variable for the success of e-procurement selection is to address the internal service quality attributes and security, process and infrastructure attribute of e-procurement processes—a theme which offers significant scope for future research. In this article presents the e-procurement issues at different level and mitigates the issue.

## Keywords:

## Introduction

E-procurement is the business to business or business to consumer or business to government purchase and sale of supplies, work and services through the internet and in addition other data and networking systems, for example, electronic information interchange (EDI).

A significant part of the e-procurement literature to date has (normally) focused on early adopters. The specific areas of interest in these studies relate to system implementation, identifying efficiency effects, speculating the potential changes in inventory network configuration that may happen, and placing that e-procurement will have a noteworthy effect on the capacity by leading to its outsourcing or conversely raising its strategic role. The use of inter-authoritative systems, for example, electronic information interchange and internet-based extranets enable new types of collaborative alliances between separate exchanging partners (Philips, 2003). In India most associations today are receiving e-procurement as a method for operating their activities and getting feedback by use of emails, extranets and other internet technologies used to help every business (Mentzer, 2006).

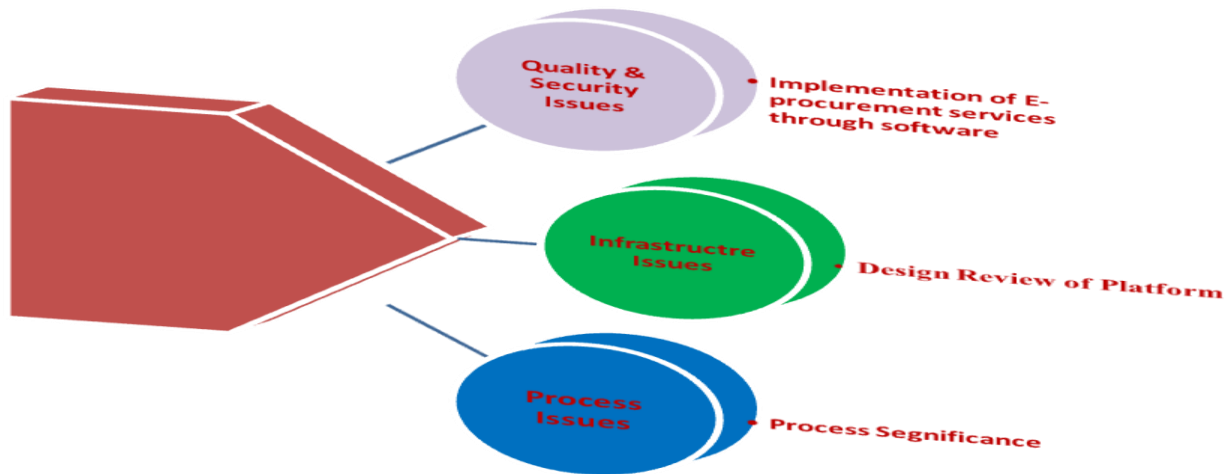
## E-Procurement in Public Sector

E-procurement refers to the use of electronic methods in every stage of the obtaining process from identification of requirements through payment and potentially to contract management (Davila et al., 2003). There are six types of e-procurement: e-ordering/e-maintenance repair operate, web-based enterprise resource arranging, e-sourcing, e-tendering, e-reverse selling/e-unloading and e-illuminating (de Boer et al.,2002). Some of the benefits of receiving e-procurement include funds in obtaining exchange cost resulted from less paperwork, less mistakes and more efficient acquiring process (Croom & Brandon-Jones, 2007).

Electronic procurement systems represent an imperative development for the acquiring process (Neef, 2001), offering benefits to the association through purchase process efficiency picks up and price reductions (de Boer et al, 2002), enhanced collaborative relationships and critical open door for enhancing the internal service and statues of the buying capacity (Croom and Johnston, 2003). Some of the usually used apparatuses in general society sector are e-Tendering, e-RFQ, e-Auctions,

e-Catalogs, and e-Invoicing. Pictorial description of the standard framework of the e-procurement is shown in Figure1.

**Figure 1 E- Procurement Issues at Design Stage**



**Review of Literature**

There are several definitions of e-Procurement technologies in the published literature. However, in this research paper, the e-Procurement technology refers to the different packages, instruments and additionally applications that facilitate electronic correspondence, data exchange and exchanges related to the obtaining of merchandise, services and works over the Internet. The e-Procurement technologies and tools include several sorts of tangible and intangible objects such as web-enabled/ supported software packages; network

technologies for the exchange of data and information (e.g. EDI, e-mail, and wireless technologies); web-supported transactional and collaboration applications; web supported data collection and handling technologies (e.g. GIS, GPS, RFID, sensor networks) and interactive, integrative and collaboration technologies (e.g. Web 2.0, BIM, ERP, cloud computing, web-based project management and customized e-Procurement software applications) used to support the execution of construction procurement activities electronically.

**Table 1 Critical Analysis Review by Different Researchers**

E-Procurement Models	Authors	Comments
<b>Technology Acceptance Model (TAM)</b>	Amin et al., (2010) ; Rose & Fogarty, (2006); Behrens et al, (2005); Jaeger & Matteson, (2009) ; Kwon & Chidambaram, (2009) ; Wangpipatwong et al, (2008)	Mobile Banking ; self-service; product quality banking technologies; OASIS; Section 508 for Websites; Cellular Telephone Adoption; e-government website, e-filing, Security , authentication and authorization , Complexity , functionality, lack of integrity .Innovated technology, Lack of interoperability of e-Procurement software packages, High maintenance cost of the system and system failure Resistance to change into an IT culture. system developers
<b>Technology Environment Organization (TEO )</b>	Zhu et al., (2003); Angeles, 2014 ; Pan & Jang, (2008); Lippert & Govinda rajulu, (2006); Oliveira & Martins,(2010); Hsu et al, (2006)	E-Business adoption by European firms; Nike's "Considered Index" Green Initiative; the adoption of enterprise resource planning; Web Services , Adoption; e-business adoption; ; E-Business Use in U.S. Firms , Lack of system integration and standardization issues , Technology risks , End-user resistance , usefulness , Completeness , WSDL (Web Services description language , UDDI (Universal description and discovery language) , SOAP ( Simple Object Access protocol) ,lack of Government support , Immaturity of technology , Incompatibility with ERP Systems

<p><b>Diffusion of Innovation (DOI)</b></p>	<p>Zhang et al, (2015) ; Jwaifell &amp; Gasaymeh, (2013) ; Chigona &amp; Licker, (2008); Hsu et al, (2006)</p>	<p>patient acceptance and use of consumer e-health innovations; Teachers' Adoption of Interactive Whiteboards; Communal Computing Facilities Adoption; ; E-Business Use in U.S. Firms , Performance measurement; reliability, uml , availability of technology , the adoption of new and innovative technologies and the implementation of e-commerce and e-procurement ,a suitable environment for innovation and ICT adoption .</p>
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**Objective of The Research**

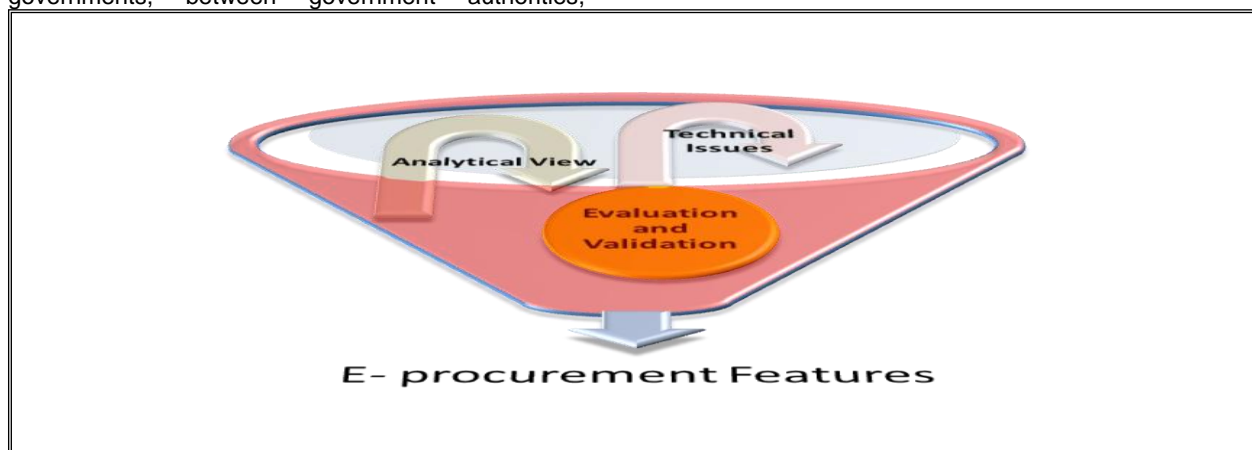
This study aimed at investigated the critical factors to analysis for the e-procurement software design & implementation. So, the specific objective is to upgrade the effectiveness and straightforwardness in public procurement through the execution of an exhaustive, end – to – end e-Procurement arrangement what's more, to course the whole public procurement action being attempted by the Government through such system in a staged way. Productivity in taking care of public procurement by the Government is improved through mechanization and process re-designing wherein the eProcurement system will Empower the Government keep up an unmistakable/unambiguous photo of its procurement exercises on an ongoing premise. Through e-Procurement in public procurement, our prime target is to present straightforwardness, cost investment funds and lessened stock cost. E- Procurement guarantees that the Government and the supplier's network will have an equivalent, reasonable and fair access to circumstances Promoted on the web. It will likewise prove the path forward to tremendous benefits in people in general and private sector which expedites higher return investment following the implementation of the new e-procurement system

**Critical Observation**

This section discusses about the critical research software suit that is extracted after the reviewing the existing literatures of the e-procurement system. The prominent software found on the existing research attempts in various form shown in figure 2. The Electronic Government Procurement is the use of electronic government platform over electronic resources such as the World Wide Web & the Web-based platforms applications to buy and sell goods and services on behalf of a public authority. This is a type of electronic commerce that takes place between governments, between government authorities,

government and the private organizations or government and the members of the public. E-Procurement after all represents a business process of importance, including the capacity to articulate requirements that the procurement deals with the E-Procurement technologies including E-Procurement Software, B2B (business-to-business) barter, e-security and any mechanism that helps to improve any of it can help the end user to get the highly accurate quality process [13]. According to the experts, highlighted that the e-procurement is the critical process but executed by the software. Therefore software is an important positive indicator for any process. In order to enhance the e-procurement software quality and e-procurement security at different stages from begin to end. So therefore e-procurement is a process and process is executed through the software. Initially we have to improved software and then automatically process will improved. So therefore it is necessary to implement the e-procurement design in the early phase of the software development cycle (SDLC) by the help of latest techniques. Basically E-Procurement software have to implemented in software like e-commerce , SAP, e-payment, e-tender EDI , e-tendering, e-auditing , bur the software implementation in terms of natural language, UML, Object Oriented Design Base, Agile Approach ,Cloud Computing .

As in above figure1 already explained that the E-Procurement Software can be implemented in mainly divided into three categories. One of the categories is to enhance the security and quality issues that can be implemented in e-procurement process through software. Other one is to enhance the infrastructure issues that can be implemented in the design review of software. Lastly, the category is to enhance process issues that can be implemented in the process significance.



**Conclusion**

In this research paper we will suggest some steps and advocate the theme for e- procurement. The domain of e- procurement process is too huge to be done by the individual researchers or group of researchers which cannot be avoided. This study may be support to reduce the efforts and cost in case of implementation of e- procurement. This e- procurement steps is very substantial benefits it term of the increase productivity and reduce e- procurement software development time and cost .The choice of steps and features also depends on aspect of the system under test and skills of users. Implementation of e- procurement efforts allocations can be made easy by knowing complexity of cost, time and efforts. We will further explore this research.

**References**

1. Adebiji, Ayodele A., Ayo, and Adebiji M. O (2010) *Development of Electronic Government Procurement (e-GP) System for Nigeria Public Sector. International Journal of Electrical & Computer Sciences IJECS-IJENS Vol: 10 No: 06 74*
2. Chen & Meixell (2003): *Web Services Enabled Procurement in the Extended Enterprise: An Architectural Design and Implementation. Journal of Electronic*
3. *Commerce Research, VOL. 4, NO. 4, 2003 Dada, Kochs & Petersen, (2011) Web-Based Expert System for Classification of Industrial and Commercial Waste Products. Journal of Emerging Trends in Computing and Information Sciences Volume 2 No.6, ISSN 2079-8407*
4. Conallen J (2003) *Building Web Applications with UML, Addison-Wesley, 2 editions, 2003.*
5. Muchiri R.P., Lucyann M., K.,(June, 2015). *Software Based Cellular System for Rural Communication. Published in IJCAT Journal, Volume 2, Issue 6, June 2015.*
6. F. Bof and P. Previtali, "National models of public (e)-procurement in Europe", *Journal of e-Government Studies and Best Practices*, Article ID 315295, 14 pages, 2010.
7. M.K. Sharma, K.S. Vaisla, "E-Procurement model in governance framework of Uttarakhand to provide B2B, G2B, and B2G e-commerce application", *Proceedings of the 2nd National Conference on Computing for Nation Development, ISSN – 0973-7529 & ISBN – 978-81-904526-2-5, pp.711-712, 2008.*
8. R. Eadie, S. Perera, G. Heaney, "Identification Of Key Process Areas In The Production Of An E-Capability Maturity Model For Uk Construction Organisations, *Journal of University of Ulster, vol.1, 2010.*
9. Wang, Hsing-I, "The Planning of the Architecture of a Public E-Procurement Environment under the Cloud – the Case of Taiwan", *The Journal of Global Business Management, Vol.8, No. 2, 2012.*
10. K. Kiroski, M. Gusev and S. Ristov, "IaaS Cloud Model for e-Ordering and e-Invoicing", *Federated Conference on Computer Science and Information Systems, pp. 105–110, 2013.*
11. S. Ojha and I.M. Pandey, "e-Procurement Project in Karnataka: A Case of Public Private Partnership", *Vikalpa, Vol.39, No.4, 2014.*
12. A. Grilo and R.J. Goncalves, "Electronic Public Procurement of Construction and Public Works: Towards A New Reality", *International Public Procurement Conference, pp.10-11, 2010.*
13. Alfaadhel, S. (2011) *An empirical study of critical success factors for small and medium enterprises in Saudi Arabia. Challenges and Opportunities (Doctoral dissertation, University of Bradford).*
14. Azadegan, A., &Teich, J. (2010) *Effective benchmarking of innovation adoptions: A theoretical framework for e-procurement technologies. Benchmarking: An International Journal, 17(4), 472-490.*
15. Batenburg, R., 2007. *E-Procurement adoption by European firms: a quantitative analysis. Journal of Purchasing & Supply Management 13, 182–192.*
16. Schoenherr, Tobias, and V.M. Rao Tummala. "Electronic Procurement: A Structured Literature Review and Directions for Future Research," *International Journal of Procurement Management, Vol. 1, No. 1/2, 2007/*
17. *The Adoption and Use of E-Procurement Technology Models (Antonia Davila- Graduate School of Business Stanford University)*