Exploring the Uptake and Application of Electronic Procurement to Central and Local Government

Danny J. McCONNELL, & Prof. Neil F. DOHERTY
The Business School,
Loughborough University,
Loughborough, Leics,
N.F.Doherty@lboro.ac.uk

Dr. Fiona ELLIS-CHADWICK
The Business School,
Open University
Milton Keynes, Beds,

Abstract: *In recent years, the private sector has witnessed a surge of interest in the potential of the Internet as a medium for managing procurement and purchasing. As a result, many commercial organisations have already reported very significant benefits. Some governmental agencies have also recognised the potential benefits of e-procurement, but relatively little progress has been made towards its wider adoption, within the public sector. The research presented in this paper attempts to help remedy this situation by presenting and empirically testing an embryonic e-procurement adoption model, for use in the public sector. The model has been derived from the extant literature, and draws heavily on institutional theory, and the testing of the model has been accomplished using the detailed case study of a UK-based governmental department.*

Key Words- E-procurement; United Kingdom; Public Sector; Applicability Model; institutional theory

I   INTRODUCTION

Internet technologies are redefining buyer-supplier relationships, streamlining the purchasing function though refinement of the supplier base and in so doing, making the supply chain 'leaner' (Croom, 2001). The rapid introduction of e-procurement technologies is making both buyers and sellers more informed. For example, Wal-mart now gives suppliers access to its sales data-base, which gives the suppliers the ability to proactively restock Wal-mart's shelves (Smith & Rupp, 2002). Already, many commercial organisations across a range of sectors have reported very significant benefits from the use of e-procurement, such as improved contract compliance, enhanced management information, and reduced transaction times. Moreover, there is plenty of evidence that the adoption of e-procurement can result in significant cost savings. Examples include General Electric who expect to save between $500 million and $700 million on purchasing costs over the next three years and the Bank of Ireland who has reported savings of approximately IR£1 million in one year (Neef, 2001).

It is not, however, just the private sector that is likely to benefit from the adoption of e-procurement capabilities. It is recognised that government agencies are also likely to gain cost and efficiency advantages through the adoption of e-procurement (Tulip, 2000). Moreover, the Internet is also creating opportunities for Government to become more transparent and facilitates the unhindered exchange of ideas and information between public sector agencies and their trading partners. As McIvor et al (2002) note: *'the connectivity that automatically results from Internet technologies can exert a very powerful influence in encouraging a free flow of ideas around the organisation, permitting individuals and organisational units to converge and inter-connect'.* One particular governmental sector where e-procurement is likely to flourish is the NHS where it is envisaged that Internet-based systems will soon be the standard way to order all supplies (Ward, 2000).

In response to the evidence of successful e-procurement in the private sector and interest in its potential in the public sector, the Government commissioned a number of high profile reviews to explore the potential of e-procurement within the public sector (e.g. MCC, 1998; Gershon, 1999; NAO, 1999). Following these reviews, the UK Government set a target (NAO,1999) whereby 90% of routine items would be purchased electronically by March 2002, with the key enabler of electronic procurement (e-procurement) being central to meeting this target. The rationale behind this target and the focus on procurement was to improve public sector procurement through: enhanced compliance; enhanced control and increased efficiency.

Although the interest in public sector e-procurement is growing, there is very little by way of specific research to guide governmental agencies on when and how electronic purchasing should be applied. Indeed, Schoenherr et al (2007), recently reported that only 13% of academic literature published on e-procurement focused on facets of e-procurement within the government and public sector. The aim therefore of the research reported in this paper is to explicitly target this gap in the literature by presenting a research model that has been derived from the literature, to support public sector organisations when exploring the applicability of e-procurement. In addition to drawing heavily on the literature to formulate the model, this paper also presents the provisional results of a case study, which

was used to pilot test the model. To this end, the paper is structured into a number of distinct sections. The following section reviews the literature with respect to the uptake and application of e-procurement, paying particular attention to its potential relationship with '*institutional theory*' [Scott, 2008]. The embryonic adoption model is presented and reviewed in section 3, before the study's methods are presented in section 4. In the fifth sections, the case study is used to test the legitimacy of the model, before the paper's implications and contribution are reviewed and summarised in the concluding sections.

II   LITERATURE REVIEW

This section aims to review existing literature with respect to the adoption of e-procuremement. In critically reviewing the literature, the motivations and academic justification for this research will be established.

A.   Factors affecting the adoption of e-procurement

Within the private sector a significant amount of research has been carried out into e-procurement and potential benefits that can be accrued, should it be successfully implemented. For example, identified benefits include: enhanced relationships with suppliers; reduced order cycle times; reductions in the cost of placing orders; the stream-lining of the supply-chain, greater compliance with standards, and many, many more [e.g. Croom and Johnson, 2003; Hawking and Stein, 2004; Heywood et al, 2002; Reason & Evans, 2000]. However, it must be recognised, that the outcomes of e-procurement initiatives in the private sector have not been uniformly positive, as problems have often been experienced. As Heywood et al (2002) note, '*it is no means certain that all the potential of e-procurement will be realised and it is inevitable that huge sums of money, and considerable effort, will be wasted by some organisations in pursuit of the business benefits*'. For example, common examples of problems include: security problems; cultural mismatch; non participation by key suppliers; regulatory / legal difficulties; cost overruns / failure to achieve value for money [Heywood et al, 2002].

Ultimately, the successful outcome of e-procurement initiatives is likely to be significantly influenced by the extent to which a variety of facilitators are in place, and if a number of potential barriers can be avoided or overcome. For example, the ultimate success of an e-procurement initiative will be dependent upon a range of factors, such as the following (Min and Galle, 2003; Hawking and Stein (2004), Bartezzaghi and Ronchi (2004):

- The organization's willingness /unwillingness to re-engineer processes;

- The presence / absence of the appropriate competencies amongst employees;

- The closeness of fit with an organization's procurement strategy;

- The appropriateness / inappropriateness of the organization's culture;

- The availability / unavailability of appropriate standards within the business sector.

B   E-procurement adoption through an 'Institutional' lens.

In addition to the potential inhibitors / facilitators highlighted above, there is also the yet un-tested possibility that there are a number of institutional drivers that might be either encouraging or discouraging public sector organisations when it comes to the adoption of e-procurement. Institutional theory suggests that organisations of the same type – for example, governmental departments or agencies – tend to resemble and mimic one another, as they are usually influenced and shaped by the same environmental factors [Scott, 2008]. Consequently, organisations of a certain class might all adopt similar attitudes to the desirability, or otherwise, of a particular type of technology. For example, Teo et al [2003] have shown how the decision to adopt EDI, amongst commercial organisations, has been significantly influenced by a range of institutional factors, such as the practices and success of their customers, suppliers and competitors, in relation to the application of this technology. In a similar vein, Gibbs and Kraemar [2004] have demonstrated how such institutional factors have also influenced organizations to mimic one another with respect to their adoption of B2C e-commerce.

Whilst institutional theory is becoming an increasingly important lens for studying all types of organisational phenomena [Ashworth et al, 2007], it is particularly appropriate for the study of public sector organisations, as these are perceived to be more vulnerable to institutional forces than their profit-oriented counterparts [Frumkin et al, 2004].

C   E-procurement adoption in the Public Sector

In response, at least in part, to the success stories coming from the private sector, many public sector institutions and agencies are now also becoming very interested in the potential of e-procurement. Moreover, the following high profile reviews, have also underlined the very strong business case for e-procurement:

- **The Review of Civil Procurement in Central Government (Gershon, 1999):** The Gershon review of civil procurement in Central Government identified a number of areas of weakness in the Government's procurement strategy. In particular, it highlighted the absence of common systems across Government for recording what is purchased, the associated prices and sources of supply and analysing the true costs of procurement transactions. The Gershon review highlighted a number of important drivers to encourage government to adopt e-procurement, as a matter of priority.

- **Modernising Procurement – (NAO, 1999):** The National Audit Office review of procurement focused on the following two key areas in relation to departmental and agency procurement: 1) the

importance of procurement to government and 2) the need for value for money in procurement.

- **Efficiency in Civil Procurement – (MCC, 1998):** The PX Report published in July 1998 was commissioned by the Ministerial Cabinet Committee [MCC] on Public Expenditure (PX) to take forward efficiency issues in procurement arising from the Government's Comprehensive Spending Reviews (CSRs). This report detailed a number of actions for Central Government across the all areas of electronic commerce.

- **DTLR Procurement Review – (Byatt, 2000):** The Local Government Review of procurement carried out in 2001 by Sir Ian Byatt examined ways for improving local services to citizens and through the improvement of procurement practices. In addition to simply identifying the drivers for adopting e-procurement, the Byatt (2000) review also provided important insights into how the benefits could ultimately be achieved.

However, despite the compelling nature of case for public sector e-procurement that has been made both by formal, governmental-sponsored reviews, and perhaps more importantly through the positive experiences of private sector organizations, there is very little evidence that e-procurement has been widely adopted within the UK public sector.

D   A Critique of the Literature

Although a considerable body of work, with regard to the uptake and application of electronic procurement, has already been assembled, it can still be criticised in a number of key respects. More specifically existing studies tend to adopt narrow conceptualisations of e-procurement, typically centred upon a specific type of technical artefact. Many of the existing contributions to the literature present theoretically derived taxonomies of adoption factors, without empirically testing the validity of these new frameworks. In cases where frameworks of adoption factors have been empirically tested, this has typically been accomplished using questionnaires: to date, there has been a noticeable absence of in-depth studies of e-procurement adoption, using qualitative methods. Perhaps even more importantly, to date there have been very few studies of e-procurement adoption in a public sector context. To help fill these gaps in the literature, it was necessary to formulate a conceptual model, as described below, which would act as a focal point for conducting a wide-ranging and in-depth study of e-procurement adoption, in the public sector.

III   DEVELOPING AND VALIDATING AN E-PROCUREMENT ADOPTION MODEL

The various literature sources detailed in the preceding sections provide a useful source for the development of a Governmental e-procurement adoption model, but the foundations for this model are primarily the private sector, where there is a far richer and more comprehensive body of academic material available. It was envisaged that the primary objective of the resultant model would be to provide

important new insights into the procurement practices and procedures that have been automated by organisations operating in the public sector, and the factors that have influenced this level of adoption.

A   E-procurement Defined

One of the greatest initial difficulties facing the academic researcher, as well as any organisation considering the introduction of e-procurement, is to establish exactly what is meant by the term e-procurement. The absence of a consistent definition of e-procurement has led to a plethora of definitions appearing in the press and academic literatures, and has led to confusion within organisations seeking to pursue e-procurement. This confusion has in fact been identified by Henry (2000) and Heywood et al (2002) as one of the key inhibitors to its adoption. Moreover, for the researcher, choosing an appropriate definition of e-procurement is of great importance, to guard against '*each potential respondent having a slightly different conceptualisation of e-procurement*' [Dooley and Purchase, 2006]. Against this backdrop, Schoenherr et al [2006] advise that that at the outset of any study '*e-procurement is defined explicitly and unambiguously to avoid confusion*', typically by '*adopting or adapting an established definition from past research*'. Consequently, before we could develop a research framework, it was important that we established a clear and appropriate definition for e-procurement.

A thorough review of the large, and rapidly growing, literature that discusses the meaning and characteristics of e-procurement clearly demonstrates that due to its multi-dimensionality, e-procurement is not an easy concept to tie down with simple definitions. There is obviously a strong **technological** dimension that must be at the heart of any definition, as it is widely recognised that information technology provides the platform upon which any application is built [Caldwell et al (2002), de Boer et al (2002)]. Existing definitions also tend to promote a strong emphasis on the need to address to complete procurement **process**, from the recognition of a purchase requirement through to the receipt of the order and the payment of the invoice [Teo et al, 2009].

These existing definitions of e-procurement, whilst comprehensive from a technology and broad process aspect do not take account of the need to re-engineer the underlying processes before "*e-enabling*" them. Successful e-procurement requires the effective re-engineering of procurement processes, as '*implementing e-procurement without first addressing procurement can just result in making poor procurement electronic*' [NePP, 2004]. Consequently, existing definitions also ignore the critical role of **people** in the procurement process: one of the major inhibitors to the successful implementation of e-procurement, especially in the public sector, is likely to be changing the organisational culture and the attitudes and behaviours of the people involved in the procurement process. Finally, any definition of e-procurement must explicitly recognise the need to enforce **compliance** with procurement standards and policies [NePP, 2004]. Consequently, any holistic definition should draw together each of these critical themes, namely: technology, process, people and control / compliance. With

this in mind, the following definition has been adopted for the purposes of this research study:

*'E-procurement is the application of information **technology (ies)** to streamline the B2B purchasing **process**, whilst concurrently enhancing the input of **people** and the degree of **compliance** with controls'.*

The establishment of this multi-dimensional definition, which incorporates the key themes from the literature was an important step in the study, as it helped us to frame our research model, as presented in section 3.
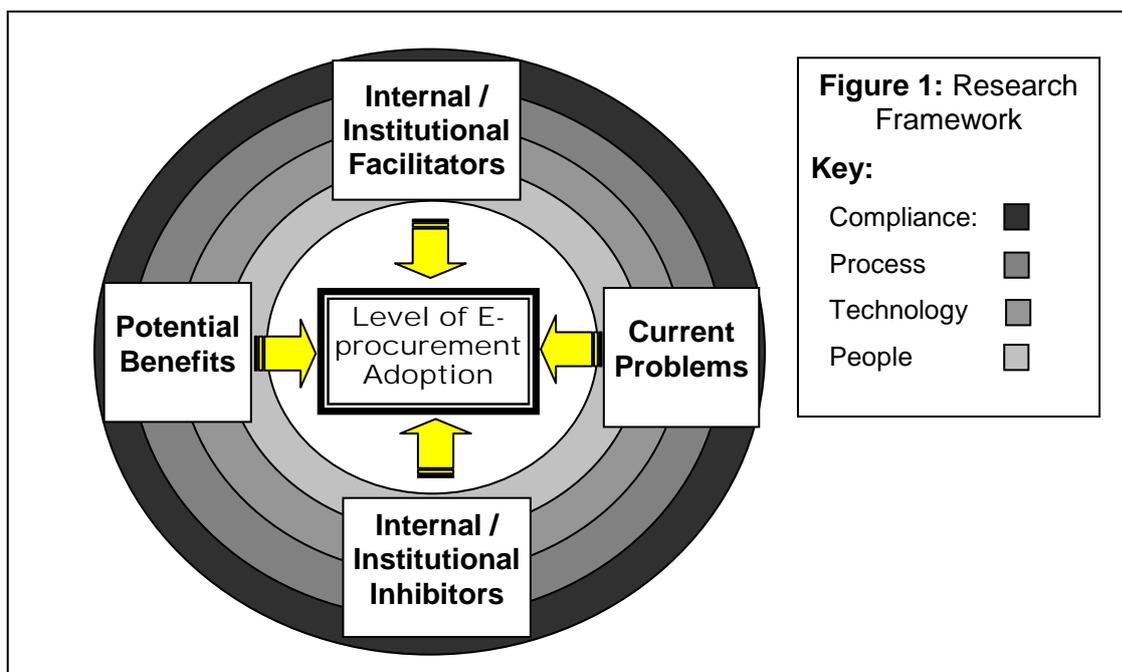
B   A Conceptual Model of e-procurement Adoption

Based upon a careful review of the literature it was possible to identify the following key elements of a model, as depicted in figure 1, which would help to explain an organisation's organization practices:

- **The drivers / facilitators of e-procurement:** These relate to the capabilities and characteristics, that are specific to an organisation, which might help them readily adopt and integrate e-procurement technologies. For example, a wider range of pre-existing factors, such as human resources, technical infrastructure and working practices (Doherty & McAulay, 2002), will strongly influence an organisation's ability to successfully adopt e-procurement;

- **The barriers / inhibitors of e-procurement:** All organisations contemplating major new investments in information technologies are likely to face a significant array of specific risks and challenges that must be proactively addressed if a successful implementation is to be achieved. Such barriers can be categorised as organisation-specific risks (e.g. cultural inertia, non participation by suppliers, etc.),

as well as more global risks (e.g. plethora of technical standards, numerous procurement models, etc.);

- **The wider 'institutional' facilitators / inhibitors of e-procurement:** There are likely to be a number of significant institutional factors that will exert an influence over the behaviour of all governmental departments and agencies, irrespective of their own particular circumstances. All organisations face significant institutional pressures to conform to best practices and to imitate their peers [DiMaggio & Powell, 1991]. Consequently, it seems highly likely that a public sector organisation's uptake and adoption of e-procurement will be greatly influenced by the behaviour of its peers, as well as by governmental policy and initiatives;

- **The current problems with procurement:** One of the biggest incentives for organisations to invest in e-procurement is if it is experiencing debilitating problems with it existing manual or semi automated procurement processes and practices. Such problems tend to centre on the procurement processes, and are manifested through: large volumes of paper-work; high levels of errors; too many suppliers; slow transaction processing [Hawking et al, 2004];

- **The potential benefits to be realised from e-procurement:** E-procurement initiatives have the potential to deliver a significant variety of important organisational benefits [see table 1].However, as More & McGrath (2001) note, no matter how strong the business case is for a particular e-procurement proposal, the benefits will only, ultimately be realised if the organisation adopts appropriate change management and communication practices.;

Figure 1: Research Framework

Key:

Compliance: ■
Process ■
Technology ■
People ■

Internal / Institutional Facilitators

Potential Benefits

Level of E-procurement Adoption

Current Problems

Internal / Institutional Inhibitors

The e-procurement adoption model – as graphically represented in Figure 1 - presents a summarised view of the key areas that would be addressed during an applicability assessment exercise. Each of the constructs on this framework is supported by detailed breakdowns of specific issues, as derived from the literature, which will need to be critically reviewed, when conducting an evaluation. For example, a decomposition of the potential benefits element of the model has been presented in table 1. Having derived an embryonic from the literature, the next stage of the research process was to test its validity through a detailed pilot study, as described in the following section.

IV. RESEARCH APPROACH / METHODS

The pilot organisation selected is an Executive Agency within one of the UK's major Central Government Departments. This organisation was selected as the pilot organisation for the following three main reasons:

i. The pilot organisation aligns with the research as it has had a number of attempts to introduce e-procurement, which have failed, and as such it is considered that it should provide an insight into many of the issues facing a public sector organisation considering the introduction of e-procurement.

ii. The location of the organisation's headquarters made them easily accessible by the lead researcher.

iii. One of the authors has worked with the organisation in a professional capacity and therefore has ready access to key internal and external stakeholders.

The organisation is large, with an annual budget of £200m (excluding notional costs) and employs approximately 2,500 staff. The annual budget is comprised of approximately £70m relating to staff costs with the remaining £130m comprising operating costs. The organisation provides a range of services in relation to public infrastructure and as such a significant amount of expenditure in relation to operational activities, approximately 75% relates to expenditure on the maintenance of the existing infrastructure or the development of new infrastructure. The remaining 25%, approximately £30m is spent on the purchase of goods and services unrelated to infrastructure.

The pilot case study was conducted using a number of complementary data collection techniques [Yin, 1994], to build a rich and comprehensive picture of the organisation's current procurement processes, as well as to critically appraise its potential to adopt e-procurement. More specifically, the lead researcher spent a considerable amount of time on-site within the case organisation, where he was given: full access to its procurement paperwork and documentation; the opportunity to observe the operation of the procurement process; and permitted to interview key stakeholders both within the organisation, as well as some of its suppliers. More specifically, the data collection approach was as follows:

i. **Collection / collation of quantitative data:** Given the sheer scale and complexity of the case organisation's procurement activities, the first stage in the research

process was to gain an objective appreciation of this domain. Consequently, a very significant document review was conducted to develop a clearer understanding of issues such as: numbers / location of suppliers; numbers / values of invoices; average time / cost to process purchase orders; and the value of expenditure by commodity group / division. Although this document review was very wide-ranging in its focus, by and large it focussed upon the collection and collation of numeric data.

ii. **Collection / collation of qualitative data:** Having undertaken a document review, and a provisional analysis to understand the key themes that could be attributed to it, a series of interviews were undertaken to help interpret the quantitative data. Moreover, as the quantitative data primarily related to the problems of the current manual practices, the interviews also addressed a wider set of issues, such as the inhibitors and faciltators of e-procurement, as well as the benefits that might be expected from its enactment. A wide variety of employees from the case organization were interviewed, including senior managers, procurement specialists and users of procurement services. Moreover, the opportunity was taken to interview representatives of four of the case organisations' key suppliers, to ensure that a balanced view of the buyer-supplier relationship could be derived. The interviews generated a significant amount of data, as they were generally lasted between 2 – 3 hours. .

Having collected this significant set of research data, it was carefully analysed using the tools for qualitative analysis, as suggested by Miles and Huberman [1994], as well as a variety of statistical tools to more fully analyse the quantitative data.

V CASE STUDY FINDINGS

At the time that the study was conducted, the case organisation was really just beginning to establish an e-procurement agenda. It had already implemented two entry-level procurement technologies [BACS & e-tendering]. Their e-tendering system was a fairly low-tech solution by which tendering opportunities were simply published on the organisational web-site, whilst BACS [Bankers Automated Clearing System] is a very common UK-based standard to facilitate the electronic processing of financial transactions. In addition to these fairly straightforward technologies, the case organisation was also actively planning to adopt another four, rather more sophisticated technologies: e-catalogues, e-requisitioning and e-ordering.

The research model was used as the focal point for conducting a careful analysis of the research data, to try to determine the factors that might help explain this organisation's e-procurement investment strategy. A number of important themes and issues became apparent from this analysis. For example, it became clear that the pilot organization was experiencing significant problems with its existing procurement practices, which made investments in e-procurement systems a potentially, very attractive proposition. More specifically, procurement problems and weaknesses

were identified across all four dimensions of the research model, as follows:

i. **Technology:** The case organisation had no organisational-wide strategy for e-procurement, and therefore its attempts at computerization were rather piecemeal, resulting in a number of isolated '*islands of automation*'.

ii. **Process:** The case organisation's existing procurement practices, which were largely manual were perceived to have caused a number of process-related problems. For example, it was widely recognised that the procurement processes were too costly, time-consuming and error-prone, because of the very large volumes of paper-work that needed to be manually processed and because the numbers of suppliers and invoices had proliferated. Indeed, as one procurement officer commented: '*for each procurement action, a minimum of seven, hard-copy, pieces of paper are involved*' [procurement officer].

iii. **People:** Due to the inadequacies of the existing systems and processes, there was low staff morale within the procurement department. As stakeholders noted, procurement activities were viewed as an '*organisational back-water*', which comprised '*menial jobs with little prospect for advancement*' [Purchasing Professional]. Consequently, there was perceived to be little likelihood that staff would actively and enthusiastically engage in any process re-engineering initiatives.

iv. **Compliance:** The absence of integrated suite of procurement systems and processes had resulted in problems of compliance and control, with the result that there was '*a significant degree of off-contact* [maverick] *purchasing*' [Finance Director]. Poor control of the purchasing process was also perceived to be resulting in the proliferation of quality problems.

Given the very serious nature of these procurement problems, being experienced by the case organisation, it wasn't difficult to discern why it had already implemented e-tendering and BACS, and why it was also very keen to extend this level of automation, as soon as possible.

Against this backdrop, there was also a very compelling case that the wider adoption of e-procurement would help to deliver a significant array of benefits. It was noted that the introduction of BASCS and e-tendering had already helped to reduce the administrative costs associated with procurement, whilst also helping to improve relationships with suppliers. From a technological perspective it was perceived that e-procurement would help to deliver higher levels of process automation and integration, which would ultimately facilitate the delivery of more timely and accurate information. Moreover, it was envisaged that the availability of higher quality procurement information would allow the organisation to negotiate lower prices through the use of '*aggregation and collaboration to obtain better discounts*' [Procurement Officer]. Moreover, it was recognised that e-procurement was likely to raise staff morale by up-skilling them and enriching their jobs, whilst also delivering improved financial control and improved contract compliance.

Despite the many obvious attractions of implementing electronic procurement, it was also widely recognised that there were many barriers in existence that would make it very difficult for the case organisation to easily achieve its immediate plans for a further three procurement technologies, let alone move towards fully automated procurement. For example, there were many concerns raised from a technological perspective, with respect to the adequacy of the organisation's IT infrastructure, the inability of key suppliers to trade electronically and the poor levels of IT literacy amongst existing staff. Moreover, concerns were raised about '*the security of procurement transactions*', '*particularly given that fraud or security breaches would result in the loss of public money*' [Head of IT].

Table 1: Potential benefits of e-procurement by theme and academic source

Potential Benefit	Theme	Hawking et al (2004)	Attaran (2001)	Croom et al (2003)	Minahan & Degan (2001)	Carayannis &Popescu (2005)
Improved relationships	Process		✓		✓	
Reduced price	Process	✓	✓	✓	✓	
Reduced administrative cost	Process	✓	✓	✓	✓	
Reduced inventory cost	Process		✓	✓	✓	
Improved management information	Process		✓		✓	
Improved financial control	Compliance		✓			
Improved contract compliance	Compliance				✓	
Improved citizen services	People					✓

In a similar vein, key stakeholders identified many process-related inhibitors, including: lack of standardisation; unwillingness to re-engineer business processes; the overall project costs; and the complexity of the organisation's

procurement processes. Public sector organisations tend to have exceptionally complex procurement processes, because of the wide range of products and services that they are required to purchase. For example, one procurement officer noted: '*whilst it might be relatively easy to catalogue and procure stationery and IT consumables, infrastructure projects which involve multi-million pound procurements, on an annual basis, are not at all straightforward, and far to risky to manage through e-procurement solutions*'.

It was also recognised that the profile of the organisation's existing staff would also inhibit the adoption of technology, for the following reasons: reluctance to change; inappropriate culture; and unavailability of suitably skilled personnel. Finally, from a compliance perspective, the regulatory, probity and legal constraints associated with public sector procurement was highlighted by the procurement stakeholders as one of the main reasons why e-procurement may not be appropriate given the complexity of rules and regulations associated with public sector procurement, including EU procurement.

In sharp contrast to the abundance of inhibitors identified by stakeholders, there was very little explicit recognition, within this particular governmental agency, of any specific internal factors that might facilitate the adoption of e-procurement. However, when the case findings are further examined through the lens of '*Institutional Theory*', then a number of potential drivers for change do become apparent, as discussed in the following section.

VI. DISCUSSION: E-PROCUREMENT THROUGH AN INSTITUTIONAL LENS.

In summary, we see an organisation that is likely to gain very significant benefits from e-procurement, but is currently very poorly positioned to succeed with a B2B project which aims to make the transition from manual procurement to fully automated procurement. Consequently, this governmental agency needs to decide whether it should make an immediate commitment to e-procurement, and proactively address the inhibitors as an integral part of the project, or whether it would be more prudent to make the organisational climate, infrastructure and culture more conducive to e-procurement prior to embarking on a major investment Moreover, the agency needs to decide whether it would be most appropriate to attempt to fully automate all aspects of the procurement process, or target just those aspects of procurement in which it believes that the highest value can be most easily delivered In tandem with this decision, the organisation needs to reflect upon whether it should attempt a big bang or phased implementation of its chosen functionality.

Whilst it might appear that this organisation's destiny, with respect to its adoption of e-procurement, is in its own hands, the application of the lens of '*Institutional Theory*' suggests that its fate might be more closely tied to that of other public sector organisations than might be expected. Teo et al (2003) have used Institutional Theory to understand the factors that influence the adoption of inter-organisational systems and found three pressures have the potential to influence organizational behaviour when adopting IT innovations. More specifically, Teo et al (2003) have demonstrated that DiMaggio & Powell's (1991) taxonomy of institutional pressures [1) Mimetic; 2) Coercive; 3) Normative] can be successfully used to help explain the adoption of complex IT solutions, within an organisational context. Consequently, these three pressures are now used to help interpret our e-procurement data:

i. **Mimetic Pressures:** Such pressures typically arise from the drive to play it safe, and reduce uncertainty. Under conditions of uncertainty, imitating successful peers is typically seen as the safest strategy. Because of the relatively low levels of e-procurement adoption amongst public sector organisations, there aren't as yet many early adopters that can be followed, and therefore the 'safest' strategy is for organisations to stick to their existing manual or semi-automated processes, until more tried and tested solutions become available, and are proven within a public sector context.

ii. **Normative Pressures:** It has been argued that normative pressures typically arise from a process of socialisation [DiMaggio & Powell, 1991], which predisposes organisational stakeholders to perceive certain types of behaviour as legitimate. Whilst socialization occurs through interactions between employees within an organisation, it is more commonly associated with relationships between individuals in professional networks. As Teo et al [2003] note normative pressures could arise from '*members of dyadic relational channels and multilateral organizations such as professional, trade, and industry organizations*'. In the context of public sector procurement, it is probably unlikely that any normative pressures will be exerted through networks of governmental employees. However, as public sector procurement professionals are likely to mix and interact with their counterparts in the private sector, it is likely that over time, such pressures may start to have some affect.

iii. **Coercive Pressures:** Organizational procedures, behaviours and structures are often strongly influenced by the demands of actors on whom the organization is dependent for resources, or even from outright regulation and mandates. In Teo, Wei & Benbasset's study, coercive pressures were perceived to be most likely to emanate from key customers, suppliers or even a parent company. Whilst our case organisation hadn't, as yet, succumbed to any coercive pressures, this state of affairs is not likely to survive for very much longer. The government wants to see far higher levels of automation and integration within public sector procurement processes [NePP, 2004] and will take steps, probably through a mixture of incentives and regulation, to ensure that their vision comes to pass. For example, initiatives such as '*Beacon Councils*' are used to identify, reward and ultimately promote the work of 'excellent public sector organisations, so that best practices are

disseminated throughout the sector [Ashworth et al, 2009]. More specifically, the government has been actively encouraging the development of 'Centres of Procurement Expertise' [OEP, 2009]. Whilst this initiative will help promote 'best practice' with respect to all forms of procurement within governmental agencies, the role electronic procurement is given a very prominent position. Consequently, we are beginning to see a state of affairs, in which coercive pressures, in the form of incentivisation are being used to encourage some governmental agencies to adopt e-procurement, in the hope that mimetic pressures will then take over by encouraging other organisations to adopt these 'best practices.

Based upon this Institutionally-oriented analysis of public sector e-procurement adoption, it is possible to provisionally suggest that mimetic and normative influences can be used to help explain the relatively slow uptake and adoption of e-procurement technologies within public sector agencies. However, in the longer term, it seems likely that central government will use coercive forces to ensure that their e-procurement ambitions are ultimately satidfied.

VII. CONCLUDING REMARKS

Government agencies are beginning to recognise the enormous potential offered by the Internet, in general, and e-procurement systems in particular. However, despite the growing interest in this subject, there has, to date, been very little literature that explicitly addresses the role and adoption of e-procurement within the public sector. This paper provides a timely progress report on an on-going research project being conducted in this area, by describing how an exploratory framework has been constructed, and provisionally validated, to help better understand the behaviour of public sector organisations in their adoption of e-procurement technologies. The most positive outcome of the piloting exercise has been to provide reassurance that the research framework, presented in figure 1, is a useful way of assessing a governmental organisation's current position with respect to its potential / readiness for the adoption of e-procurement. More specifically, this study has helped to demonstrate that there is a clear case for e-procurement adoption, amongst governmental agencies, because of the problems they are currently experiencing with their existing practices, and the potential benefits to be realised through greater automation, However, due to the strength and spread of the inhibiting factors that are aligned against e-procurement adoption, it is unlikely that investment programmes will be imminently launched.

From a theoretical perspective, in addition to the testing of the new model, the most important potential outcomes of this research have been the formulation of a more comprehensive definition of e-procurement, and the application of 'Institutional Theory' to help explain e-procurement adoption, within the public sector. More specifically, the use of Institutional Theory helps to demonstrate how governmental agencies' response to the challenge / opportunities of e-procurement is shaped by shared institutional factors /

pressures, rather than being primarily determined by the organisation's own particular circumstances.

Finally, it is important deliver a health warning with respect to the findings presented in this manuscript: they are highly provisional and exploratory. As, at this stage, we have only conducted the one pilot study, it is difficult to make any clear pronouncements or generalisations with regard to the adoption of e-procurement and the validity of our model. The aim of the paper has been, at least in part, to stimulate a debate on the subject, and generate some feedback. We are currently undertaking a series of follow-up studies in a variety of governmental agencies, so that the ideas, with respect to the content and process of the framework, can be validated, enhanced and further expanded.

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