

THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

E-Procurement Adoption Factors in Government Procurement

Petrina (Pei-Chun) C. Feng

Associate Professor, Department of Administrative Management,
Central Police University, Taoyuan, Taiwan

Abstract:

There has been lots of revolution on how most governments conduct their procurement. Public procurement is a sensitive sector in any republic as it is a factor in the economic growth of the country. Many countries, however, have experienced numerous challenges in their procurement process hindering them from the achievement of the set objectives. A stable government ought to observe the regulations within which it conducts its procurement. Some of the issues that are of concern uniformly across the economies include transparency, accountability, security, trust, effectiveness in the cost and time constraints. The loopholes created in the breach of either of this virtue causes huge embezzlement of funds through corruption and issuing of the contracts to incompetent people. This, in the long run, contributes to the failure to projects and stagnation in economic growth.

Technology, on the other hand, has been evolving with the aim of digitalizing the day to day activities making them simple and effective. Many countries have employed technology and use of internet in many sectors such as health, education, security, political activities such as elections as well as procurement. This research expounds on the use of technology in the public procurement and majors on the positive and the negative effects arising from the use of technology. Some of the technologies discussed include the E-procurement and use of Bitcoin Technologies.

This research makes use of the primary data obtained in the public institutions where procurement takes place. The data will help in evaluating the factors that the government consider in deciding the inclusion of technology in their procurement system. The conclusions will be used to mobilize the economies on the necessity to employ technology in the public procurement for best financial management and enhanced economic growth.

Keywords: Government Procurement, Technology, E-Procurement, Blockchain Technology

1. Introduction

Many studies have been done in the field of procurement or different studies. Use of ICT in procurement have been associated a lot with the fight against corruption. However, Heek (1998) associates these innovations to a possible loophole in the exercise of hidden corruption. It is thus vital that the countries involved in the use of ICT be willing and able to operate the procurement systems effectively to promote transparency and eliminate corruption (Wescott, 2001). This research will investigate the vital factors to be considered when deciding on the most appropriate technology in the government procurement process.

In the current economic crisis, a lot of pressure has been put on the governments to cut down on expenditure while reducing deficits. 10- 15 percent of a country's GDP is often accounted for in public procurement as it holds up to 65 percent of public sector budgets. With this in mind, governments are faced with the challenge of attaining maximum value while rigorously reducing their spending. It simply means that many of the governmental organizations need to shift to a value-driven from its current budget driven way of thinking and acting and that there is an important role for procurement function to fulfill. Public procurement function faces some challenges, and they include:

- Procurement is perceived as an operations department rather than an advisor or partner
- Procurement acts more of reactive than proactive process and only involved once specifications have been defined.
- It is organized around contracts rather than commodities of purchase. Peak moments occasionally occur around contracts expiry, but there is no continuous process internal and supply market developments and opportunities.
- Procurement does not feel like it is responsible for the operational procurement processes.
- The fear of negative publicity has led to a growing emphasis on the legal aspects of the tendering process.
- These challenges can be tackled through different approaches. The approaches are:
- Introducing multidisciplinary commodity teams. Stakeholders are identified from the commodity level and multidisciplinary teams, having representatives from business and procurement teams to set up and meet regularly.

This ensures that the procurement team is involved from as early as tendering and the commodity managed as a continuous process.

- Implementing of a closed loop procurement process. When procurement team is involved in implementing this kind of process, it can take ownership of the end-to-end procurement processes: Tendering, contract implementation and management to the purchase to pay activity.
- Development of commodity profiles and strategies for each commodity. These profiles give clear information on current situation covering among other things, the market trends and developments, internal policies and developments, processes, spend, contracts and compliance. These profiles can be used as a tool to proactively share insights with the stakeholders, forming a strong basis for commodity strategy development.
- Development of methods and skills. They will relate to stakeholder and market analysis, the total cost of ownership analysis, commodity strategy development, and business case development. When you properly, they translate insights and ideas into a success.
- Facilitation of behavioral change which is highly needed. This makes the procurement team feels part of the bigger picture while taking ownership, being proactive and constantly looking for improvement opportunities.

2. E-procurement

Electronic procurement (e-procurement) is one of the implementations made in the E-Government plans which are transformative government agendas in molding their services to give a transparent, convenient and efficient service (Satyanarayana, 2007). It can be defined as the way to procure goods and services by use of electronics in every step of the process (Corsi, 2006). Typically, procurement process entails indentation by the management, publication, bid process, evaluation, the award of contract and the management of the procured contract.

E-procurement is part of the E-governance programs established in many governments in the world which provides opportunities for the citizens to exercise their democratic rights freely (Fang, 2002). Meier & Terán (n.d) categorizes the stages underwent in e-procurement into three major phases. The first phase is of strategic procurement which involves the specification of conditions and the standards of the goods to be procured together with the selection of the suppliers and the procurement models. The second phase is of Tactical procurement where the contract is given accompanied by its conditions as well as the price, qualities and the dates of the operation. The third stage has three sub-phases that include the issuing of orders as well as the payments for the same, the control of the services rendered by ensuring that the goods and the services delivered are of good quality and are delivered in time within the framework given. The final sub-phase gives the after sales services such as helpful information on how to improve the services as well as other forms of support.

E-procurement is common in both the developed countries such as UK and Australia as well as the developing economies such as South Korea, China, and Mexico among others.

3. Government Procurement

This is also referred to as public procurement. Government interacts with other businesses in acquiring goods and services which is mostly in the form of making purchases. Government procurement enables efficient acquisition of resources ranging from the simple goods such as stationery to the complex goods such as the construction projects. If used effectively, government procurement has the capability of nourishing the economy as well as creating equality in the nation through fair distribution of resources (UNOPS, 2010). With the current trend, ICT has been widely applied to make government procurement easier. This gives rise to the Government e-Procurement system (GEPS). GEPS is defined as the move by the government to relate with the contractors and suppliers to acquire goods, services and works through the use of information technology systems that include the use of internet or any other form of network connection (Schapper, Rivolta, & Leipold, 2005).

4. Blockchain Technology

This technology was introduced by Stuart Haber and W. Scott Stornetta in the year 1991 in the United States of America (USA) who proposed to authenticate the possession of the intellectual property through sequential time stamping of the digital documents (Haber & Stornetta, 1991). Blockchain may be defined as a distributed database that contains records of transactions or events that are of a digital nature carried out between the participating parties. This database is neither controlled nor owned by a specific body but can be monitored by any involved party. It is shared via network nodes and updated through a way of data mining (Pilkington, 2016). This technology can be extended to sales and supply chains which entails the procurement process as a form of contracts. Contracts and transactions can be moved to the digital environment and make them less costly, more secure, transparent in a shared database that cannot be manipulated. The transactions can also be recorded in a digital record accompanied with a digital signature (Lansiti & Lakhani, 2017). The procurement process can thus be projected to evolve into smart contracts and (Pflaum, Bodendorf, Prockl, & Chen, 2017)

5. Technology

This study focuses on the level of preparedness for the use of technology in South Korea through the focus on the general environment for innovation, infrastructure, internet coverage and the affordability. It then assesses the impacts in both the economic and social impacts on public procurement. Economic impacts will dwell on the job creation in the procurement process, as well as the entry of new and better services in the market.

5.1. Theoretical Framework

This study reviews several theories that are relevant in relating technology to the effective public procurement. They include Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), Transaction Cost Theory (TCT), Principal-Agent Theory (PAT) and Technology, Organization, and Environment Theory (TOE).

5.2. Transaction Cost Theory

This theory assumes that for any transaction involving the exchange of goods and services, the cost incurred must be done at the lowest cost (Williamson, 1981). The theory argues that the higher the value of the assets been transacted, the higher the need to coordinate and control the transactions and the higher the need for the organization (government) to take more caution in the governance (Martins, Serra, Leite, Ferreira, & Li, 2010). The practitioners are expected to understand how the adoption of the technology in the procurement system will help in controlling the trade-offs as well as evaluating the effects of exogenous shocks in the value of the business (Kauffman & Mohtadi, 2004)

This theory is helpful in assessing the impacts of the cost of technology in the procurement system. The introduction of technology should be in a way that both the cost of the technology is low as well as high output in the services provided.

5.3. Principal-Agent Theory

In this study, the government which lenders its services to its citizens through intermediaries, is the principal. On the other hand, the intermediaries who include the contractors and the suppliers are the agents who do these tasks of the provision of services to the communities are the agents. The agents decide on issues to do with the procurement on behalf of the government (principal). (Jensen & Meckling, 1976). This theory has been used to assess the relationship between the government and the citizens in other countries such as Ethiopia, Fiji, and India (Singh, Pathak, Naz, & Belwal, 2010).

This theory is helpful in generating our precedent on the need for trust as a factor in the use of technology to help in the procurement process. It helps us to visualize government procurement as a contract. Technology should create a more convenient environment in which the government relates well with its agents in trust and good faith.

5.4. Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

This theory gives a guideline on the factors that are significant in choosing the adoption of new technology. It is an improvement of the former UTAUT and Technology Acceptance Model (TAM) theories which incorporates all the other previous theories made in the acceptance of the technology. This theory identifies seven main factors considered in affecting the behavioral intention in the adoption of technology that includes social influence, hedonic motivation, effort expectancy, performance expectancy, habit, price value and facilitating conditions (Venkatesh, Thong, & Xu, 2012).

5.5. Technology, Organization, and Environment Theory (TOE)

TOE explains the adoption of technology in three major perspectives that include the context of Technology, Organization, and Environment as it was founded in the year 1990 by Tornatzky and Fleischer (Tornatzky & Fleischer, 1990). Technology context explains both the technology within the organization (government) such as the equipment and the personnel as well as the technologies outside the organization such as the network infrastructures. The setup and the policies of the government represent the organizational context in this theory which encompasses such things as its size, management, and its scope. Finally, Environment refers to the issues affecting the organization from its environments such as the competitors, and the industry at large (Hsu, Kraemer, & Dunkle, 2006). In this study we assume the environment to be such factors as the international regulations in procurement as well as the standards set globally. This theory will help us in contemplation of the facilitating conditions in the adoption of the innovative technology.

6. Conceptual Framework

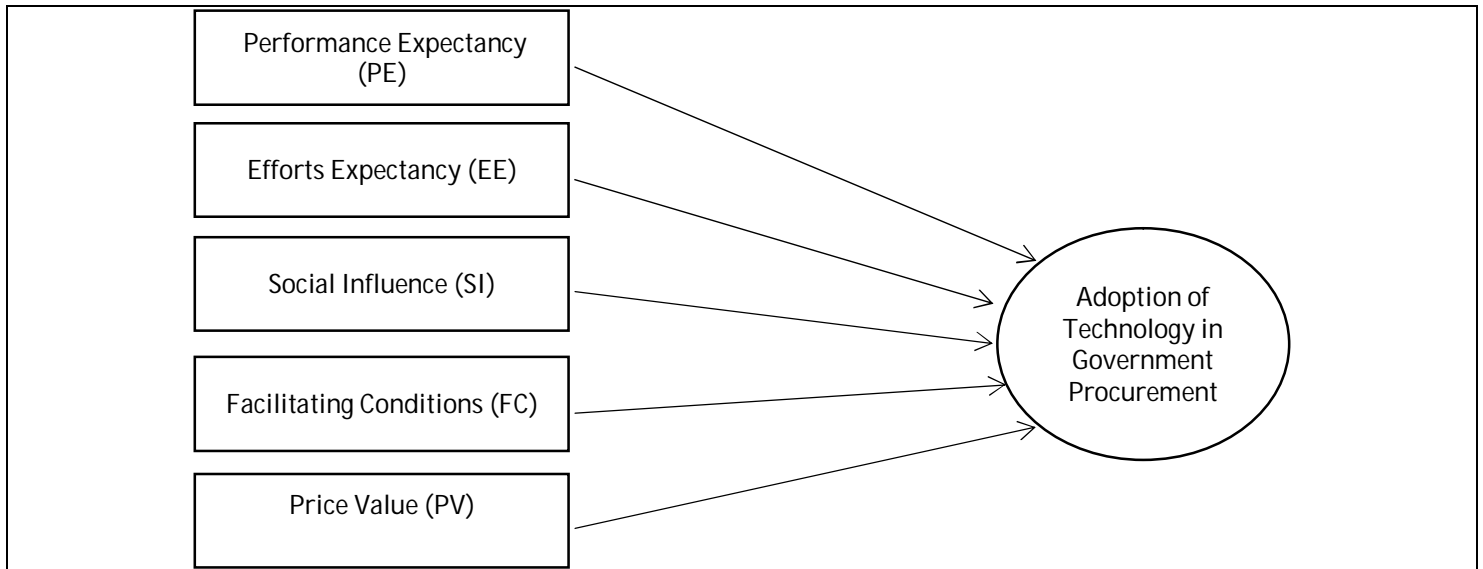


Figure 1

7. Anticipated Problems

There are several challenges that are anticipated when collecting data. One of the anticipated challenges is the concerns raised by the respondents regarding confidentiality of the responses they give. This will be resolved by having an introductory section in the questionnaire where the confidentiality of the responses given by each respondent will be assured. Another challenge is the fact that this study will be conducted in the public sector of one republic. The conclusions drawn from this study will be made with a lot of caution.

8. Conclusion

It is expected that some of the factors investigated will have a great influence on the adoption of technology in government or public-sector procurement. Some of the factors expected to have a strong significance include performance expectancy, effort expectancy and facilitating conditions. The other two variables are expected to have minimum or little effect on adoption of technology in public sector procurement.

The results of this study are expected to help other public-sector institutions and governments in other countries to make the right considerations when planning to adopt information technology in procurement. From the analysis of this study, the most important factors will be identified and hence the authorities in charge of public sector procurement will be expected to pay more attention to those factors. The study is also expected to give insights on the best procurement practices after the adoption of technology.

9. References

- i. Alraja, M. N. (2015). User Acceptance of Information Technology: A Field Study of an E-Mail System Adoption from the Individual Students' Perspective. *Mediterranean Journal of Social Sciences*, 6(6), 19-25.
- ii. Campbell, J. (2017). Chapter 7 Public Procurement Policy in South Korea: Approaches to Sustainable Development and Anti-Corruption. In *Public Policy and Governance*.
- iii. Chisenga, V. M. (2016). An Assessment of Factors that Influence the Use of Rejsekort in Denmark. *Master Thesis (cand.marc. It.)*. Copenhagen Business School.
- iv. Corsi, M. (2006). E-procurement Overview. *eG4M*. Università "La Sapienza" di Roma.
- v. Fang, Z. (2002). E-Government in Digital Era: Concept, Practice, and Development. *International Journal of The Computer, The Internet and Management*, 10(2), 1-22.
- vi. Fendos, J. (2017, January 24). *The History of a Scandal: How South Korea's President Was Impeached*. Retrieved from thediplomat.com: <https://thediplomat.com/2017/01/the-history-of-a-scandal-how-south-koreas-president-was-impeached/>
- vii. GanIntegrityInc. (2017). *South Korea Corruption Report*. USA: GAN INTEGRITY INC. Retrieved Oct 31, 2017, from <http://www.business-anti-corruption.com/country-profiles/south-korea>
- viii. Haber, S., & Stornetta, S. (1991). How to time stamp a digital document, Lecture Notes in Computer Science 537. (*Advances in Cryptology—CRYPTO' 90*), 437–455.
- ix. Heeks, R. (1998). *Information technology and public sector corruption*. Manchester: Institute for Development Policy and Management.

- x. Hsu, P., Kraemer, K., & Dunkle, D. (2006). Determinants of e-business use in us firms. *International Journal of Electronic Commerce*, 10(4), 9-45.
- xi. Jeng, D. J.-F., & Tzeng, G.-H. (2012). Social influence on the use of clinical decision support systems: revisiting the unified theory of acceptance and use of technology by the fuzzy DEMATEL technique. *Computers and Industrial Engineering*, 62(3), 819-828.
- xii. Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-60.
- xiii. Kauffman, R., & Mohtadi, H. (2004). Proprietary and open systems adoption in eprocurement: a risk-augmented transaction cost perspective. *Journal of Management Information Systems*, 21(1), 137-166.
- xiv. Lansiti, M., & Lakhani, K. R. (2017). The Truth about Blockchain. *Havard Business Review*, 1-11.
- xv. Martins, R. A., Serra, F. R., Leite, A. d., Ferreira, M. P., & Li, D. (2010). Transactions Cost Theory influence in strategy research: A review through a bibliometric study in leading journals. *Encontro da ANPAD*, 1-17.
- xvi. Meier, A., & Terán, L. (n.d.). E-Procurement. In U. o. Fribourg (Ed.), *Second International Seminar on eDemocracy and eGovernment. Quito - Ecuador* (pp. 1-34). Information Systems Research Group.
- xvii. OECD. (2016). *The Korean Public Procurement Service: Innovating for Effectiveness*. Paris: OECD Publishing. Retrieved from http://www.keepeek.com/Digital-Asset-Management/oecd/governance/the-korean-public-procurement-service_9789264249431-en#.WfrrrluCzIU
- xxviii. Pflaum, A., Bodendorf, F., Prockl, G., & Chen, H. (2017). The Digital Supply Chain of the Future: Technologies, Applications and Business Models Minitrack. *Proceedings of the 50th Hawaii International Conference on System Sciences*, 4179 - 4181.
- xix. Pilkington, M. (2016). *Blockchain Technology: Principles and Applications*. University of Burgundy, France.
- xx. Rahim, M. (2008). Identifying factors affecting acceptance of e-procurement systems: An initial qualitative study at an Australian City Council. *Communications of the IBIMA*, 3(2), 7-17.
- xxi. Rogers, E. M. (2010). *Diffusion of Innovations*. Simon and Schuster.
- xxii. Satyanarayana, J. (2007). *Concepts of e-Procurement*. Capacity Building workshop under NeGP.
- xxiii. Schapper, P., Rivolta, M., & Leipold, K. (2005). Authentication: International scope and non discrimination in government commerce vs. PKI. *Digital Evidence and Elec. Signature L. Rev*, 2.
- xxiv. Singh, G., Pathak, R., Naz, R., & Belwal, R. (2010). E-governance for improved public sector service delivery in India, Ethiopia and Fiji. *International Journal of Public Sector Management*, 23(3), 254-275.
- xxv. TheEconomist. (2017, Jan 25). *Declining trust in government is denting democracy*. Retrieved from Daily Chart: <https://www.economist.com/blogs/graphicdetail/2017/01/daily-chart-20>
- xxvi. Tornatzky, L., & Fleischer, M. (1990). *The process of technology innovation*. Lexington: Lexington Books.
- xxvii. UNOPS. (2010). Procurement from developing countries and economies in transition. *2009 Annual Statistical report on United Nations Procurement*.
- xxviii. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS QUART*, 27(3), 425-478.
- xxix. Venkatesh, V., Thong, J. Y., & Xu, X. (2012). CONSUMER ACCEPTANCE AND USE OF INFORMATION TECHNOLOGY: EXTENDING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY. *MIS Quarterly*, 36(1), 157-178.
- xxx. Welch, E. W., & Hinnant, C. C. (2003). Internet use, transparency, and interactivity effects on trust in government. *36th Annual Hawaii International Conference on System Sciences*.
- xxxi. Wescott, C. (2001). E-government in the Asia Pacific Region. *Asia Journal of Political Science*(9), 1-24.
- xxxii. Williamson, O. (1981). The economics of organization: The transaction cost approach. *American journal of sociology*, 87(3), 548-77.