

UNIVERSITY OF SOUTHERN QUEENSLAND



**THE POTENTIAL OF PUBLIC
E-PROCUREMENT TECHNOLOGY TO
REDUCE CORRUPTION IN PUBLIC
PROCUREMENT**

A Dissertation submitted by

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ABSTRACT

Public procurement, which accounts for almost 10 to 15 percent of Gross Domestic Product (GDP) in developed countries and almost 20 percent or more of GDP in developing countries, can be a mean for any governments to encourage broader reforms in terms of economic, technological, and social infrastructure improvements. Further, it can be a central instrument to assist in the efficient management of public resources. Corruption has hindered the desired efficiency in procurement process.

Corruption in public procurement is an international issue that is recognised by many government institutions and international organisations including the World Bank, United Nations (UN), Asian Development Bank (ADB), Organization for Economic Co-operation and Development (OECD), Transparency International (TI). It is a threat to economic and human development in all countries and is believed to be increasing at alarming rates, especially in developing countries. Public procurement processes go through different stages including project planning, product design and documentation, tender process, contract award, and accounting and auditing and each stage has a risk of corruption. Several governments have adopted Information and Communication Technologies (ICTs) as a tool to enhance transparency and accountability in the procurement process. The public e-procurement technology, one of the ICT tools, is seen as an essential tool for a sincere attempt to reform the government public procurement processes as well as to reduce the chances of corruption. In addition, it has other numerous perceived benefits that include increasing transparency and accountability, standardising and monitoring, enhancing fair competition amongst bidders, avoiding human interference, reducing human errors and personal discretion in purchasing decision, and maximising value for money.

Nepal is one of the most corrupt counties in South Asia according to Transparency International. Corruption in public procurement is a serious problem in Nepal where the process of awarding public contracts and tenders can be perverted by government officials and is subject to interference. Potential contractors (bidders) are believed to have also used their coercive power to win contracts. Government officers and bidders are involved directly or indirectly and advance their own personal interests.

In this regard, the government of Nepal introduced a public e-procurement to enhance transparency and accountability in public procurement.

In this backdrop, the main objective of this study is to explore perceptions on the potential of e-procurement to reduce corruption in public procurement, which is followed by the main research question, “*which factors are associated with the intent to adopt e-procurement technology as an anti-corruption technology?*”

This study employed the positivist paradigm to examine the intent to adopt e-procurement technology in government and to explore the potential of the technology to reduce corruption in government procurement. The population was drawn from the government departments and its registered bidders in Nepal. A field questionnaire survey was conducted to collect the quantitative data and the study used a convenience sampling approach as determined by the level of interest shown by the participants to respond to the survey. In the end, 46 government officers from seven government departments, and 220 government registered bidders responded by completing a questionnaire. The hypotheses were tested and results were analysed using the Partial Least Squares Path Modelling (PLS-PM) approach for government officer sample data and Structural Equation Modeling (SEM) approach for bidders sample data.

This study reviewed several theories and identified three theories including: Principal-Agent theory, Technology Acceptance Model, and Transaction Cost Theory being most relevant to anti-corruption studies. This study identified seven important anti-corruption constructs including: information asymmetry, monopoly power, trust, perceived usefulness, perceived ease of use, transaction cost, and transparency and accountability and one dependent construct: intent to adopt public e-procurement. This study developed a research model based on a review of three theories and seven anti-corruption factors linking to anti-corruption technologies. The research model was developed based on two stakeholder’s perceptions: those of government officers and government-registered bidders from Nepal.

The statistical results confirmed that the study model was valid and the results suggested that seven anti-corruptions construct were antecedents towards intent to adopt public e-procurement in terms of the perceptions of government officers. The results from the PLS-PM model for government sample data showed that the model explained 89% of the variations of intent to adopt e-procurement. The seven variables significantly influencing intent to adopt e-procurement were 'information asymmetry', 'monopoly power', 'trust', 'perceived usefulness', 'perceived ease of use', 'transaction cost', 'transparency and accountability'. Conversely, five variables were significant to the intent to adopt e-procurement on the perceptions of government registered bidders 'information asymmetry', 'monopoly power', 'perceived ease of use', 'transaction cost', 'transparency, and accountability'. Analysis of the results from the structural equation modeling (SEM) for bidder's sample data indicated that the model explained 57 % of variation of intent to adopt e-procurement. The overall results supported the proposed research model to evaluate the perceptions of the potential of e-procurement to reduce corruption in public procurement.

Overall, these research findings provide a clear guideline for developed and emerging countries with regards to adopting e-procurement technology for the purposes of reducing corruption in public procurement. This study demonstrated a high level of intent to adopt e-procurement having a positive and significant effect on reducing corruption in procurement that may help officials in the governments of emerging countries decide to tackle procurement reform. The main contribution of this study is that it provides a new body of scientific knowledge for governments, practitioners, policy makers, and international organisations (UN, WB, ADB, OECD, and TI) in their endeavours to combat corruption in government procurement processes.

CERTIFICATION OF DISSERTATION

I certify that the ideas, research works, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for another award, except where otherwise acknowledged.

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ABBREVIATIONS

ADB	Asian Development Bank
AGFI	Adjusted Goodness of Fit Index
ASV	Average Shared Variance
AVE	Average Variance Extracted
B2B	Business to Business
B2C	Business to Customer
CFA	Confirmatory Factor Analysis
CPI	Corruption Perception Index
CR	Composite Reliability
DOI	Diffusion of Innovation
DOR	Department of Road
e-Contract Management	Electronic Contract Management
EDS	Emerging and Developing Economics
e-government	Electronic Government
e-Informing	Electronic Informing
e-Intelligent	Electronic Intelligent
e-Markets	Electronic Markets
e-MRO	Electronic Maintenance Resource Planning
e-Ordering	Electronic Ordering
e-Procurement	Electronic Procurement
e-Reverse Auctioning	Electronic Reverse Auctioning
e-Sourcing	Electronic Sourcing
e-Submission	Electronic Submission
e-Tendering	Electronic Tendering
FCAN	Federation of Contractors Association of Nepal
G2C	Government to Customer
G2G	Government to Government
GDP	Gross Domestic Product
GEPSON	Government Electronic Procurement System of Nepal
GFI	Goodness of Fit Index
GTN	Global Trade Negotiations

IA	Information Asymmetry
ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
LCD	Least Developed Countries
MP	Monopoly Power
MSV	Maximum Shared Variance
NFI	Normed Fit Index
OECD	Organisation for Economic Co-operation and Development
PCLOSE	Closeness of Fit
PEU	Perceived Ease of Use
PLS-PM	Partial Least Squares Path Modelling
PLS-SEM	Partial Least Squares Structural Equation Modeling
PPMO	Public Procurement Monitoring Office
PPP	Public Procurement Processes
PU	Perceived Usefulness
R ²	Coefficient of Determination
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modelling
TA	Transparency and Accountability
TAM	Technology Acceptance Model
TC	Transaction Cost
UN	United Nations
UNDP	United Nations Development Programme
UNODC	United Nations Office on Drugs and Crime
UNOPS	United Nations Office for Project Services
WB	World Bank
χ^2	Chi-square

LIST OF PUBLICATIONS ARISING FROM THE RESEARCH

List of Refereed Book Chapters:

1. **Neupane, A.** Soar, J. and Vaidya K. 2014, *Anti-corruption capabilities of public e-procurement technologies: Principal-agent theory*, In Joseph Kelvin Bwalya, (ed.) *Technology Development and Platform Enhancements for Successful Global E-Government Design*, IGI Publishing (IGI Global), Hershey, PA. United States.
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10. Vaidya K., **Neupane A.** 2011, 'The potential of electronic procurement and other tools to combat corruption in public procurement in Nepal', *NRN Australia* 51-61 South Street Granville NSW 2142, 16th July 2011.
11. **Neupane, A.**, Vaidya, K. & Soar, J. 2011, 'The potential of public e-procurement technology to combat corruption: (An experience from developing and developed countries)', *5th International conference on "Information and Communication Technology (ICT) for Development and Education*, Kathmandu, Nepal, November 16-17.

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