THE TRANSPARENCY OF PUBLIC BIDDING AND CONTRACTING USING E-PROCUREMENT IN MALAYSIA SMPPS

Mohamed Fathi Alaweti  
Faculty of Science and Technology  
University Sains Islam Malaysia  
mralakrami@gmail.com

Nurdiana. A  
Faculty of Science and Technology  
University Sains Islam Malaysia  
nurdiana@usim.edu.my

Qais Faryadi  
Faculty of Science and Technology  
University Sains Islam Malaysia  
qais@usim.edu.my

ABSTRACT

E-procurement has been recognized as an electronic acquisition of goods and services in organizations. Before decades ago the development in e-procurement was limited and took little attention by researchers. Nowadays e-procurement becomes an essential part in most of public bidding in developing countries like China, Australia, U.S.A and Great Britain. This research focuses on implementation e-procurement system in government agencies in Malaysia and critical success factors that improving the transparency level of public bidding and contracting by utilizing the advantages of e-procurement technology in ensuring efficient evaluation of bid and tendering process for small medium public projects (SMPP). The purpose of the research is to find the right way for installing electronic tendering systems of e-procurement systems in government agencies in Malaysia in order to increase the level of public bidding transparency amongst (SMPP). Data collection of this research will be obtained from utilizing a set of three methodologies (Descriptive- Qualitative- Correlational Analyses) in order to increase the reliability of the study hypothesis and the precision of study solution a research questionnaire will be submitted to the managers and officials in major Malaysia government which are associated with procurement and public projects. The result of the research tries to provide recommendation about future intention of electronic tendering systems of e-procurement in Malaysian government agencies amongst (SMPP).

Field of research: E-procurement, Transparency, small medium public projects (SMPP), Efficiency, Government Agency, Focus Group

1. Introduction

E-procurement which is also referred as an electronic procurement is business-to-consumer, or a business-to-business, or a Business-to-government purchase and sales of goods. E-procurement process involves sales and business transaction services through the Internet. E-Procurement is more than just a system for making purchases online. A properly implemented system can connect companies and their business processes directly with suppliers while managing all interactions between them. This includes management of correspondence, bids, questions and answers, previous pricing, and multiple emails sent to multiple participants.

Small and medium public projects (SMPP) organizations use e-procurement for high transparent contracting and disclosed for the public in most of times to achieve significant benefits such as cost
savings and increased efficiency, other advantages faster government procurement process and
higher transparency comparing to traditional procurement and tendering ways. All these advantages
provide high control over corruption in procurement services and tendering. E-Procurement helps
the directors and managers in commercial departments inside government agencies in decision-
making process through providing easy access relevant information about each bid and competitors,
the awarding process will be very organized and precise using e-procurement. Keeping track all
offers and bid will help the decision committees to have better knowledge about theses bids and
obtain better pricing which will save a lot of unnecessary costs. E-procurements also help private
organizations to focus on their trading partners and contracts.

2. The definitions of E-Procurement

There a many public sector agencies around the world have identified the E-Procurement to
represent a priority e-Government agenda, and these definitions stated that the implementing of E-
Procurement is compliment of e-government systems (Schedler&Summermatter, 2007).

The theoretical understanding of E-Procurement is defining the general model of the system.
Schoenherr and Tummala (2007) have defined the concept of E-Procurement as “the sourcing of
goods or services via electronic means, usually through internet”.

Defining E-Procurement is more accurate by understanding the roles of Information Technology
through using the software and hardware in running the procurement process, knowing very well
the role of the software and hardware will make the concept of E-Procurement is easier to
understand (Borins, 2002).

Vaidya et al (2007) have described E-Procurements as using modern electronic tools like the internet
and e-mails for business-to-business (B2B) purchases online and using the internet technology to
supply goods and provide services for sales online, the study defines E-Procurement is supplier and
buyers exchange of goods and services using the internet and information technology applications.
Other definitions by Turban et al, (2006) has defined the concept of E-Procurement is “the electronic
acquisition of goods and services in organizations”, while KishorSajeev (2007) have defined E-
Procurement is the use of Internet-based information and communication technologies in order to
carry out one or more transactional or strategic procurement activities.

3. The evolution of the concept

the fact that driving the transformation and exchange of information and communication technology
(ICT) is booing around the globe, and shows that business transactions, strong competition and
globalization are important factors in the development and growth of economies nowadays. The
electronic business is growing and starts the reengineering through global business environment and
increasing the transformation to the digital business increasing rapidly in many countries worldwide
(Heeks&Bailur, 2007). E-Procurement has made significant technological advantages in recent years
and it is highly expected to continue in rapid improvement in the future (Croom& Brandon-Jones,
2009). The literature about E-Procurement and the contributions by scholars on this field of study
and the implementation of E-Procurement application started to develop during the last decade, and
the development was mainly in the public services.

The Internet is nowadays enables many applications online that make organizational processes more
effective and procurement of goods and service more efficient (Pani & Agrahari, 2007). One of the
significant internet applications utilized by public organizations is the procurement application that
has traditionally involved old manual activities for processing procurement transactions (Hawking et
al, 2004).
Corina (2011) has showed that E-Procurement has emerged from e-commerce originally, while the first solution of e-commerce was based on using closed point-to-point links between the suppliers and buyers, and also was utilizing electronic data interchange (EDI). Corina (2011) has stated these forms of application was the emergence of E-Procurement which allows at the beginning to exchange of business documents between the buyer and seller in an agreed format, and E-Procurement in the last few years have made significant technological advantages and the future, is expected to continue to improve the efficiency and effectiveness (Mirchandani & Sims, 2001).

4. The cost saving of E-Procurement

E-Procurement can save a lot of costs to the buyers when using the digital assessments of commercial proposals because of reducing the number of employees doing the assessment of bids, as well as less communications and efforts with suppliers and focusing on potential buyers only. The significant cost savings of E-Procurement is a great advantage to the public agencies, for instance the reduction in the cost and efforts of processing the papers of purchase orders which can be manipulated electronically (Ageshin, 2001) also reduction in inventory costs and decrease in order fulfilment time (Chandrasekar, 2003, eMarketer.com, 2001; Williams, 2003) accrue to firms that successfully reengineer their purchasing business processes. Other types of savings that were to include maintenance savings or savings obtained purchaser if not more than products and prices of acquisition services providers, while move purchases increasingly, hiring authorized suppliers are also saved in consolidated expenses (Trkman & Kevin, 2010).

Ronchi et al (2010) have identified and measured four types of cost savings from using E-Procurement system (order cost, administrative cost, lead-time order cost and opportunity cost of capital), and these types of cost saving will be examined in this study. While Panayiotou et al (2004) have focused on the reduction of cost per tender, and they have highlighted the opportunistic improvement as the savings was from relocation of human capitals and savings from cost of sales.

5. The practicing of E-Procurement system

The importance of Internet in developing new ways to supply and buy goods for public and private project is using online application. The researcher states that the evolution of Internet in the last two decades showed the importance of practicing E-Procurement as a new supply management tool emerged in the mid-1990s, which has brought great benefits to organizations around the world and showed a potential cost saving and efficiency in procurement of goods online. The main advantage E-Procurement can deliver: such as cost reduction, process reorganization, improved contract fulfillment, increased spends under management, and many other benefits. (Tiago, Couto, Tiago & Vieira, 2009).

Today, leading enterprises and companies in Europe are practicing E-Procurement and enjoying its benefits and increasing the use of their E-Procurement systems, E-Procurement technology and other advanced technologies become very essentially in a way to make procurement professionals true supply managers at these companies, moreover creating supply value for the company that was difficult to provide before (Basware, 2011) and this finding is identical with Rebecca (2008) exploratory and empirical research to examine the initial E-Procurement experiences of companies participating in electronic bidding. The study respondents were asked to indicate their purchases of six types of goods/services: strategic and nonstrategic direct materials, strategic and nonstrategic services, indirect materials, and capital goods Faruk Karaman, (2007) referred to E-Procurement practice was not well-established in emerging countries, and he added the existing barriers like transportation, financial, lack of telecommunication infrastructure, and government legislations will hinder the adoption in the developing countries.

Thai (2001) has concluded that practicing E-Procurement will provide quality bidding, efficient timeliness, cost saving, minimizing efforts in doing business, reduce financial risks and technical risks,
and finally increase competition which lead to save cost of buying goods or service at high prices, while Layne et al. (2008) have stated that bidding for public sector is the best place to practice E-Procurement of goods or services, and this is because if the high transparency of information resulting from electronic bidding.

6. The barriers on adoption E-Procurement

The Barriers on the adoption of E-Procurement integration have received high attentions from the researchers on the field of information technology around the world; such literature and studies still lacks empirical evidence from both suppliers’ and buyers’ perspective (Thomson, D & Singh, M, 2001).

Hamid (2003) has investigated the impact of culture and attitudes of suppliers with regard to the flow of information that could affect the adoption of E-Procurement; “The factor of People’s attitude can contribute to issue strong barriers towards swift implementation of new technology” (p.122), while the researcher of this study foresees that the main and popular way for tendering in and solicitations for bids is an open tender, and argued that for many years the open tender was considered a fair method to procure goods and services by the government in public projects.

The main factors that produce the barriers varied from external factors to internal factors, Chan & Lee (2003) have shown that the external factors include shortage in technology, and poor information technology infrastructure, government legislation, improper environment; and internal factors such as information technology resource limitations, organizational behavior, and the type of management.

Chan & Lee (2003) have added that the sources of the external factors came from the industry, government, change of technology, they emphasized that with supported efforts from the government some of the external barriers can be eliminated or at least minimized, whereas Norma Mansor (2008) concluded that the adoption of E-Procurement with government support can certainly improve the public procurement in quite different ways but with a condition to remove the major barriers on adoption and using E-Procurement effectively, this conclusion was identical with Marston & Baisch (2001) who have stated that the some barriers such as financial capability resulting from the cost of changing the existing information system could be difficult to avoid, therefore Marston & Baisch (2001) have indicated that only large organizations can adopt the E-Procurement technology without major difficulties because of their financial ability.

Faruk Karaman, (2007) has concluded that, the lack of a qualified and skilled workforce and IT specialist, and cultural barriers, and absence of security protection to online bidders will hinder the development of E-Procurement in the developing countries, while Khu et al. (2012) have concluded that E-Procurement process is not widely adopted among small and medium enterprises, and the existing external factors that guide to presenting strong barrier to the adoption of the technology of E-Procurement. Murali Raman & Magiswa Dorasamy (2008) suggested that the government should take a more proactive role in promoting E-Procurement. This includes making sure that the government’s policy on procurement avoids any contradiction with the E-Procurement implementation plan.

7. The methodology

In this study the researcher used a mixed approach Qualitative and Quantitative methodology because the two approaches complement each other and also using both approaches will help to make accurate conclusions about the study variables such as the Efficiency of e-procurement Implementation, and the Background and knowledge about e- procurement, and Technological Capacity of Government Systems.
The Qualitative Research will be used in this study in the earlier phases of the research. The next part of the research the quantitative approach will be applied. The reason to use the quantitative research in the next stage of this research is to help the researcher to have a better understanding depending on statistical tools in order to predict the future of public bidding process after applying e-procurement applications in government agencies.

The qualitative methodology is used in order to explore and understand; experiences, attitudes, background, behaviour and interactions of employees working in the tendering departments and responsible for assessment of bids and proposals for public projects. The reason for selecting qualitative methodology is to have a complete and detailed description of the adoption e-procurement in Malaysia that will help the researcher to identify the main obstacles and difficulties facing the government agencies to setup the applications of e-procurement in their computer systems.

The quantitative methodology will support the conclusions from the early phase of the research because of using reliable statistical tool, the quantitative approach is important in this study to precisely figure and calculate our observation using statistical analysis with high reliability and validity so that we can compare both results obtained from the qualitative and quantitative approaches to get better understanding to results obtained from the analysis of the study.

8. The Theory

This study will utilize the concept of (Actor Network Theory) ANT theory for treating Human and non-human actors (factors) in the study model. The reason why because ANT is often associated with the equal treatment of human and non-human factors that affect the dependent variables in the study and the researcher want to measure the impact of all factors equally on the decision-making process and transparency of e-procurement. In addition to that the benefit of applying the principle of generalized symmetry of ANT theory in this study is that all entities in the analysis can and be described in the same terms and the researcher can apply the same measures on all factors (human and non-human) without distinction which can enhance the reliability of the study. The motivation for this is that differences between the study variables are generated in the network of relations, and should not be presumed.

The independent variable (Experience of employees) is a social factor; however the distinction between intermediaries and mediators according to ANT theory is very important from the perspective of sociology. For instance, a sociologist might take silk or background of participant as intermediaries, holding that the former “means”, “reflects”, or “symbolises” the upper classes and the latter the lower classes. Intermediaries are entities which make no difference and so can be ignored, but in this study, Intermediaries are affecting the dependent variables of the study.

Mediators are entities which develop difference and so should be the object of study according to ANT theory, therefore the three dependent variables of the study (System efficiency, System Security, System Confidentiality) are the main objects in the study that produce the output in the model of transparent decision-making process.

9. Research Variables

The study specified independent and dependent variables that will be examined in the study and analyze their impact on the output of e-procurement model.

- The independent variables: These variables are input factors that measured and manipulated in the study to determine their effect on the output of decision-making and transparency model for e-procurement. These two variables are the inputs to e-procurement model. The independent variables are:
1) **Experience of employees.** Providing qualified employees who are responsible for running e-procurement application is an essential requirement for effective and reliable e-procurement process. The study assumes that two dimensions specify the experience factor (background and knowledge of employees and perception of employees to work with complicated electronic bidding systems

2) **Technological Capacity.** The study assumes that two dimensions specify the technological capacity (IT expertise and government aid). The support of government to provide adequate technological infrastructure that help public buyers to install and change their old procurement methods with modern automated systems is important, in addition to that providing qualified experts that fill the gap and shortage of IT specialist in procurement department is important, all these elements are essential for effective technological capacity

- **Moderate variable:** It is the factor that is measured in this study to verify whether it affects the process of decision-making and transparency of e-procurement or not.

  1) **Bidding period.** The period required to submit the proposals according to buyer’s rules is crucial and sometime big projects need sufficient period to prepare qualified offers, otherwise the bidders may not catch time and then submit offers that not comply with buyer’s need and issue future complication in negotiations and assessment of bids

- **The dependent variables:** These variables are the factors of the study that will be observed and measured to determine the effect of independent variables of the study. The factors of the study will determine the output of the decision-making model which will be either accurate or inaccurate. The study assumes there is a correlation and direct relationship between the three dependent variables (factors)

  1) **System Efficiency.** The capability of e-procurement system to achieve assessment of proposes and select the best bides among many potential offers with high quality and accuracy

  2) **System Security.** The systems of e-procurement should be reliable and provide high security to protect the commercial and technical information of proposals and offers as well as all information associated with the bidders

  3) **System Confidentiality.** The capability of negotiation and make the negotiation process confidential and secure is one of the main demands in reliable e-procurement system.

10. **Research Framework**

The framework is derived from a comprehensive study on the impact of human and no-human actors in the decision making process of e-procurement such as experience and technological capacity on the whole procurement process. The framework shows the importance of IT on public procurement (Anderson & Danziger, 2001) and the impact and power of IT on e-procurement system, which is associated with three factors (efficiency, security, and confidentiality), these three factor are the dependent variables of the model and represent the non-human actors which are affected directly by human actor (experience of employees, technological capacity) according to ANT theory. Since e-procurement is done with software application that includes features for supplier management and complex auctions (Baily, 2008) then system efficiency and security become critical factors in big public projects. Public sector organizations use e-procurement for contracts to achieve benefits such as increased efficiency and cost savings (faster and cheaper) with high security in bidding in government procurement (Bellantuono et al, 2008). The researcher assumes that e-procurement is not completely an automated process, and therefore human factors influence the process of e-procurement. E-procurement from the perspective of this study is a mix process between human and non-human actor and therefore applied in this model.

The framework shows that assessment of bids in e-procurement process is affected by the relationship between three dependent factors (system efficiency, system security, and system
confidentiality) and all these factors are non-human actors, which are involved in the e-procurement decision making process from the perspective of ANT theory. The procurer from the public agency and the suppliers of the will be the human actors in the e-procurement environment (Pani&Agrahari, 2007). The remaining actors will be considered as non-human actors, which is (bidding period). The framework includes tow human actors (experience of employee) which enables the actors to communicate in negotiating and exchanging goods and services (Schoop 2008) and (technological capacity) actor. (human& non-human) has specific role in ensuring the success and transparency of the decision-making process in the e-procurement environment. The correlation between the three non-human factors (system efficiency, system security, and system confidentiality) plays a vital role in e-procurement decision-making and assessment of bids. Hardy and William (2008) found that on governmental e-procurement policies provided examples of both types of actors including IT specialists and IT systems as two correlated human and non-human factors. This study will evaluate the correlation between human and non-human factors as shown in the framework, and by using ANT theory as guide for this research; it is assumed that there will be human and non-human actors that will influence the decision-making process in the e-procurement environment identified in the model of this research.

Figure 1: The research framework
11. Data Gathering Instrument

The data-gathering strategies that will be used in early phase of the research (the qualitative approach) are structured interviews with IT experts working in the IT departments in selected government agency in Malaysia, which is currently using electronic systems for the bidding and assessment process for the received quotations and proposals associated with public projects. The primary data that will be collected in the next phase of (quantitative approach) is questionnaires, the data collected from the questionnaire is important to collect measurable data, statistical analysis is more accurate and this will help to make precise conclusion and also compare the data obtained from the questionnaire with the data obtained from the structured interviews.

The study will use Statistical Package for the Social Sciences (SPSS) to make the statistical analysis from the collected data. The main statistics will be applied in this study through implementing the software SPSS are:

- Descriptive statistics: Frequencies
- Bivariate statistics: Means, , ANOVA, Correlation, and standard deviation

12. Findings

In this model the output will be the final decision of the e-procurement system. The decision represents the result of the system and indicating the name of contractor (supplier) and the final budget of the project. The project budget should be a fixed amount unless the number or specification of items in the proposal changed. If the output of the model was Inaccurate (positive), then more than one contractor may be selected by the system and no single criteria was implemented by the e-procurement system to fulfill buyer’s requirements, therefore the study assumes in case of negative output (Inaccurate Decision) then one or more than of the three factors (System Efficiency, System Security, System confidence) are not effective or strong enough to the human factors(Experience of employees and Technological Capacity)

13. Conclusion

E-procurement is becoming an established part of the business landscape (Stephens Inc., 2001). We are witnessing the continuous, tightly competitive progress of e-procurement applications in the SMPP. Nonetheless the researcher can still identify three success factors major, unsatisfactorily solved issues that prevent them from supporting effective strategic sourcing. The decision making support tools for strategic e-procurement are founded on the Efficiency, Confidentiality and the security e-procurement system. As an example, most success factors share the commonality of not providing support for determining the winner in multi-item, multi-attribute negotiations and bidding. The unavailability of such support poses an intricate, combinatorial problem to professional buyers that leads them to either relinquish or opt for alternative, and less efficient, non-combinatorial protocols. In this work the researcher tries to make headway in providing transparent decision support.

Finally In this paper the researcher have tried to exemplify how the success factors process can be highly automated, allowing companies to achieve enormous benefits: cost savings, processing time reduction, less time-to-market, more transparent and more time left to strategy. We have presented our contribution along this direction by dissecting Quotes, an Internet-enabled sourcing solution capable of streamlining the e-procurement transparent system.
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