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An Empirical Investigation of the Effect of E-Readiness Factors on Adoption of E-Procurement in Kingdom of Bahrain

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Abstract

Many scholars on E-procurement are investigating causes and factors to explain why the rate and speed of adoption is frequently very slow. This paper explores the organizational and environmental "E-Readiness" variables that might affect E-procurement adoption in Kingdom of Bahrain. Using Molla and Licker (2005)'s Perceived E-Readiness Model (PERM), this study investigated the effects of Perceived Organizational E-Readiness factors (POER) and Perceived External E-Readiness factors (PEER) on the adoption of E-procurement in Kingdom of Bahrain. Data were collected from 71 of ministries, authorities and some private companies. Using discriminant function, this research found that the external factors (Market Forces, Supporting Industries, and Government) affect mainly the initial adoption while the internal factor (Awareness, Commitment, Governance, Resources including human, business and technology resources) effect of the institutional adoption. The outcome of this research provides insights of factors to be considered at different adoption stage for a better E-procurement readiness in the Kingdom of Bahrain.

Keywords: E-Readiness, E-procurement, adoption, perceived E-Readiness model, PERM

1. Introduction

At the early 1990's a new technological mean of conducting business has emerged that is called E-business that was replacing traditional means of commerce with more sophisticated and developed ones. Last decade, E-procurement system emerged as a new concept since economists noticed its impact instead of traditional procurement systems. Developing countries including Kingdom of Bahrain recognize the benefits of adopting E-procurement and it becomes a top priority for countries seeking improvement and growth to adopt E-procurement system. Accordingly, Kingdom of Bahrain developed a national strategic plan that is called "e-Procure" through which they are striving for adopting E-procurement successfully to achieve a better quality of life. However, it is not fully applied across the whole ministries.

Therefore, this research is to explore the factors to be considered for a better adoption of E-procurement in Kingdom of Bahrain including both internal and external factors. Toward achieving these objectives, quantitative research method was adopted in which 71 online and paper based questionnaires were distributed among sample of ministries, authorities and some private companies.

The rest of the paper is organized as follows: first an overview about e- Procurement is presented, then a theoretical background about the E-Readiness is discussed, after that research model and hypotheses as well as research method and instrument are presented, then the results are discussed and finally the paper is wrapped up by a conclusion, recommendations and further works.

2. An Overview of E-Procurement

The emergence of ICT revolution has tremendously transformed current business commercial approaches and strategies. At the early 1990's a new technological mean of conducting business has emerged, E-business was replacing traditional means of commencing with more sophisticated and developed ones (Smart, 2010). Public E-procurement is classified as a B2B sort of E-business, where organizations (suppliers) provide goods and services to other organizations using ICT technologies and the internet.

Most organizations do not differentiate between the term purchasing/acquisition and the concept of E-procurement, while in fact both terms are not the same (MacManus, 2002). The dictionary of purchasing terms

defines public E-procurement as "the designated legal authority to advise, plan, obtain, deliver, and evaluate a government's expenditures on goods and services that are used to fulfill stated objectives, obligations, and activities in pursuit of desired policy outcomes.", while National Institute of Government Purchasing identifies acquisition as" The process of obtaining supplies, services, or construction through purchase, lease, or grants." (NIGP, 2013).

A comprehensive definition of e-procuring system is any technologies, automation tools, database systems, and network (commonly web-based) used in part of or all the purchasing process (Davila et al. 2003; Leipold et al., 2004; Croom & Brandon, 2005).

Donahue (2003) also defined E-procurement as a technology solution that facilitates corporate buying using the Internet. It has the power to transform the purchasing process because it pervades all of the steps identified. Here E-procurement is broadly defined to include e-design at the specification development stage of the purchasing process, ending with the supply manager's efforts to evaluate and rate supplier performance.

Boer et al. (2001) classified maturity level of E-procurement systems into six forms of E-procurement based on the E-procurement activity: **E-MRO** (maintenance, repair and operating materials) that is the way of using the network system to creating and approving purchasing requisitions, placing purchase orders and receiving goods and services ordered .It can be used by all the staff within the organization, **Web-based ERP** that is the way of ordering requested product and services by the authorize employees of the purchasing department using software to support that transactions, **E-sourcing** that is the way of searching and choosing supplier of specific item using the internet technology. By this way the purchaser can increase the competitiveness in tendering strategy and decrease the risk associated with purchaser, **E-tendering** that is the method of sending request for information and request for proposal to vendor and receiving the feedback from them, using new Internet technology devices, **E-reverse** auctioning. Usually the auction makes the supplier to sell goods and services to the buying organization .It is all about increasing and decreasing the price of the goods and services. Using the internet devices to reach equivalent of reverse auction .Its focuses on the values of the goods and services, and **E-inform** that is the process of collecting and distributing purchasing information from internal resources and to external resources by the Internet technology.

3. Theoretical Background of E-Readiness

E-Readiness is 'a measure of the degree to which a country, nation or economy may be ready, willing or prepared to obtain benefits which arise from information and information technologies' (Dada, 2006). In the context of business, E-Readiness can be defined as 'a measure of its e-business environment, a collection of factors that indicate how amendable a market is to Internet-based opportunities" Economist Intelligent Unit (2005). The Bridges Organization (2005) found that conducting E-Readiness assessment within countries is useful as it facilitates concrete planning and posters positive changes for country which is a useful starting point for developing counties (Dada, 2006). By looking to the literature, it is apparently that there are variety of E-Readiness tools with a range of questions, statistics, best practice benchmarking and historical analyses that were developed by many professional bodies such as the Asian Pacific Economic Cooperation APEC (2001), The Bridges Organization (2005), Economist Intelligent Unit (2005), McConnell International (2002), Press et al. (1998), etc.

On the other hand, many academic researchers investigated the organizational adoption of IT through developing empirical research models there were drawn from a wide variety of perspectives: such as organizational change perspective number of research models has been developed from different perspectives: such as organizational change perspective (Moreton, 1995; Orlikowski & Baroudi, 1991), managerial action perspective (Kraemer & King, 1981), the institutional perspective (Kling & Iacono, 1989; Orlikowski, 1993); the political and social perspective (Kling & Scacchi, 1982; Robey & Boudreau, 1999). However, there is a lack of consensus among the assessment tools as Molla and Licker (2005) stressed. They emphasized that there is a clear lack of appropriate model to investigate e-commerce adoption in developing countries.

To move from simple measurements to concrete action, it is important to consider both the micro and the macro level in which to consider both the organization involved in implementing the technology and the environment readiness which were clearly presented in Molla's (2004) research who developed with Licker a model that they called it Perceived E-Readiness model" (PERM) to include both internal and external factor for the IT adoption that is the base of this research.

4. Research Model and Hypotheses

The model applied in this research is called "Perceived E-Readiness model" (PERM) that was followed by many

researchers due to its inclusion of external and internal factors. The model is based on a study conducted by Molla and Licker (2005) in the United States of America to measure E-Readiness of adopting e-commerce in the developing countries. The model uses Interactionism imperative which works as a dynamic framework that will combine all other four perspectives. Throughout its stated factors, the model covers multi-perspectives including external factors and internal institutional aspects that will affect the readiness of adopting E-procurement. The model consists of two main constructs that will lead to adoption of E-procurement: the first construct is Perceived Organization E-Readiness (POER) which contains six factors relaying within the organization and that will affect the initial adoption of E-procurement. The second construct is Perceived External E-Readiness (PEER) which consists of three factors that represent external factors that will influence the adoption of E-procurement.

In perceived organization E-Readiness, the model measures factors within the organization such as commitment, governance, awareness, human resource, business resource and technology resource that will contribute to initial adoption of E-procurement. On the other hand, perceived external E-Readiness consists of three factors which are: market forces, government and supporting industries. Both constructs will affect initial adoption of E-procurement as shown in Figure 1.

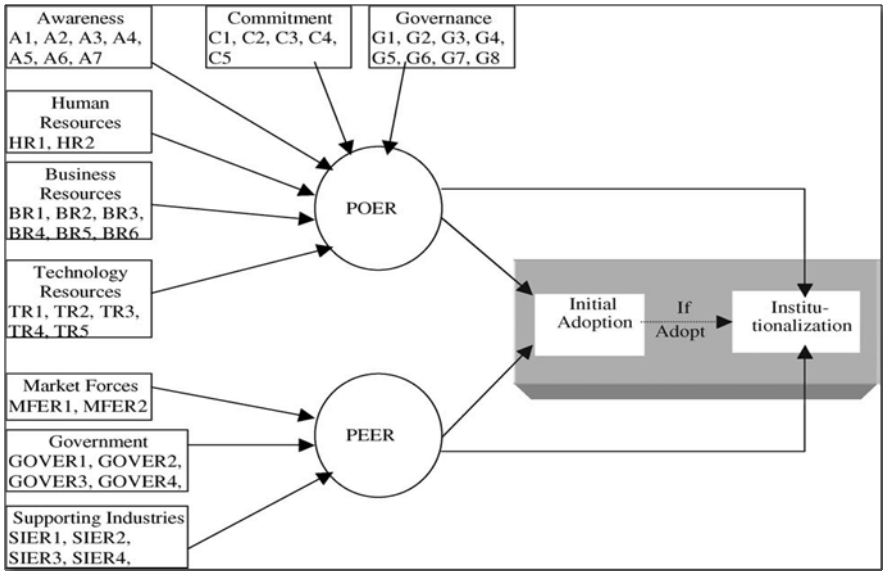

Figure 1. The PERM for assessing the E-procurement adoption (Molla & Licker, 2005)

The hypotheses of this research were derived from Molla and Licker's model. They identified two main constructs POER and PEER, each consists of factors. The model was applied in several studies to measure E-Readiness for adopting e-commerce, but we have used it in this study to measure E-Readiness of adopting E-procurement in the Kingdom of Bahrain as both e-commerce and E-procurement fall in the same field with the same environmental characteristics. They differentiate between initial adopters and institutionalized adopters according to technologies, resources and operational reasons. Thus, Perceived Organizational E-Readiness (POER) and Perceived External E-Readiness (PEER) are hypothesized to have significance to level of adoption of E-procurement. They classify POER construct as the most influential into embracing E-procurement. POER construct refers to how much the ministry believed in that the ministry had awareness, commitment, resources, and governance to adopt E-procurement. Therefore, the following hypotheses were stated:

- POER1: Perceived Organizational E-Readiness has significance on initial adoption of E-procurement.
- POER2: Perceived Organizational E-Readiness has significance on institutionalized adoption of E-procurement.

They identified six internal factors that will influence the level of adoption in POER construct:

- Awareness (A) that is the comprehension of the surrounding environment of E-procurement. Awareness can be achieved through keen understanding of ministry structure, technologies, requirements, benefits and threats as well as forecast of future trends and their impact.

- Commitment (C) that is the organizational strategic support and energy towards E-procurement. Moreover, commitment refers to having a clear vision that is supported by top management. Commitment refers to how will the ministry accept and support E-procurement ideas and projects.
- Human Resource (HR) that is human resource availability and accessibility of staff and employees that possess certain essential IT skills and knowledge important to carry on with E-procurement initiatives and projects. Researchers found that the more the staffs within ministries are knowledgeable and skilled about IT, the more initial adoption is likely to occur, and vice versa the lack of resources will cause E-procurement systems to fail (Heeks, 2002)
- Technological Resource (TR) that is a simple enabling mechanism that will decide on how the processes of certain task will be under taken. That is how well the ministry is computerized and the level of flexibility of current systems applied, and the ministries 'experience in network based systems.
- Business Resource (BR) that includes all the tangible assets capabilities of a ministry and most of it intangibles. Business resources include communication, openness, existing relationships, funding of E-procurement projects as well as risk taking behavior. Researches identify business resources as an empowering attribute that will contribute and add up to E-procurement organizational E-Readiness.
- Governance (G) that is governance within an institution as tactical and strategic model developing countries put to monitor their activities and E-procurement initiatives.

On the other hand, they defined PEER as the extent to which supporting industries, market forces and government are willing and ready to help in the E-procurement implementation. PEER construct is hypothesized to have significance on level of adoption of E-procurement; therefore following hypotheses were stated:

- PEER1: Perceived External E-Readiness have significance on initial adoption of E-procurement.
- PEER2: Perceived External E-Readiness have significance on institutionalized adoption of E-procurement.

For PEER construct to have significance on level of adoption of E-procurement, they defined three factors that will affect Perceived External E-Readiness:

- Government E-Readiness which will assess how the nation and its various institutions in the country are prepared to embrace, facilitate, and support E-procurement requirements.
- Market Force E-Readiness which emphasizes that associated partners in conducting E-procurement transactions such as suppliers and other ministries will actually allow an electronic conducts of E-procurement transactions.
- Supporting Industries E-Readiness: that emphasized that the existence of supporting industries such as finance, IT industry whose activities will affect E-procurement in developing countries.

5. Research Methodology and Instrument

In order to achieve research objective, quantitative approach was followed in which questionnaires has been distributed to a sample of 100 employees within various governmental entities to measure E-Readiness of those entities in adopting E-procurement and 71 responses were collected.

6. Validity and Reliability of Instrument

A validity test was conducted for the items of the 9 factors (Awareness, Human resources , Business resources, Technological resources, Commitment, Governance, Market forces E-Readiness, Government E-Readiness, Supporting industries E-Readiness) and the items with value less than the cut-off level 0.5 (Hair et al., 1998) were removed , which were (A1, loading =.476), (A3, loading =.452), (BR4, loading =.423), (BR5, loading =.449), and (GVeR4, loading =.183). In addition, the internal consistency reliability was tested. Most of the factors have the alpha coefficients that is greater than the acceptable level that is 0.7 or more (Nunnally, 1978) except one factor that is awareness which has a less than the cut-off level (0.7) which is 0.564. For this case, the researchers applied many options of deleting items to reach into the cut-off level. Accordingly, we reached into an option where the Alpha value reached into 0.618 that is also accepted as Bowling (2002) stressed that the internal consistency is accepted when the values that are greater than or equal to 0.5.

7. Analysis of the Data

To analyze collected data, SPSS statistical software was used to analyze the collected data. Mainly Discriminate Function Analysis (DSA) was used to measure the factors that affect E-Readiness of governmental entities in adopting E-procurement.

8. Sample Description

The questionnaire targeted a sample of 100 employees from five different government entities; the responses that received were 71 responses. The questionnaire was distributed on paper as well as online. The research sample is categorized into three categories (79% initial adopter, 18% institutional adopter and 3% non-adopter) as shown in Figure 2.

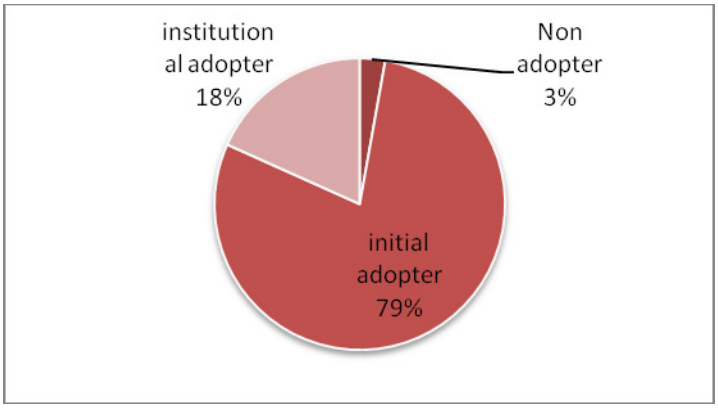

Figure 2. Dependent variable categories

9. Results

Mainly Discriminate Function Analysis was used to measure the factors that affect E-Readiness of governmental entities in adopting E-procurement. Discriminate Function Analysis (DFA) is defined as a kind of analysis that consist of discriminate functions to show the best discrimination between two groups based on several predictive variables (Büyüköztürk and Çokluk-Bökeoğlu, 2008). This analysis is the best in our case because discriminate function analysis is used when the dependent variable consists of several groups. When the variable has two categories it is two-group discriminate analysis while multiple discriminate analysis when more categories are involved (Moutinho and hutcheson 2011).

With the following inputs we run DFA using SPSS:

Categorical dependent variable

E-procurement adoption status has the following maturity level which can be categorized into three categories as shown in Figure 3.

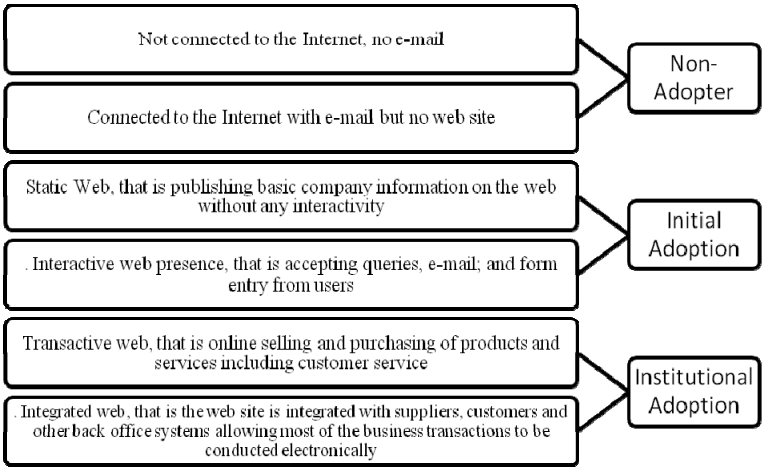

Figure 3. Dependent variable categories

On that basis, we have three groups, and therefore DFA should provide two functions.

Interval independent variables

- POER – Perceived Organizational E-Readiness.
- PEER – Perceived External E-Readiness.

Table 1. shows that Wilkes's lambda is significant by the F test for all variables (Perceived Organizational E-Readiness and Perceived External E-Readiness) and no variable will be dropped from the model.

Table1. Tests of equality of group means

	Wilks' Lambda	F	df1	df2	Sig.
POER	.652	6.943	5	65	.000
PEER	.807	3.102	5	65	.014

Table 2. shows the functions generated by the model and both are significant.

Table 2. Ignificance table

Test of Function(s)		Wilks' Lambda	Chi-square	df	Sig.
dimension 0	1 through 2	.542	40.390	10	.000
	2	.853	10.472	4	.033

Table 3. shows indication of the predictors of membership by calculating the discriminate loading for each variable per each function.

Table3. Structure Matrix (discriminant loading)

	Function	
	1	2
POER	.950*	.313
PEER	.407	.913*

From function1: POER is identified as a significant and positive contributor to institutionalization of E-procurement, which supports the hypothesis of POER2

From function2: PEER is identified as a significant and positive contributor to Initial adoption of E-procurement, and this supports the hypothesis of PEER3

As a result, the Perceived External E-Readiness (PEER) factors effect mainly on the initial stage of adopting while Perceived Organizational E-Readiness (POER) factors affect the institutionalized adoption stage of E-procurement.

With the following input we ran the DFA using SPSS:

Categorical dependent variable

E-procurement Adoption status: 1 for Non-Adopter, 2 for Initial Adoption, 3 for Institutional Adoption.

Interval independent variables

The model generated 2 independent variables which are:

- **Internal variable** (Perceived Organizational E-Readiness) and it is consists of:
  - Awareness;
  - Commitment;
  - Governance;
  - Resources (Human Resources, Business Resources, Technology Resources).
- **External variable (**Perceived External E-Readiness) and it is consists of:
  - Market Forces E-Readiness;

- Supporting Industries E-Readiness;
- Government E-Readiness.

Table 4. shows that Wilks's lambda is significant by the F test for all variables except for Human Resources and Supporting industries

Table 4. Tests of equality of group means of the factors

	Wilks' Lambda	F	df1	df2	Sig.
Awareness	.764	4.016	5	`	.003
Human resources	.864	2.040	5	65	**.085**
Business resources	.722	5.006	5	65	.001
Technology resource	.823	2.789	5	65	.024
Commitment	.703	5.504	5	65	.000
Governance	.805	3.150	5	65	.013
Market forces	.840	2.484	5	65	.040
Government	.821	2.844	5	65	.022
Supporting industries	.936	.882	5	65	.**498**

Accordingly, the results support two hypotheses which are:

- POER: Perceived Organizational E-Readiness will have a significant on institutionalized adoption of E-procurement.
- PEER: Perceived External E-Readiness will have a significant on initial adoption of E-procurement. More specifically, in POEP the following sub-factors were significantly affecting which are in sequence: Awareness, Business resources, Technology resource, Commitment and Governance and in PEER, the following sub-factors were significantly affecting which are in sequence: Market forces, Government and Supporting industries.

10. Discussion

To measure E-Readiness we used discriminate function analysis. The main result revealed that 79% of government entities and ministries are initial adopters, 18% of them are institutional adopters and only 3% are non-adopters. The findings revealed that most effect on adoption is related to internal factors and external factors have less influence over initial adoption.

First, we have tested how each construct is going to influence adoption of E-procurement and then we have tested how each factor within each construct contributes to the adoption of E-procurement. The test of equality of group means shows that both main constructs POER and PEER are significant by the F test were sig. value is below 0.05. Then, we interpret how each factor within each construct influence adoption of E-procurement and the following are the results:

1). POER: awareness, commitment, business resource, technology resource, and governance had a significant effect on initial adoption of E-procurement. However, human resources had no significant effect on adoption of E-procurement.

2). PEER: both market forces and government had a significant effect on adoption of E-procurement. However, supporting industries had no significant effect on adoption of E-procurement.

Molla and Licker (2005) stressed on the followings for each of the above constructs:

- Commitment: In regards to the first construct POER, results reveal that commitment is most influential factor contributing to the adoption of E-procurement. Ministries management should be supportive from all aspects to E-procurement initiative and they have to support their vision and provide leadership to E-procurement ideas and projects.
- Awareness: Ministries should widely spread awareness of E-procurement concepts in the ministry, an understanding of E-procurement models, E-procurement technologies, and also there should be comprehension of threats and benefits projected from E-procurement.
- Technological resources: ICT is the basis of any E-procurement transaction; therefore ministries should strive to provide a well technological environment that will embrace E-procurement projects. Moreover, ministries should provide flexible systems and networks.

- Business resources: Ministries must own set of assets both tangible and intangible that will enable the implementation of E-procurement. The capabilities within ministries such as communication and risk taking behavior will contribute to the adoption of E-procurement
- Government: In regard to the second construct PEER, results show that the most influential external factor affecting adoption of E-procurement is government. Preparing nations to receive and embrace the change from traditional procuring system to E-procurement is a must, ministries should coordinate with the government to ensure that diverse institutions of the nation are supporting E-procurement and ensuring on having regulations in this wise.
- Market forces: Ministries have to ensure that there is a connection and communication between suppliers and different partners of a governmental entity. The ministries therefore must define clearly a communication strategy to ensure that its partners are willing to conduct transactions online.
- Governance: Ministries should have a strategic, tactical and operational business model that will help them in carrying out their tasks and govern their activities.

11. Conclusion, Recommendation and Future Works

This research identifies internal organizational factors that affect the initial adoption of E-procurement and other external factors that will influence adoption of E-procurement.

The findings of this research revealed that internal organizational factors such as Awareness, Commitment, Governance, business and technological resources will lead to the adoption of E-procurement in various governmental entities. However, results revealed that even though there is a big impact of POER factors on the adoption of E-procurement, human resource did not have a significance impact on adopting E-procurement. On the other hand, test results revealed that technological resources had the biggest impact on adopting E-procurement.

Furthermore, respondents' results show that ministries adoption of E-procurement is also affected by other external factors, PEER factors such as government and market forces that had significance on the adoption of E-procurement.

The results of this research consist of several implications for procurement's employees in the government entities and the government. It can help the government to understand the external and internal factors which will affect the implementation of E-procurement project in the future starting from non adoption to institutional adoption level. Specifically, the result can help the government overcome obstacles by understanding the factors that affect negatively and positively on the project.

According to the results obtained, the following recommendations are suggested:

- The government should focus on the external factors (Market Forces, Supporting Industries, and Government) for initial adoption.
- The government should focus on the internal factor (Awareness, Commitment, Governance, Resources (Human Resources, Business Resources, Technology Resources) for institutional adoption.
- Increase commitment of governmental entities, management support towards E-procurement initiatives, support their vision and provide leadership to E-procurement projects.
- Increase level of awareness through raising the level of understanding of E-procurement threats and benefits and also understanding of E-procurement models and technologies.
- Provide wide supportive ICT environment to E-procurement projects.
- Provide the necessary business tangible and intangible assets to support E-procurement projects.
- Improve the role of government in equipping the nation and other institutions are supportive of E-procurement projects, and ensure that there is communication between them.
- Ministries should have a strategic, tactical and operational business model that will help them in carrying out their tasks and govern their activities.

This research has to be extended it to include all entities in the public sector. Also, other research is needed to investigate the effect of E-procurement adoption after implementation on the stakeholders.

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References

Asian Pacific Economic Cooperation APEC. (2000). E-*Commerce Readiness Guide, Electronic Commerce Steering Group.* Retrieved from http://publications.apec.org/publication-detail.php?pub_id=647

Boer, L. D., Harink, J., & Heijboer, G. (2001). *A model for assessing the impact of electronic procurement*. Retrieved from: http://doc.utwente.nl/42447/1/EPforms.pdf.

Bowling, A. (2002). *Research Methods in Health* (2nd ed.). Buckingham: Open University Press.

Büyüköztürk, S. B., & Çokluk-Bökeoğlu, O. C. (2008). Discriminant Function Analysis: Concept and Application. *Eurasian Journal of Educational Research, 33,* 73–92.

Bridges.org. (2005). Comparison of e-readiness assessment models and tools. Cape Town: Bridges.org. Retrieved from http://www.bridges.org/files/active/0/ereadiness_tools_bridges_10Mar05.pdf

Croom, S. R., & Brandon, J. A. B. (2005). Key Issues in E-procurement: Procurement Implementation and operation in the Public sector. *Journal of Public Procurement, 5*(3), 367–387.

Dada, D. (2006). E-Readiness for Developing Countries: Moving the focus from the environment to the users. *EJISDC, 27*(6), 1–14.

Davila, A. D., & Gupta, M. G., & Palmer, R. P. (2003). Moving Procurement Systems to the Internet: The Adoption and Use of E-procurement Technology Models. *European Management Journal, 21*(1)*,* 11–23. http://dx.doi.org/10.1016/S0263-2373(02)00155-X

Donahue, J. F. (2003). Supply management and E-procurement: creating value added in the supply chain. *Industrial Marketing Management, 32*(1)*,* 219–226. http://dx.doi.org/10.1016/S0019-8501(02)00265-1

Economist Intelligent Unit. (2005). The 2005 E-Readiness ranking: A white paper from Economist Intelligent Unit. Retrieved from http://graphics.eiu.com/files/ad_pdfs/2005Ereadiness_Ranking_WP.pdf

Kraemer, K. L., & King, J. L. (1981). Computing Policies and Problems: A Stage Theory Approach. *Telecommunications Policy, 5*(3), 198–215. http://dx.doi.org/10.1016/0308-5961(81)90004-5

Kling, R., & Scacchi, W. (1982). The Web of Computing: Computer Technology as Social Organization. *Advances in Computers, 21*(1), 1–90.

Leipold et al. (2004). The World Bank E-procurement for Selection of Consultants: Challenges and Lessons Learned. *Journal of Public Procurement, 4*(3), 319–339.

McConnell. (2002). *Defining and Achieving Your E-Fitness Goals*. Retrieved from http://mcconnellinternational.com/

Molla, A. M., & Licker, P. S. (2005). E-Commerce adoption in developing countries: a model and instrument. *Information & Management, 42*(6), *877*–899. http://dx.doi.org/10.1016/j.im.2004.09.002

Molla, A. (2004). The impact of E-Readiness on e-commerce success in developing countries: Firm level evidence. *Development Informatics Working Paper No. 18, IDPM, the University of Manchester.* Retrieved from http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di

Press et al. (1998). An Internet Diffusion Framework. *Communications of the AC, 41*(10), 21–26. http://dx.doi.org/10.1145/286238.286242

Moreton, R. (1995). Transforming the organization: the contribution of the information systems function. *Journal of Strategic Information Systems, 4*(2), 149–162. http://dx.doi.org/10.1016/0963-8687(95)80022-I

Moutinho, L., & Hutcheson, G. (2011). *The SAGE dictionary of quantitative management research*. London: SAGE Publications Ltd.

MacManus, S. A. M. (2002). Understanding the incremental nature of E-procurement Implementation a the state and local levels. *Journal of Public Procurement 2*(1), 5–28.

National Institute of Government purchasing (NIGP). (2013). *Public Procurement Dictionary of Terms.* Retrived from http://www.globalpublicprocurement.org/Resources/Glossary/

Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). New York: McGraw-Hill.

Orlikowski, W. (1993). CASE as organizational change: investigating incremental and radical changes in system development. *Management Information Systems Quarterly, 17*(3), 309–340.

Orlikowski, W. J., & Baroudi, J. J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research, 2*(1), 1–28. http://dx.doi.org/10.1287/isre.2.1.1

Robbey, D., & Zmud, R. (1992). Research on the Organization of End-User Computing: Theoretical Perspectives from Organization Science. *Information Technology and People, 6*(1), 11–27.

Rob, K., & Iacono, S. (1989). The Institutional Character of Computerized Information Systems. *Information Technology & People, 5*(1), 7–28.

Smart, A. S. (2010). Exploring the business case for E-procurement. *International Journal of Physical Distribution & Logistics Management, 40*(3), 181–201.