Implementing e-Procurement Initiatives: Impact of Organisational Learning across the Public Sector

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Abstract

This paper presents the results of a literature survey and proposes a model of organizational learning factors (OLFs) that are likely to impact the success of a technological innovation such as e-Procurement. Implementing e-Procurement initiatives requires the public sector agencies to have the organizational and management ability and flexibility to learn and share the lessons in regards to the new systems and technology and adjust themselves to new procurement practices and processes in a timely fashion. It is believed that this study will yield several insights and better understanding of the organizational learning factors that impact the level of user and supplier satisfaction leading to e-Procurement implementation success.

Keywords: organisational learning, implementation perspectives, public sector, e-Procurement initiative

Introduction and Background

Although there are many definitions of e-Procurement and confusion exists in defining the term (Vaidya et al., 2004; World Bank, 2003; Murray, 2001), e-Procurement is basically a tool that enables procurement activities such as sourcing, ordering, commissioning, receipting and making payment. In order to avoid confusions, this paper will use the "first-level" definition of e-Procurement provided by the World Bank (2003) which states that "electronic Government Procurement (e-GP) is the use of information and communication technology (especially the Internet) by governments in conducting their procurement relationships with suppliers for the acquisition of goods, works, and consultancy services required by the public sector". Although, e-Procurement involves a set of technology solutions such as e-Tendering, e-Auction or Reverse Auction, e-Catalogue/Purchasing, e-Marketplace and e-Invoicing etc. that concentrate on different key areas of procurement, this paper will refer to the full (end-to-end) e-Procurement system rather than any specific e-Procurement tool.

The second level definition of theWorld Bank (2003) differentiates between e-Tendering and e-Purchasing. While e-Tendering is the "acquisition of high value, low volume goods, works and services by seeking bids via a public process followed by the evaluation of bids and award of contracts", e-Purchasing is the "acquisition of low value, high volume goods, works and consulting services by direct quote in the open market or from pre-qualified suppliers and payment for the purchase" (IADB, 2002). Furthermore, while e-Tendering involves six processes of "disclosure, download, clarification, upload, opening and tracking", e-Purchasing is based on transactional modules and involves three processes of "pre-qualification; best quotation, reverse auction, catalogue; and ordering and payment" (World Bank, 2003). However, there seems to be some overlap. According to the World Bank (2003), a few or all functionalities of the e-Tendering system can be used the in the pre-qualification process of an e-Purchasing system in order to shortlist the companies being qualified for RFQ/RFP, reverse auctioning, or catalogue-based shopping. Having defined e-Procurement, it is also important to define the term "implementation".

What is implementation? As with e-Procurement, implementation has been defined in different ways. A typical general definition from the Information Systems (IS) literature, states that implementation is "an effort beginning with the first thought of developing a system and not ending until the project is completed or abandoned" (Ginzberg, 1979, p. 408). However, Chan and Swatman (1998) believe that IS implementation is best described as a process of organisatinonal change that extends over a considerable period of time. The implementation of an e-Procurement initiative involves deployment of e-Procurement software, content and site testing, user training, establishment of workflow and approval rules and overall deployment activities (KPMG, 2001). In this context, e-Procurement implementation can be regarded as an ongoing process where organizational learning can take place in terms of streamlining the procurement processes and practices, integrating systems and technology and improving organization and management. This description will guide the selection of some e-Procurement initiatives in the public sector for the purpose of this study.

In the following sections, this paper presents the literature that discusses organizational learning issues in regards to e-Procurement implementation. Following the methodological approach, a survey of eleven major e-Procurement initiatives in Australia, the UK and USA has been presented in order to identify the Organisational Learning Factors (OLFs) and research model is presented. The paper is concluded with discussion of the future research in this area and implications of this study to the professionals and practitioners who are in the process of implementing e-Procurement initiatives in the public sector.

Literature Background

Although there is abundance of practitioner literature on the benefits to be achieved after the implementation of a particular "brand" of e-Procurement solution providers such as SAP, Ariba, Lawson, Oracle and so on, limited analysis of the success of e-Procurement can be found in recent academic literature (Vaidya et al., 2004a). While there has been some studies on the impact of e-Procurement (Segev et al., 1998), measurement of benefits of e-Procurement (BuyIT, 2002; Tridas and Kekre, 2002), value of e-Procurement (Subramahiam, 2003); and adoption of e-Procurement models (Devila et al., 2003), limited empirical research has been conducted on e-Procurement

implementation in the public sector (Vaidya et al., 2004b; Croom and Brandon-Jones, 2004). Furthermore, there is very little research available that investigates the implementation of e-Procurement initiative from the organizational learning point of view. In this regard, organisational learning can be viewed as organisational activities that improve the chances of success of the implementation of e-Procurement initiatives which cannot be achieved at an individual level. Scott & Vessey (2000) regard engaging in organizational learning as a way to address e-Procurement implementation failures because of the newness of the technology.

Fiol and Lyles (1985) define organizational learning as a process of improving organizational actions through better knowledge and understanding. Organizational learning can occur through problem solving—identifying and resolving implementation failure factors that occur in the execution of day-to-day organizational activities. While success and failures are usually thought of as outcome variables , organisational learning is a process (Pentland, 1995) during which information and knowledge are acquired, created, interpreted, distributed, stored, and retrieved (Stein and Zwass, 1995). As the IT adoption process can be described as a learning process (Attewelll, 1992), e-Procurement initiative implementations should be viewed as exercises in organisational learning. It is therefore important to investigate both success research and failure research and distill the experiences with both category of implementations and, cross-check and synthesize the results into a comprehensive framework.

While Sitkin's (1992) theory of intelligent failure attempts to provide the answer, the model has recently been adapted as describing how to "learn from failure" (Scott & Vessey, 2000). Though there have been very little studies from e-Procurement perspective, some studies relating organisational learning to failures can be found in the IS literature. Scott & Vessey (2000) view organisational learning as a series of processes interspersed with "small" successes or failures. According to the authors, organisations will sometimes fail, giving them opportunity to learn from their failures. They further reason that the experience of failure produces learning readiness and if the cause of the failure is determined, organisational learning takes place.

According to Argyris (1982), organizations find it difficult to learn lessons from problems and seldom question the underlying basis of their own problems. Soete and Weehuizen (2003) further support this notion that public sector organizations often lack innovation and are resistant to change – they tend to emphasize conformity and defend status quo instead of focusing on creativity, improvement and change. This is especially evident when implementing innovative information technologies such as e-Procurement systems. As the implementation of e-Procurement initiatives in the public sector demands exchange of information within and among users (specialist-users and end-users) and suppliers (large suppliers and local/regional SMEs), the procurement organization must have capacity to exercise organizational learning and share the lessons learnt. However, despite many examples of public sector e-Procurement failures in the popular business press (Vaidya et al., 2004), organizations do not document and share the lessons learnt pertaining to the failed e-Government implementations because organizations are interested to publicize only successes (Subramanian & Sachdeva, 2003) and are apparently silent on failures, making it difficult to researchers to obtain data (Sauer, 1999).

Building a Conceptual Framework

The implementation of an e-Procurement initiative may be viewed from a number of perspectives. A report commissioned by the Department of Premier and Cabinet (S&A, 2003) makes the point that e-Procurement should not be viewed in isolation as a function to be addressed on its own. A number of studies have been conducted in the recent years to categorize and generate models of the factors which influence e-Procurement initiative success and failures. e-Procurement research has included a variety of constructs and measures in understanding and predicting implementation success (Vaidya et al., 2004, CGEC, 2002; OSD, 2001, DOF, 2001).

A CGEC study (2002) confirmed that a significant portion of the initial value proposition often is not ultimately delivered due to problems related to technology, business process, and/or people/organizational issues. The Local Authority Strategy for eProcurement report (IBM, 2003) has identified the three areas where e-Procurement implementation strategy should be focused to ensure that the required practices, processes and systems are developed and rolled out in a consistent manner across the public sector. As such, the three areas namely 'organization and management', 'practices and processes' and 'systems and technology' have been termed as "implementation perspectives" for the purpose of this study. e-Procurement organizational learning in this regard should be defined as a process of identifying and improving the implementation factors that are likely to impact the success of an e-Procurement initiative. The overall conceptual model for this study (figure 1) as presented below will serve as the basis for the development of propositions on the impact of Organisational Learning Factors (OLFs) on implementation factors, and in turn, on the success of an e-Procurement initiative.
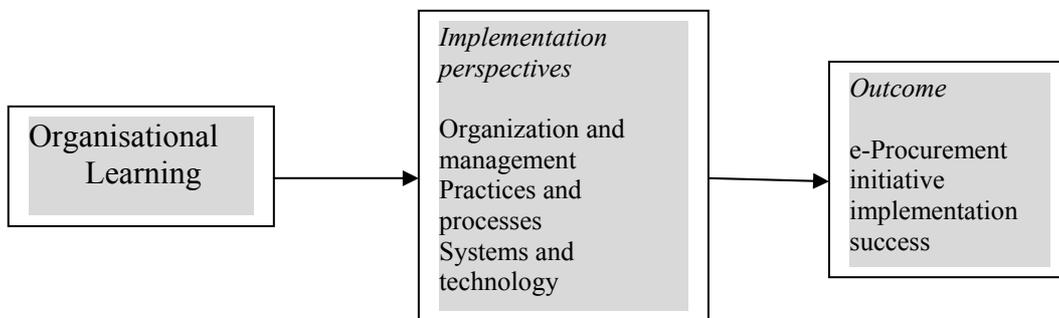
Figure 1: Conceptual framework

Each of these perspectives highlights important aspects of the implementation of e-Procurement initiative process. However, there has been no single, coherent theoretical framework that covers the complexity of the entire process as yet. It appears that the difficulty of establishing a single e-Procurement adoption and implementation model stems from the diversity of e-procurement applications across various organisational domains, diversity of e-Procurement system's adoption and buyers and as well as its impact on inter-organisational systems and internal business processes. Furthermore, many organizations need advice and guidance about proceeding with this new technology. Without a set of organizational learning factors, it seems impossible to identify the barriers to the progress of implementing e-Procurement initiatives and

managing the risks associated with the implementation. In this regard, the research question for this paper is as follows:

What are the impacts of organizational learning on the success of e-Procurement initiative implementations in the public sector?

Methodology and a Survey of Organizational Learning Factors (OLFs)

Literature survey is defined as "the documentation of a comprehensive review of the published and unpublished work from secondary sources of data in the areas of specific interest to the research" (Sekaran, 1992, p37). The aim of this paper was to analyze a number of e-Procurement initiatives, in order to investigate whether a general set of Organizational Learning Factors (OLFs) for e-Procurement existed. While the use of in-depth case studies of e-Procurement initiatives in the public sector would ideally have suited our research purpose, time and financial restrictions limited our study to use multiple case studies by literature survey to identify major cases in order to allow us to come up with a set of OLFs.

Through a survey of the available e-Procurement literature, assessment or evaluation reports of eleven e-Procurement initiatives were identified that provide answers to the research question. These eleven documents were identified through the Internet search of key words and phrases containing either the phrase "e-Procurement lessons" and "organizational learning" or other equivalent words and phrases. The focus of the survey presented in this paper was the identification of the generic and critical organizational learning factors that can be learnt from implementations across the e-Procurement value proposition in the public sector. The methodological phases are composed of the following five phases as shown in the table below (Table 1).

Phases	Actions
I (Research design	Defined research subject and scope, collected and analysed relevant literature
II (Data collection)	Located 14 research documents and identified the OLFs in the literature
III (Data analysis)	Data were divided and conceptualized
IV (Ratings and Ordering)	The identified OLFs were rated and ordered according to the number of citations in the literature
V (Categorization)	The OLFs were categorized according to the conceptual model

Table 1: The methodological phases

In the table below (table 2), a survey of e-Procurement Organisational Learning Factors (OLFs) is presented. The lessons learnt are rated according to the number of citations present in the specialized literature and the assessment/evaluation reports of the initiatives.

OLFs (No. of citations)	PLS Ram-Boll 2000	KPMG 2001	DIR 2001	OSD 2001	OGC 2002	APA 2002	S&A 2003	AGV 2003	AOT 2003	NePP 2003	ePS 2004
Recognize the importance of change management (4)			√		√		√				√
The "Big-bang" strategy is riskier than phased strategy (4)	√			√			√	√			
Have a flexible supplier adoption approach (3)	√		√		√						
Disciplined business case and pilot projects are necessary (7)	√		√		√	√	√	√		√	
Collect baseline data and measure performance (5)		√	√	√			√	√			
An effective communication plan is necessary (5)	√				√	√			√	√	
Manage user expectations (4)				√				√		√	√
Resources and multi-skills should not be underestimated (5)	√			√	√			√		√	
Risk analysis and contingency planning is important (4)				√		√		√		√	
Have a clear vision of aims and objectives (7)	√		√			√		√	√	√	√
Audit system for security and data for integrity (4)			√	√				√	√		

Table 2: Survey of e-Procurement OLFs

For this purpose, publicly available assessment/evaluation reports (2000 - 2003) of the following major e-Procurement initiatives in the UK, USA, Australia and European Union were reviewed:

- Electronic public procurement pilot projects in the European Union (PLS-Ramboll, 2000)
- University of California, USA, (KPMG, 2001)
- General Services Commission, USA, (DOIR, 2001)
- Enhanced Comm-Pass Initiative, Commonwealth of Massachusetts, USA, (OSD, 2001)
- The ePilot Project, UK (OGEC, 2002)
- Commonwealth's Electronic Procurement System - eVA, USA, (APA, 2002)
- Department of Premier & Cabinet, Australia,(S&A, 2003)
- National e-Procurement Project, UK (NePP, 2003)
- eProcurement Scotl@nd, UK (ePS, 2004)
- Electronic Commerce for Procurement, Australia, (AGV, 2003)
- Government Electronic Marketplace, Western Australia, (AOT, 2003)

e-Procurement Organisational Learning Factors (OLFs)

This section highlights the issues experienced by various e-Procurement initiatives as identified in the above survey. It is the perspective of this paper that these factors can be termed as Organizational Learning Factors given the influence of organizational learning on the lessons learnt.

Recognize the importance of change management

The assessment report (DIR, 2001) identified that change management standards had not been met in the case of GSC's e-Procurement project. Among the key lessons the Food Standards Agency learnt was the fact that change management could be a major problem and could take longer than expected (OGC, 2002). Similarly, West Lothian Council identified its key task as overseeing the change management issues (ePS, 2004). S&A (2003) regarded change management and training as the most important implementation issue and concluded that most other issues are also related to change management.

The "Big-bang" strategy is riskier than phased strategy

PLS-Ramboll's (2000) recommendation was to lift the e-Procurement project into three phases. This also has been supported by OSD (2001) which recommends agencies to employ a phased approach of implementation and assess the success and effectiveness of each phase prior to embarking on the next phase. AGV (2003) emphasized the need for ensuring that project should be small enough to be managed. S&A (2003) also advocated an incremental approach to e-Procurement, rather than the "big-bang" directive.

Have a flexible supplier adoption approach by using incentives to suppliers

Supplier adoption seminars were contributory factor in the success of supplier adoption in the case of Cynulliad Cenedlaethol Cymru National Assembly for Wales (OGC, 2002). The experience of Good Standards Agency was that some suppliers were not

ready to be involved because of cost issues and the Environment Agency also found the supplier adoption as a problem (OGC, 2002). In line with this, PLS-Ramboll (2000) recommended to introduce economic incentives for the use of e-Procurement for suppliers. Participation by small and historically underutilized businesses is very important and their input during e-Procurement system design should be received (DIR, 2001).

Disciplined business case and pilot projects are necessary

A business case for e-Procurement was developed in the case of Cynulliad Cenedlaethol Cymru National Assembly for Wales (OGC, 2002). PLS-Ramboll (2000) recommended focusing on more advanced pilot projects. Adherence to the proven principles of project management in order to make optimum choices between trade-off factors such as scope, time, cost, risk, and quality (DIR, 2001). While Virgina's e-Procurement system called eVA was criticized for lacking detailed implementation plans (APA, 2002), the business case for Victoria's EC4P was found to contain conceptual flaws in estimating productivity savings (AGV, 2003).

Collect baseline data and measure performance

DIR (2001) also emphasized to define a set of performance standards to ensure acceptable levels of reliability, response time, security, and scalability. OSD (2001) advises to use the Balanced Scorecard approach which not only measures the success of an e-Procurement initiative from financial perspective but also from customer, internal process and learning and growth perspectives. S&A (2003) noted that absence of baseline data limited the ability to analyze the project results and measure the outcomes of the project. But in the case of EC4P, the central project team developed a post-implementation review template to assist evaluation of project success (AGV, 2003).

An effective communication plan is necessary

In Cynulliad Cenedlaethol Cymru National Assembly for Wales, a strong communication strategy meant that users bought in making the pilot a success (OGC, 2002). In line with this, PLS-Ramboll (2000) recommended to develop best practice catalogue on benefits of e-Procurement and best practice of implementation of projects. One of the recommendations of AOT (2003) was to get the finding of its report about the viability of Gem Purchasing communicated to all stakeholders.

It is essential to manage user expectations

According to OSD (2001), if expectations are too high, initial use will be high with a high rate of drop off, but if expectations are too low, users will never adopt the system in the first place. The Department of Education and Training conducted a pilot with end-users to check the effectiveness of training sessions under development (AGV, 2003). Unless user expectations are managed, simply implementing an e-Procurement system does not solve the compliance problem. This was evident in the case of Gem Purchasing that buyers could still be non-compliant when using the e-Procurement system (AOT, 2003).

Resources and multi skills should not be underestimated

It was noted in the Environment Agency that remotely hosted application required reliable and speedy internet access for all users (OGC, 2002). The OSD project team (2001) identified the importance of skilled team members in best-of-breed Internet technologies including search engines, bidding modules, supplier registration modules, contract management modules and decision support tools. According to AGV (2003), the staff working on the EC4P project were learning as the initiative proceeded but unfortunately the project was unable to rely on that learning because of high turnover of personnel.

Risk analysis and contingency plans are important

OSD (2001) identified the stability and viability of the solution provider and lack of participation of suppliers and users as the most significant risks and suggests some ways to minimize the risks. Besides these risks, risks pertaining to technical architecture, business process re-engineering and contractual agreements have also been identified by AGV (2003).

Have a clear vision of aims and objectives

PLS-Ramboll (2000) recommends that it is necessary to formulate a clear strategy for e-Procurement and this should given high priority. The importance of requirements document stating the aims and objectives lies in the fact that it should be communicated to all stakeholders and the project should not be deviated from its original requirements without a formal change process (DIR, 2001; APA, 2002). A challenge that was faced in the case of Gem Purchasing was the need to obtain value for money and achieve efficiencies in procurement, whilst ensuring the requirements of other policies such as Buy Local that aim to deliver the economic benefit to the state (AOT, 2003).

Audit system for security and data for integrity

In the case of Cynulliad Cenedlaethol Cymru National Assembly for Wales, the clear audit train provided by the system caused an improvement in procedural compliance (OGC, 2002). DIR (2001) noted that the GSC's e-Procurement project should be monitored by the external quality assurance team which can help minimize risks and ensure a successful project outcome. While performance audits are essential to ensure that the load on system resources and bandwidth is not greater than capacity (to avoid poor performance and system unavailability), data audits should be initiated to ensure the integrity of the sensitive data (OSD, 2001). APA (2002) has identified the importance of audit trail that helps to protect the agency from unsolicited claims from suppliers. The audit arrangements in the case of EC4P were found inadequate, which made it impossible to ensure control measures were effective (AGV, 2003).

e-Procurement OLF Model and Future Research

Empirical researchers in the field of Information Systems (IS) have commonly used user satisfaction as the dependent variable (Doll and Torkzadeh, 1990; Franz and Robey, 1986; McKeen and Guimaraes, 1997). As the suppliers are another important side of an e-Procurement system, an e-Procurement initiative cannot succeed without their whole

involvement and supplier satisfaction also should be used as another dependent variable. In line with the conceptual framework as presented above, OLFs have been grouped to fit into the three categories of implementation factors. Furthermore, is there a culture of learning in the organization and to what extent is it easy to learn and change? What are the levels of ability to share feedbacks, to reuse past experience? How effectives are complains and control mechanisms? And to what extent organizational resistance is preventing from learning and changing? The answers of these questions in terms of the intensity and criticality of the OLFs can determine the user and supplier satisfactions, which can in turn, determine the e-Procurement success. Removing recurring implementation failures thus can contribute to improvements, especially when such innovative technologies as e-Procurement systems lead to new procurement practices. By studying past failures, it can be possible for the organizations to learn how to prevent similar situations from recurring.
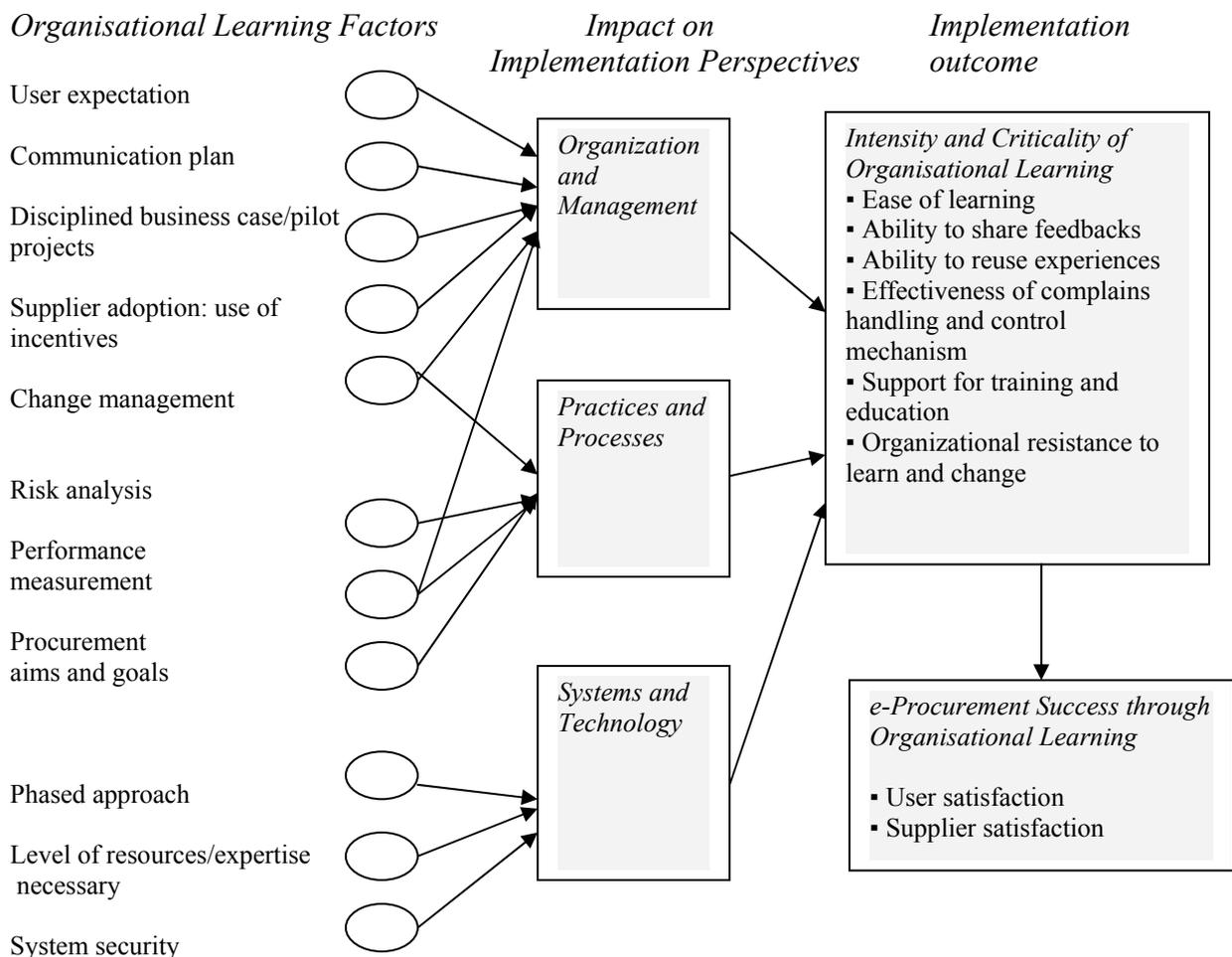
Figure 2: A model of e-Procurement OLFs

In the next phase of this study, semi-structured interviews of public sector e-Procurement project managers will be carried out to capture the perspectives of interviewees. The results of this enquiry will be used to refine the OLF model and variables relating to each implementation factor and thus develop propositions. The hypotheses for future research will also come from multiple case studies, which will be

tested by means of survey questionnaires distributed in to public sector agencies. The surveys will help to evaluate the intensity and criticality of the OLFs, the implementation factors and associated variables. It would be useful to identify the specific performance measures for each variable of the OLF in terms of quantifiable indicators.

Furthermore, the public sector needs to develop more proactive management control and evaluation techniques to ensure that projects of this nature deliver measurable benefits.

Conclusions

Organisational learning in the context of e-Procurement occurs due to the interplay of various factors underlying the organization and environment, procurement processes and practices, and systems and technology. This paper briefly reviewed some of the theoretical concepts that can be drawn upon to study the impact of organizational learning on the various implementation factors that ultimately determine the success or failure of an e-Procurement initiative.

While business cases are increasingly common in connection with e-Procurement initiatives, our research shows that they are often not detailed enough when it comes to organizational learning. Launching a project in a relatively isolated low risk/high-impact area in order to test a new e-Procurement system is an effective way to avoid large-scale failures. While decreasing the impact of failure is important, pilots can also serve as a role model by demonstrating the usefulness and establishing the credibility of a new solution (Flemming, 2003). It would appear from the study that very few public sector organizations are aware of the organizational learning across the public sector e-Procurement initiative implementations.

When interpreting the findings of this study, it is important to note that user and supplier satisfaction with the implementation of e-procurement initiative does not necessarily suggest that the public sector agency is better or worse off operationally. Future research should seek to use more objective measures of implementation success. Nonetheless, customer satisfaction is still an important dimension of performance on which to measure the success of an e-Procurement initiative, since it can significantly influence the agency's perception of whether the implementation effort was justified. Although data gathered through direct observation of actual failure situations and responses of users involved in the implementation through in-depth multiple case studies of e-Procurement initiatives would ideally suit for the purpose of this study, we believe that our study has yielded several insights that could be useful to practitioners who will be faced with implementing an e-Procurement initiative in the future.

e-Procurement is not a 'fashion' that will soon pass like 'dot.bomb'. Although the benefits of e-Procurement are significant, these benefits will not be gained automatically without successful implementation of e-Procurement initiatives. The first step towards this is to identify the organizational learning factors. As these learning factors are closely related to risks associated with the implementation of e-Procurement initiatives, lessons learnt also help minimize or mitigate the risks. Also, upon completion of the survey and case studies as proposed by this study, public sector agencies that have implemented or are in the process of implementing e-procurement systems should have

a better understanding of the organizational learning factors leading to successful e-Procurement initiatives.

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