Filling the Gap in Existing Model for the Adoption of Effective Model of E-Procurement System in India

Surabhi Saxena[1], Devendra Agarwal[2]

1Ph.D. Research Scholar, Department of Computer Application, Babu Banarasi Das University, Lucknow (U.P.)India
2Head of Department, Department of Computer Science, Babu Banarasi Das University, Lucknow (U.P.) India

Abstract:

E-Procurement represents a business process of importance, including the ability to articulate requirements that the procurement deals with. A number of larger technology providers are now left to support e-procurement. In this study, we review theories for adoption models at the firm level used in information technology literature and discuss more prominent models. It is vital to recognize the determinants of IT adoption. Accordingly it is essential to know the theoretical models. There are critical reviews in the literature about the comparison of IT adoption models at the various levels, and to the best of our information there are even fewer at the e-procurement level. This review will fill the gap in existing frameworks towards the effective model

Keywords— **E-Procurement , TAM , TOE , TPB, EPM , DOI.**

I. INTRODUCTION

Significant research work has been conducted on E-Procurement over the past years. E-Procurement is the sales of supplies, work and services through the Internet as well as other information and networking systems, such as TOI, TOE, DOI and EDI much more. E-procurement has the potential to strengthen the accountability, transparency, efficiency, and effectiveness of this sensitive, high-value government function [10]. Electronic Government Procurement is the utilization of innovation to open division acquirement of products, works, and administrations, under a proficient, high quality administration system and includes interacting data and correspondence innovation to change associations with subjects and organizations and between the arms of the administration [11]. This presentation does not focus on electronic processing which are really just automations of information technology processes. Rather, the paper discusses a paradigm shift in how e-procurement groups function in a rapidly changing technology environment [4].IBM started technology challenge with people who had been trained in technology procurement. In the view, there are a few hypotheses and models proposed for technology process. In general, there are two themes of those hypotheses and models; one is with supposition of same choice and utility maximization and another is silly choice because of social weight also, imitation practices. A few

hypotheses and models incorporate components from the two streams. On the other hand, the thought and models can similarly be characterized into the firm level and person level, which were proposed to look at innovation acceptance of associations and of people, individually. Information technology (IT) is universally regarded as a necessary implement in enhancing the competitiveness of procurement [6]. It is commonly accepted today that IT has significant effects on the productivity of e-procurement process.

II. BACKGROUND OF E-PROCUREMENT ADOPTION MODEL

In this study, we review theories for adoption models at the procurement level used in information technology literature and discuss two more models, presented in background sections. In the earlier study on the current state of the e-commerce technologies applications in the construction supply chain management in Sydney, Australia, Zou and Seo purposely described the evolution from paper-based methods to the use of electronic commerce in construction supply chain management as a typical example of IT innovation in construction [1]. According to the Theory of Reasoned Action (TRA), proposed by Fishbein and Ajzen, posits that behavioural aim is determined by an individual's attitude toward the e-procurement process. TRA has two extensions- Theory of Planned Behaviour (TPB) and Technology

Acceptance Model (TAM) [2]. Several authors contend that e-procurement systems allow applying standard procurement processes using technology based controls to procuring entities. Experts highlighted that three major factors develop the e-procurement frame and also presented in figure1. E-procurement has been studied from an overall organizational, a manufacturing and an information technology perspective [16]. Indeed, in looking at the literature it is clear that many authors outline a number of taxonomies addressing different types of methods, model, approaches and guidelines such as functional aspects of e-procurement shown in the table 1.
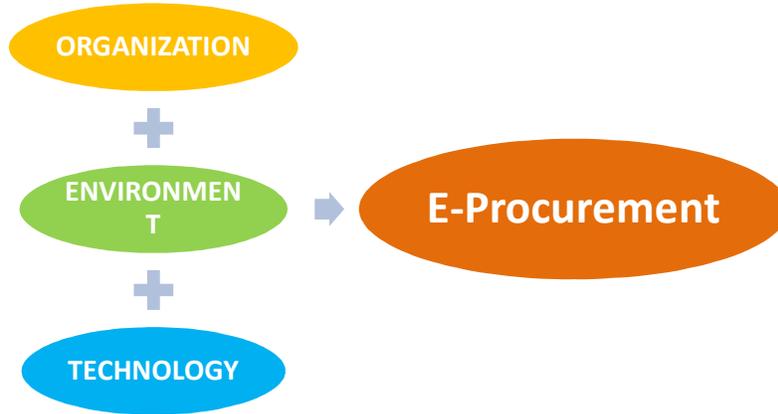
Fig1 Contribution Key of E-procurement process

The Model and Method applications were integrated with information, technology, environment, and employee, this study combined the Technology-Organization-Environment (TOE) framework, Technology Acceptance Model (TAM), Technological-Personal-Environmental (TPE), Electronic Procurement Marketplace (EPM) and Diffusion of Innovation Theory in an effort to establish a comprehensive view and to increase the level of understanding in figure 2.
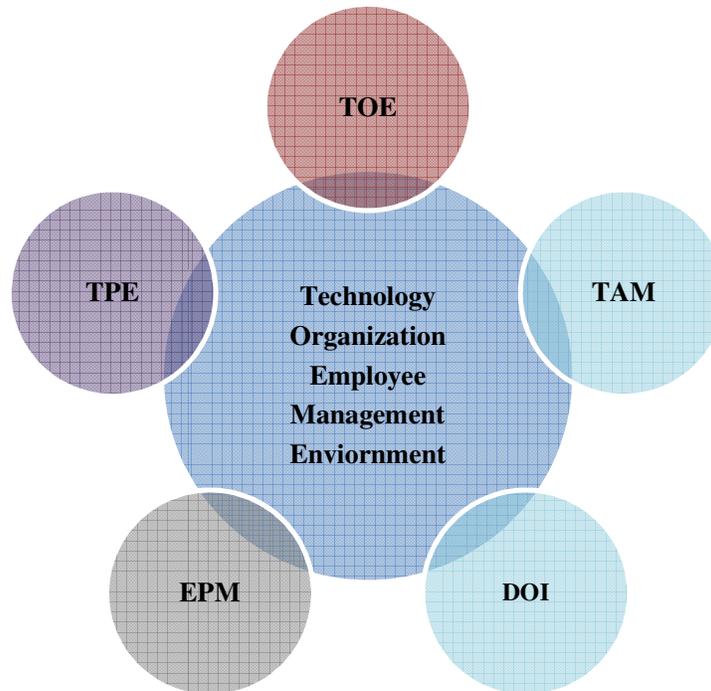
Fig 2 Basic View of Models

Table1 A critical Review on Model / Method by Researchers

Sr. No.	Researchers	Existing Model	Effecting Factors	Contribution Taxomy
1.	Carter, L. (2008) [3]	**DOI** — **Diffusion of Innovation**	**Innovation** **Compatibility** **Simplicity** **Traceability** **Observability**	Focuses on a relatively neglected area, namely diffusion and adoption of innovations in public procurement[1]
2.	Everett M. Rogers (2001) [5]			Predict ebusiness adoption through integrating the constructs of the Rogers's DOI theory[2]
3.	Quoted in Purcell, P. (2004) [8]			comprehensively reviewing the concepts[3]
4.	Alic, John, A. (2008) [9]			Conduct a systematic review of the literature to understand important[4]
5.	Arnould, J. (2004) [12]			Number of specialized reports on eProcurement Initiatives[5]
6.	Martins, Oliveira, & Popovic (2014) [24]	**TAM** — **Technology Acceptance Model**	**Perceived Usefulness (PU)** **Perceived Ease Of Use (PEOU)** **Robustness** **Trust** **Efficency** **Effectiveness**	Improved efficiency, effectiveness, and/or higher quality[6]
7.	Liew, Vaithilingam, & Nair (2014) [23]			Development of eprocured services at differen levels[7]
8	Dorcas (2015) [16]			Interoduced new equipment in process of eprocurement[8]
9	Sykes (2015) [20]			Evaluation proces amd improved the quality
10	Dr. Nikhat Praveen (2017)[17]			Focused on e-procurement software
11.	A. M. Fairchild (2007) [13]	**TOE** — **Technology organization Environment**	**Technology** Adaptablity Security Compatibility E-procurement Services **Organization** Size Slack Structure Communication **Environment** Policy Structure Organization Structure	Interoduced tonew theory with combined archeitecture[11]
12.	A. Gamba (2008) [4]			Explain in term of Orgnizational level infrastrucuter[12]
13.	Oliveira and Martins (2008) [7]			Heighlighted chronologerly presents some studies[13]
14.	Eckhardt et al. (2009) [22]			Explained Software Applications[14]
15.	McLeod, Pippin, & Catania (2009) [21]			Internet-based financial services[15]

16.	Aboelmaged, (2010) [14]	**TPB** **Theory of Planned Behaviors**	Attitude toward Using (A)	Proposed model has good explanatory power and confirms its robustness[16]
17.	Al-Zoubi (2011) [15]		Subjective Norm (SN)	Improved the predictability of intention in various fields[17]
18.	Awan, M. A. (2007) [18]		Perceived Behavioral Control (BC)	Interoduced use e reverse auction is explained by subjective norms, perceived behavioral control, and perceived usefulness[18]
19.	Alawneh, A., & Hattab, E. (2009) [19]			Heighlighted the influenced factors of e-procurement process[19]

IV. SEGNIFICANCE OF REVIEW

From the above literature, it can be well informed that these frameworks are widely used on the adoption of different innovative information technologies, software quality, and security issues proven to be validated in e procurement process. Given that the theme of this study is in regard to the e-procurement software and from the enterprises perspective, the software issue of procurement is adopted as the main research model in this research. This review will fill this gap. In the field of structural design of e-procurement software, there have been many various papers published. So, for example, reference [14] existing the model of e-procurement software upon which Web- service is based on and which offers performance of public procurement according to supply chain management scenario. Problem statement and gap will present in figure 3.
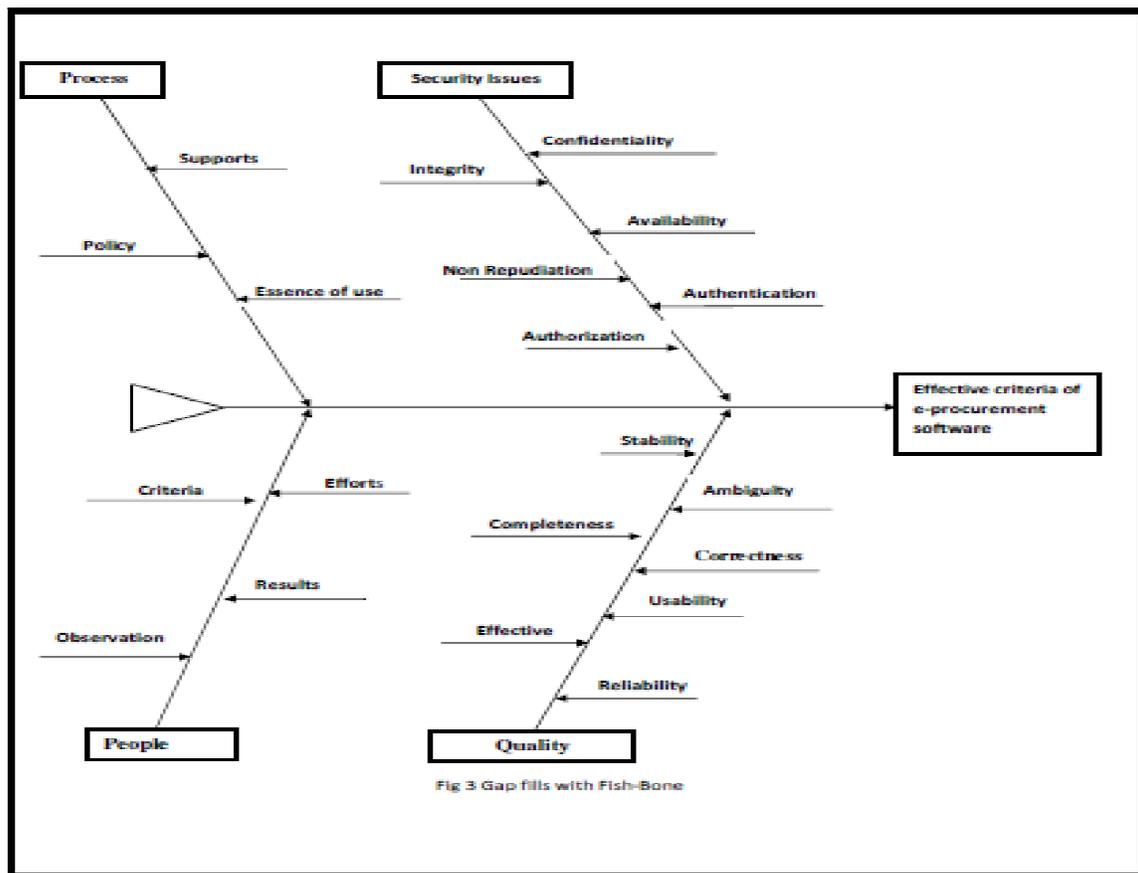

Fig 3 Gap fills with Fish-Bone

Figure 3 Gap Fill with Fish - Bone

V. GAP ANALYSIS

There are many e-procurement process, techniques, method, and approaches which are customarily applied to implementation level, but there is no standard process for enhance to technology evaluations in e-procurement process. This research specifically addresses technology enhancement and software issues. There is no any technology framework in TOE, TPB, DOI much more, which can ensure that enhance each part of technical issue of e-procurement process. There is gap in e-procurement process adoption in implementing web based platform.

Different problems are identified in technical specification for e-procurement. Requirement for technical issues as security, quality are hard to specify because of the absence of e- procurement practices. When any change in technology terms, it creates inconsistencies among the technology and e- procurement system and make it difficult to trace the security, quality issues throughout the implementations technical issues. There are a lot of specification tools are available in the e-procurement process, but these evaluation can only help you in enhance the process.

V. SUGGESTION

After successful completion of the systematic literature review some important critical observation are as follows. If we improve the e procurement software at different phase of software development process may greatly supports to e-procurement software system. In first view we found that technical issues of e-procurement process are important and essential, so experts cannot deny the technical issues.

1. In order to enhance security factors, quality factors, cost factors, risk factors and schedule factors much more in e-procurement software at different phase of software development life cycle which has positive impact on e-procurement process.

2. A factors affecting to e-procurement software system must be identified and then the set of factors relevant at the software development phase should be finalized.

3. Further, the no of affecting sub factors must be selected in e-procurement software system then matching with the correct issues of procurement system.

VI . CONCLUSION

From the above mentioned work, it is concluded that technology issues is a powerful used to represent an e- procurement process. Several approaches or application have been proposed in the literature for supporting the e-procurement process.

A survey of the relevant literature shows that maximum efforts have been put at designing, maintaining, and operating to e-procurement software systems need, for their solution and maximum number of accurate data which are common to many of them. However with the support of technology issues, E-Procurement process finds a bright future in the firms and the scope of further enhance.

The study revealed that information technology concepts and theory on the effective implementation of e-procurement in the county governments.

REFERENCE

1. Zuo, P.X.W and Seo, Y. (2006). Effective Applications of E-Commerce Technologies in Construction Supply Chain: Current Practice and Future Improvement. Journal of Information Technology in Construction, 11: 127-147

2. Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, MA; Addison-Wesley.

3. Carter, L. (2008). E-Government Diffusion: A Comparison of Adoption Constructs. Transforming Government: People, Process and Transforming Government: People, Process and Policy, 2(3), 146-161.

4. Gamba and A. Triantis, The value of financial flexibility, The Journal of Finance, vol. 63, no. 5, pp. 2263- 2296, 2008.

5. Everett M. Rogers, Diffusion of Innovations, Fifth Edition 2003, Free Press, New York, p221

6. F.C. Filho, P.H. da S. Brito and C.M.F. Rubira, ''Specification of exception flow in software architectures'', The Journal of Systems and Software, vol. 79, 2006, pp. 1397-1418

7. Oliveira, T. and Martins, M.F.O. (2008) "A comparison of web site adoption in small and large portuguese firms", ICE-B 2008: Proceedings of the international conference on e-business, Porto, Portugal, July, pp 370- 377.

8. Quoted in Purcell, P. (2004) A quick mod takes gamers beyond their doom, Sydney Morning Herald, 23 August

9. Alic, John, A. (2008). A weakness in diffusion: US technology and science policy after World War II. Technology in Society. 30, 17-29.

10. M. Broadbent and P. Weill, Management by maxim: How business and IT managers can create IT infrastructures, Sloan Management Review, vol. 38, no. 3, pp. 77-92, 1997.

11. M. H. Safizadeh, L. P. Ritzman, D. Sharma, and C. Wood, An empirical analysis of the product-process

matrix, Management Science, vol. 42, no. 11, pp. 1576-1591, 1996.

12. Arnould, J. (2004). Secondary Policies in Public Procurement: The Innovations of the New Directives. Public Procurement Law Review. 13, 4.

13. M. Fairchild, P. O'reilly, P. Finnegan, and P. M. Ribbers, Multi-criteria markets: An exploratory study of market process design, Electronic Markets, vol. 17, no. 4, pp. 286-297, 2007.

14. Aboelmaged, M. G. (2010). Predicting EProcurement Adoption in a Developing Country an Empirical Integration of Technology Acceptance Model and Theory of Planned Behaviour. Industrial Management and Data Systems, 110(3), 392-414.

15. Al-Zoubi, M., Thi, L. S., & Lim, H. E. (2011). EGovernment Adoption and Organization Performance in the Jordan Businesses Sector: Empirical Analysis. Academic Research International, 1(1).

16. Dorcas Wanjiru Muhia "Adoption of E-Procurement Strategy and Procurement Performance in State Corporations in Kenya (A Case of Kenya Revenue Authority)" Industrial Engineering Letters www.iiste.org ISSN 2224-6096 (Paper) ISSN 2225-0581 (online) Vol.5, No.6, 2015.

17. Dr. Nikhat Praveen , Dr. Mazhar Khaliq, "A General Study for Role of the Quality in the E-Procurement Process ", International Journal of Scientific Research in Computer Science , Engineering and Information Technology (IJSRCSEIT) ,January - February 2018 Volume 3 Issue 1 , pp 102-106.

18. Awan, M. A. (2007). Dubai e-Government: An Evaluation of G2B Websites. Internet Commerce, 6(3), 115-129.

19. Alawneh, A., & Hattab, E. (2009). An Empirical Study of Sources Affecting E-Business Value Creation in Jordanian Banking Services Sector. International Arab Journal of e-Technology, 1(2), 1-8.

20. Sykes, T. A. (2015). Support structures and their impacts: A longitudinal field study of an enterprise system implementation. MIS Quarterly, 39(2), 437-495.

21. McLeod, A., Pippin, S., & Catania, V. (2009). Using technology acceptance theory to model individual differences in tax software use. In Proceedings of the 15th Americas Conference on Information Systems (pp. 1-11).

22. Eckhardt, A., Laumer, S., & Weitzel, T. (2009). Who influences whom? Analyzing workplace referents' social influence on IT adoption and non-adoption. Journal of Information Technology, 24(1), 11-24.

23. Liew, E. J. Y., Vaithilingam, S., & Nair, M. (2014). Facebook and socio-economic benefits in the developing world. Behavior & Information Technology, 33(4), 345-360.

24. Martins, C., Oliveira, T., & Popovic, A. (2014). Understanding the internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. International Journal of Information Management, 34(1), 1-13.

25. S. Saxena , D Agarwal , " A Critical Literature Survey on factors that Effecting E-Procurement Software ", International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) , Volume 7 , Issue 1, January 2018 .

26. S.Saxena, D.Agarwal, "Confidentiality Assessment Model to Estimate Security during Effective E-Procurement Process", International Journal of Computer Sciences and Engineering (IJCSE), Vol.6, Issue.1, pp.361-365,January 31, 2018.

27. S. Saxena , D Agarwal , " Authentication Quantification Model to Estimate Security During Effective E-Procurement Process ", International Journal of Scientific Research in Computer Science Engineering and Information Technology (IJSRCSEIT) , Volume 3 , Issue 1,11[th] February 2018 .

28. S. Saxena , D Agarwal, " Authorization Quantification Model to Estimate Security During Effective E-Procurement Process ", IPASJ , International Journal of Computer Science (IIJCS) Volume 6 , Issue 2 , 28 February 2018 .

Author Profile

Surabhi Saxena received the MCA degree from Rajasthan Technical University , Jaipur in 2013. She is enrolled as Full time research scholar in BBDU , Lucknow in Department of Computer Application . His research interests include Software Engineering , Quality Models , ISO Standards, E-Commerce , E-Governance , E-Procurement , ERP **,** E-Security

Dr. Devendra Agarwal is currently working as HOD , Department of Computer Science in BBDU , Lucknow. He has over 18 years of teaching & 5 years of industrial experience. He has done his B.Tech in Computer Science from Mangalore University in 1993, M.Tech from U.P. Technical University, Lucknow in 2006, and Ph.D. from Shobhit University, Meerut in 2013. He has over 15 research papers with 4 students pursuing Ph.D