CHALLENGES IN MAXIMIZING TRANSFORMATIVE IMPACTS: PUBLIC POLICY AND FINANCIAL MANAGEMENT THROUGH E-PROCUREMENT

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ABSTRACT.   Scholars have indicated that the current dynamics within the provision of public services have shaped traditional governance into governance by contract. Under such conditions, public procurement and specifically e-procurement platforms have been associated with manifold positive financial and policy impacts.

Based on an extensive e-procurement literature review and the results of a survey of procurement specialists (n=499) the author argues that the early transformative impacts of digitalized procurement have been somewhat disappointing. The benefits of e-procurement are often assumed rather than based on hard evidence, which might suggest more "wishful thinking" than governance transformation. E-procurement has yet to be recognized by practitioners or scholars neither as a major policy tool nor as a mechanism of financial discipline. The paper suggests a normative e-procurement adoption model that would increase the probability of maximizing transformative benefits of e-procurement.

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The austere budgetary and economic conditions of the last decade juxtaposed with the transformation of governance (Kettl 2002, 2005) have fueled the search for innovative and cost saving management and policy approaches. Globally, governments at all levels started to pay increased attention to public procurement as an area of previously untapped strategic benefits. Within the context of technological advancements, digitalizing the public procurement process appeared to offer almost limitless possibilities.

E-procurement can be understood as the digitalization of important aspects of the purchasing process, such as search, selection, communication, bidding or awarding of contracts (Borua et al. 2001, Sun et al. 2012); with a specific emphasis on efficiency, transparency and policy in the public sector (Carayannis and Popescu 2005, Walker and Brammer 2012). On the one hand, e-procurement was expected to provide the framework for increasing administrative efficiency, transparency, accountability, sustainability and lead to increased competition (Croom 2000, Zsidisin and Ellram 2001, deBoer et al. 2002, Croom and Johnston 2003, Leukel and Maniatopoulos 2005, Henriksen and Mahnke 2005, Mishra et al. 2007, Bof and Previtali 2007, Hardy and Williams 2008, Mota and Filho 2011, Varney 2011, Walker and Brammer 2012). On the other hand, it was anticipated that e-procurement platforms, as part of e-government initiatives, would become a critical aspect of policy implementation, management and monitoring (Bof and Previtali 2007).

Whilst, governments have dedicated great resources to digitalize public procurement (Somasundaram and Damsgaard 2005, Mota and Filho 2011) the outcomes have been rather mixed. Some initiatives achieved desired goals, while most have failed to improve the conditions they were supposed to address. In many cases, e-procurement initiatives resulted in great financial waste (Somasundaram and Damsgaard 2005), decreased quality of services (Hoque et al. 2011) or have made social and policy impacts an afterthought during implementation (Bof and Previtali 2007, Peck and Cabras 2011). Holistically, it can be argued that the areas associated with highest expectations that of public e-procurement as a strategic financial management tool and as a policy mechanism -

have been thus far the two most disappointing dimensions of digitalization of public procurement (Andersen 2004, Bof and Previtali 2007, McCue and Roman 2012).

Is transformative impact of e-procurement just and "wishful thinking" exercise? This article uses data obtained from a survey of procurement specialists and the results of an extensive literature review to construct an understanding of the grounds behind the difficulties in the realization of the transformative benefits of e-procurement. The paper also suggests a normative e-procurement adoption construct that would maximize the transformative benefits of e-procurement. It is argued that in order for e-procurement to become an important aspect of modern network-based governance, its implementation cannot be approached in a localized manner. The mere adoption of e-procurement practices will not atomatically lead to improved financial or policy outcomes.

The discussion in this paper is constructed around three major sections. The first section uses original survey data to frame the argument that e-procurement has yet to achieve significant transformative impacts. The second section traces, as identified through an extensive literature review, the main challenges that need to be addressed in order for e-procurement to motivate notable management and policy impacts. The final section of the paper introduces a conceptual construct for addressing design, implementation and evaluation of procurement software.

CURRENT STATUS OF E-PROCUREMENT

Much has been made of the potential of information communication technology (ICT) to reinvent and improve the performance of governance (Fountain 2001, Kettl 2002, 2005, West 2005, Brainard and McNutt 2010). E-procurement is viewed as a critical dimension in the success of e-government. Although it might still be early to conclusively evaluate the broad impacts of e-government initiatives, hitherto, the results have been less than impressive. Dunleavy et. al (2006) and Dalcher and Genus (2003) assert that failure is a regular characteristic for ICT adoptions; in the long run cost often outweigh the benefits (Norris and Moon 2005).

Scholars agree that while it is not sure whether ICT has made government more efficient, it has yet to make it more democratic or responsive (Moon 2002, Edmiston 2003, Romzek and Johnston 2005, West 2005, Koh, Prybutok and Zhang 2008, Coursey and Norris 2008, Brainard and McNutt 2008, The Economist 2008, The Pew Center on the States 2008).

The digitalization of public procurement fits within a similar frame. E-procurement initiatives have made an impact on agencies at the functional level, but have failed to impose as a consistent financial management tool or as an effective policy mechanism (Somasundaram and Damsgaard 2005, Bof and Previtali 2007, Mota and Filho 2011, Varney 2011). It appears that e-procurement has been assimilated by extant organizational constructs enforcing traditional administrative structures (Hawking et al. 2004), rather than motivating transformation in public procurement.

In order to examine the current status of e-procurement adoption 2,269 American and Canadian members of the National Institute of Governmental Purchasing were invited to complete a 30 item survey (Appendix A). The holistic scope of the survey was to identify the current status of e-procurement implementation and use. The survey was administered online using surveymonkey.com from June 2 to June 27, 2011. The response rate was 22% (499) with the majority of responses (480) coming from American specialists.

A total of 55% of respondents have indicated that their agencies were using digitalized procurement platforms. Yet, even in cases when e-procurement was adopted, strategic dimensions such performance/risk management, contract management and collaboration tools were used by 35% or less of those responding (Table 1). Those who reported use of strategically-oriented tools also reported high levels of dissatisfaction.

Table 1. Level of Satisfaction with E-procurement (by function)

	Very Dis-satisfied	Dis-satisfied	Satisfied	Very Satisfied	Feature Not Used	Total # Responding

Requisitioning (incl. catalog services / shopping cart)	8%	10%	44%	25%	13%	174
Central contract repository	8%	7%	30%	16%	40%	168
Online supplier registration	7%	6%	30%	22%	36%	166
Notifications	7%	5%	22%	24%	43%	166
Contract life-cycle management suite	**7%**	**3%**	**17%**	**6%**	**67%**	**164**
Collaboration tools	**6%**	**4%**	**12%**	**5%**	**74%**	**159**
Spend analytics	6%	10%	24%	7%	54%	163
eSourcing	6%	5%	17%	11%	61%	163
Supplier performance and risk management tools	**6%**	**4%**	**13%**	**4%**	**73%**	**165**
Procurement marketplace (including catalog services)	5%	5%	17%	10%	64%	164
Reverse auctions	**5%**	**3%**	**8%**	**6%**	**79%**	**155**
Forward auctions	**4%**	**2%**	**9%**	**9%**	**76%**	**160**
eInvoicing	4%	3%	14%	5%	74%	162

Additionally, the procurement specialist reported low usage and integration levels among procurement and financial platforms. Across all e-procurement capabilities on average only 27% of respondents reported full or partial integration between e-procurement platforms and financial platforms (Table 2).

Table 2. Level of Integration (by function)

	Full	Partial	Not Integrated	N/A	Total # Responding
Reverse auctions	4%	1%	25%	70%	171
Forward auctions	4%	2%	28%	66%	169
Collaboration tools	**6%**	**4%**	**25%**	**66%**	**167**
Supplier performance and risk management tools	**9%**	**5%**	**27%**	**60%**	**172**
Contract life-cycle management suite	**11%**	**6%**	**23%**	**60%**	**170**
eSourcing	14%	5%	31%	51%	170
eInvoicing	15%	5%	20%	59%	167

Procurement marketplace (including catalog services)	17%	6%	25%	53%	171
Notifications	18%	8%	38%	37%	173
Spend analytics	21%	12%	24%	43%	171
Online supplier registration	21%	6%	42%	30%	173
Central contract repository	26%	11%	30%	34%	170
Requisitioning (incl. catalog services / shopping cart)	68%	9%	12%	11%	181

Within the context of the sample, the average length of e-procurement usage was not found to be statistically different for varying levels of integration or satisfaction. Regardless of the historical experience of the agency with digital procurement respondents were just as likely to report satisfaction or dissatisfaction and integration or non-integration, respectively. There were no statistical significant differences in average operating expenditures among agencies that reported partial or full integration and those reporting no integration between procurement and financial platforms. The small sample sizes make generalizations beyond the scope of the sample difficult; nonetheless, the juxtaposition of the survey responses and literature review still suggest interesting dynamics[†].

First, there are limited grounds to believe that e-procurement implementation has motivated transformational changes at the organizational or policy levels. Second, currently e-procurement platforms are rarely integrated within the larger scope of financial systems. Third, the collaborative/strategic features of e-procurement platforms exhibit low rates of usage. Fourth, in cases when e-procurement has been adopted, specialists report relatively high levels of dissatisfaction. Finally, the digitalization of public procurement might have simply enforced extant constructs and has yet to support expected financial discipline (McCue and Roman 2012).

[†] For a detailed discussion of the survey results see McCue and Roman (2012).

TRACING E-PROCUREMENT CHALLENGES/BARRIERS

Scholars have long pointed out that in governance by contract within the hollow state (Milward and Provan 2000, Savas 2000, Sclar 2000, Kettl 2002, Cooper 2003, Van Slyke 2007) public procurement and contract management will play a significant role. However, as argued in the previous section, at the moment it is difficult to claim that e-procurement can uphold the role of a strategically significant policy and financial dimension in governance.

An in depth review of extant academic literature does not suggest one primary motive behind the limited transformative impacts of e-procurement. Whilst, many of the challenge faced by governments in their efforts to digitalize procurement are common to all ICT adoptions, there are some barriers that are specific to public procurement. Table 3 offers a summary breakdown of the direct difficulties in maximizing transformative benefits of e-procurement.

Table 3. Transformation Challenges/Barriers

Challenges type	Description	Partial or full discussions provided by
Fragmented understanding of technological dynamics, implementation and spotty legislative support	E-procurement means different things to different stakeholders. Systems are implemented in a localized manner. There is limited organizational or national integration or legislative coordination.	Hawking et. al (2004), Andersen (2004), Leukel and Maniatopoulos (2005), Gichoya (2005), Henriksen and Mahnke (2005), Preus (2007), Hardy and Williams (2008), Bof and Previtali (2007), Varney (2011), Mota and Filho (2011), Hui et al. (2011), Hoque et al. (2011), McCue and Roman (2012)
Technology's "halo" effect, lack of technological "know how" and financial constraints and waste	The expectation that it is sufficient to implement the technology and the benefits "will come". Implementing e-procurement without providing the supportive context is unlikely to lead to desired outcomes. Limited understanding of technological effects coupled with lack of experience in the matter cause	Andersen (2004), Hawking et. al (2004), Gichoya (2005), Henriksen and Mahnke (2005), Bof and Previtali (2007), Hardy and Williams (2008), Thomson (2009), Varney (2011), Mota and Filho (2011), Hoque et al. (2011)

great financial waste and strategic disappointments.

Incompatibility of platforms or managerial/philosophical strategies	E-procurement systems are often incompatible with other digital platforms used by organizations or with traditional procurement practices.	Croom (2000), Andersen (2004), Leukel and Maniatopoulos (2005), Gichoya (2005), Thomson (2009), Varney (2011), Karjalainen and van Raaij (2011), Hoque et al. (2011), McCue and Roman (2012)
Interrupted (punctuated) implementation: Or the need for maintaining dedication and learning beyond first stage adoption	As it is the case with the majority of ICT use in government, e-procurement adoption is undertaken in spurts. At this point in time, there is an obvious shortcoming in continuous support and dedication to the idea. Early failures stymie future investments or transformational changes.	Andersen (2004), Varney (2011), Mota and Filho (2011), McCue and Roman (2012)
Internal customer satisfaction and maverick purchasing	If the e-procurement software is found to be inadequate for organizational needs and not representative of the decisionmaking dynamics within the agency - procurement specialists will "go around" the system. Thus, any benefit from e-procurement will be lost since the system's use becomes rather trivial.	Croom and Johnston (2003), Bouwman et al. (2007), Brandon-Jones and Carey (2010), Aboelmaged (2010), Mota and Filho (2011), Varney (2011), Diggs and Roman (2012), McCue and Roman (2012), Karjalainen and van Raaij (2011)
Resistance to technology and cooptation	Organizations often resist the changes associated with e-procurement adoption. Without a proper approach and managerial support the system will be resisted and sabotaged or co-opted within existing power constructs.	Hawking et. al (2004), Croom and Johnston (2003), Thomson (2009), Brandon-Jones and Carey (2011), Mota and Filho (2011), Hoque et al. (2011)

Complexity, uncertainty, ambiguity and network-driven contractual instability	Public procurement is probably one of the most complex areas of public administration. Within the context of increasing reliance on contracts and networks matters become even more complicated. The governance complexity and instability make effective e-procurement (transformative procurement in general) challenging and at times even technologically prohibitive.	Croom (2000), Andersen (2004), Leukel and Maniatopoulos (2005), Enquist, Johson and Camén (2005), Henriksen and Mahnke (2005), Enquist, Brown, Potoski and Van Slyke (2006, 2007, 2009), Thomson (2009), Varney (2011), Camén and Johnson (2011), Diggs and Roman (2012), Entwistle (2011), Peck and Cabras (2011), Hoque et al. (2011)
Biased data or "dead end" data collection	Either due to financial and knowledge constraints, strategic focus or organizational and legislative design - the data and insights garnered by employing e-procurement are not used. When such data are considered, it is often the case that it's done in a biased manner.	Andersen (2004),Gichoya (2005), Hardy and Williams (2008), Thomson (2009)
Software developers are not "public" ready, oriented or reasonably priced	The platforms available on the market are either primarily oriented for the private sector or are not sufficiently sophisticated to address the complexity and network-driven needs of a public entity. Public procurement specialists are not active participants in the design of the procurement software. What is appropriate for the private sector is also found fitting for the public sector as well.	Andersen (2004), Hawking et. al (2004), Leukel and Maniatopoulos (2005),Bof and Previtali (2007),Thomson (2009), Varney (2011), McCue and Roman (2012)

It should be noted that the breakdown along the dimensions offered in Table 3 is not the only reasonable or possible perspective. The literature on e-procurement offers a rich choice of discussions about the challenges faced in e-procurement implementation. Hawking et al. (2004) and Bof and Previtali (2007), for instance,

provide two wonderful frames/classifications of barriers faced in e-procurement implementation. The approach taken in this paper differ from other extant works in that it focuses on public procurement and specifically targets barriers in achieving transformative and policy impacts.

MAXIMIZING TRANSFORMATIVE BENEFITS

Based on the discussion on barriers in e-procurement adoption, one could argue that there is not one dominant challenge. Certain barriers to transformative towards the achievement of transformative impacts are characteristic to the use of technology for provision of public service, while others are specific for digital procurement (Andersen 2004). Together, the dimensions delineated in Table 3 result in a failure on the part of e-procurement initiative to transfer democratic needs, professional expectations and legislative norms into practice through process designs and resulting decisionmaking.

It is highly doubtful that addressing one barrier at a time could lead to desired outcomes. The complexity of public purchasing and the monitoring of contractual relationships would render ineffective any reform initiative that is anything less than a strategically coordinated effort at the national level. Whilst, it is difficult to argue for one best way of guaranteeing transformative impacts within e-procurement constructs; there are several action directions that ideally should be addressed simultaneously.

First, it is crucial to develop the incentive and legislative framework for supporting the development of a software market specifically focused for public procurement needs. The survey results and the review of the literature confirm that many of the shortcomings of e-procurement platforms can be traced to the lack of choices, knowledge and communication when politically-driven implementation decisions are made.

Secondly, notwithstanding the rhetorical implications of "governments that work better", e-procurement will not become an effective policy and financial tool without adequate training of

procurement specialists. There is little "halo" about technology. Its transformative effects will go only as far as the users will allow it to go. In epistemological sense, public servants have to realign their learning habits and interpretation perspectives to fit the capacities offered by technological constructs.

Thirdly, scale matters. The nature of public procurement minimizes the probability of e-procurement motivating transformative changes, if procurement is digitalized only in a localized manner and it is used on limited/discretionary bases. If e-procurement is seen both as a product and an enforcer of extant human constructs (Orlikowiski 1992, 2000, Mota and Filho 2011), it could be argued that the probability of achieving transformative impacts exhibits an direct association with the scale of the implementation.

Fourthly, notable financial investments are necessary in order to maximize the benefits of e-procurement. The capability to generate instant data and to automate large scale comparisons for purposes of decisionmaking were some of the primary reasons behind the hype of digital procurement. If such data goes unused or is misunderstood there is a higher probability of e-procurement becoming another underperforming, costly and ineffective governmental project.

Finally, and probably most important, e-procurement adoption needs to be constructed on a flexible circular-driven learning process within a cloud-type framework. It might come across as bland; however, all stakeholders need to have an "access point" within the process. Figure 1 provides a visual model of the construct that address the lack of transformative effects on the part of e-procurement platforms. Here, it is important to note that while the learning process is circular, it "starts" with the procurement specialists and the public agency. The parameters for the software design flow from practitioners to designers. Thus, in a normative sense, in order to achieve transformative impacts e-procurement platforms have to adapt to the needs and realities of practice, rather than the other way around.

E-procurement Cloud

Legislative/Judiciary Policy Constructs and Processses

Software Market/ Designers

Civil Society/NGOs/Citizens

Other Public

Agency

Procurement

Design

Implementation

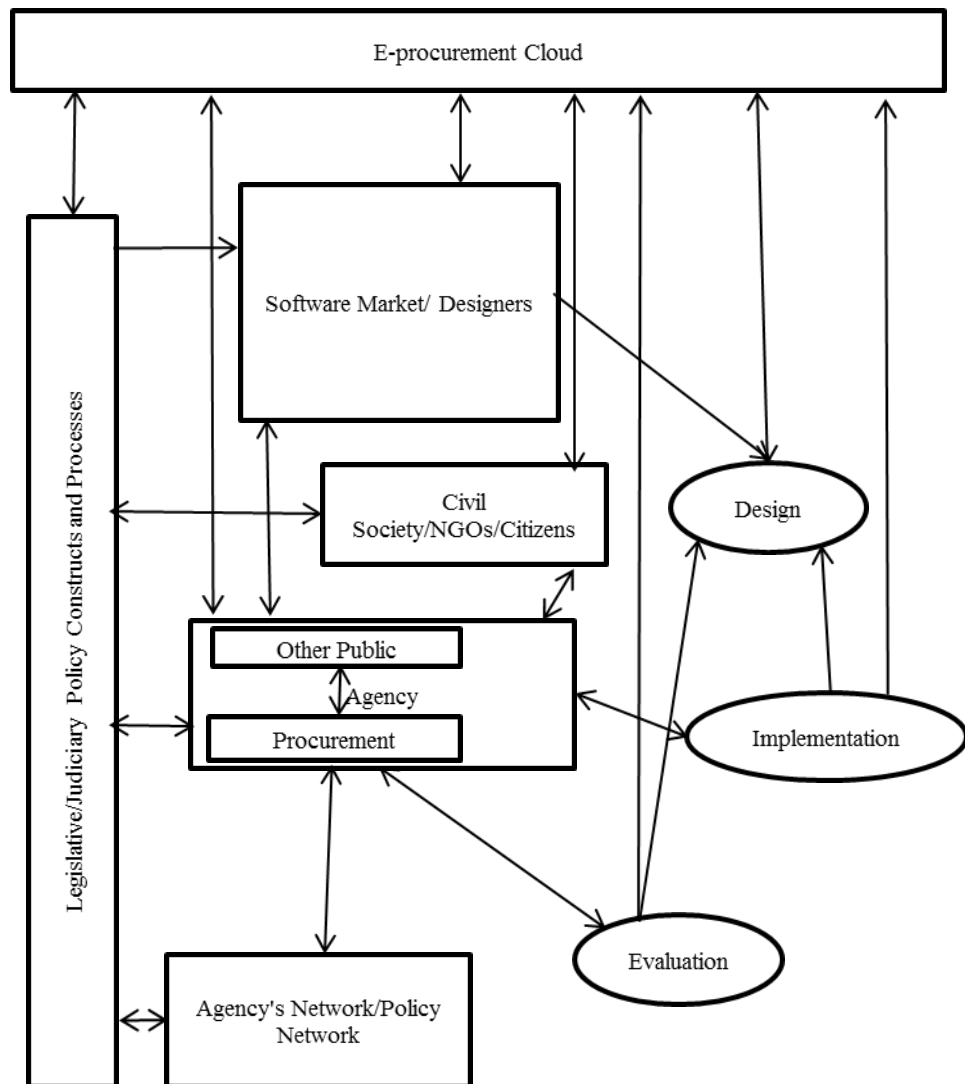Evaluation

Agency's Network/Policy Network

Figure 1. Normative Model for Public E-procurement Adoption

The schematic in Figure 1 is not the only possible visualization and its primary goal is to emphasize the circularity and complexity of a benefit maximizing mechanism, but also the "right" and need for all stakeholders to become involved in the process. In the graph the one directional arrow represents a one-directional communication/learning process and the two-headed connection stands for a two-way continuous communication/learning dynamic, respectively. Rectangle shapes are used to focus institutional structures, whereas the oval shapes emphasize functions‡.

CONCLUSION

This paper started with the argument that e-procurement implementation has yet to achieve any transformative effects within realm of public administration. The survey results and recent academic literature reflects that, regardless of organizational context or governmental level, digitalized procurement might currently have limited policy impacts and is far from the financial monitoring mechanism that it was hoped to become.

While there is limited evidence in terms of transformative-type changes, this does not mean that the expectations of e-procurement benefits were constructed on an unrealistic framework. Prolonged and sustained investments are often necessary in order for desired technology-induced changes to become reality (Fountain 2001, Andersen 2004, West 2005). It might be the case that it is still relatively early to provide a final or conclusive evaluation of the transformative capacity of digital procurement.

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‡ The case can be made that evaluation, implementation and design are institutional structures as well. For simplicity of representation, it helps to treat these constructs as functions. The legislative, network, civil society and agency contexts are obviously more complex than represented in Figure 1, but such simplifications are found appropriate here.

The literature review suggests that the dynamics of e-procurement challenges are too complex to respond to one-dimensional or localized-type solutions. There is a high probability that within inappropriate implementation constructs, the introduction of e-procurement might be associated with low benefits to cost ratios. Adoption of technology does not guarantee results and implementing technology for the sake of implementation increases the probability of failure and adverse impacts.

In sum, it appears that public servants are an important part in whether e-procurement adoption yields the desired benefits. It can be argued that without a "change in the mindset" on the part of administrators technology in public sector will be co-opted and will enforce existing administrative habits and power structures.

The discussion and the literature reviewed in this paper indicate that lack of transformative impact might be a common denominator for e-procurement platforms. As it is often the case with public sector initiatives, there is a trade-off between adopting e-procurement to specific organizational needs and achieving broader policy impacts. Under current budgetary conditions balancing competing demands and achieving scale policy coordination through e-procurement, while maintaining local flexibility, becomes a critical demand of governance. This paper intended to delineate the main barriers towards achieving transformational impacts and to suggest a redressing construct. Future research should examine the viability of the suggested approach. It might be early to conclusively evaluate the impact of e-procurement and the initial results might not be as positive as expected; however, the extant body of scholarly work suggests that issues of digitalized public procurement have been clearly delineated and are well understood. Within this context, maximizing the policy and financial impacts of public procurement becomes a matter of coordinating scale integration, minimizing friction across challenges and involving public servants.

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APPENDIX A

1. In what State, Province, or Territory is your entity located?
2. For what type of entity do you work?
3. Which BEST describes your position?
4. Which organizational structure BEST describes your procurement
    function?
5. Do you work for (indicate type of procurement function)?
6. What is the total number of full-time equivalent (FTE) employees in
    your
    procurement office?
7. What is your # of active contracts (do not include POs in this
    number)?
8. What is your # of informal 'written' (including email, fax, and on
    line) request for quotes issued per year?
9. What is your # of formal competitive solicitations (i.e., IFB, RFP)
    issued per year?
10. What is your # of POs processed per year?
11. What is your # of invoices processed per year?
12. What was your entity's total Operating expenditure on goods and
    services
    (regardless of how procured or paid) in FY 10?
13. What PERCENTAGE of the amounts above were under
    Procurement's responsibility?
14. What was your entity's total Capital Outlay expenditure in FY 10?
16. Are you using a state furnished system for any of the following
    functions?
17. Does your entity/agency use any other Procurement software?
18. Please estimate the approximate NUMBER OF YEARS your entity
    has been
    using procurement software of any type?
19. Please indicate how each capability is provided in your current
    configuration.
20. To what extent are these capabilities integrated with your
    financial system?
21. How would you rate your satisfaction with the capabilities of your
    software?
22. What level of benefit have you found in the following aspects of
    using a procurement software system?

23. What PERCENTAGE of your total system cost is covered by each type of fee?
24. If you use an electronic catalog function for requisitioning, does it provide special attention to green products?
25. Did you enhance or modify your procurement software system to help compliance with federal stimulus reporting requirements?
26. Which commodity coding system do you use with the software?
27. Are you currently planning to implement new or additional procurement software?
28. Are you currently planning to implement procurement software?
29. What PRIMARY reason has prevented you from implementing a procurement software system?
30. How would you rank the following benefits of using procurement software?