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A strategy to reduce public expenditure based on e-tendering and PROCUREMENT BUSINESS INTELLIGENCE: The case of Portugal

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EXECUTIVE SUMMARY

The high average levels of public deficit and national debt of EU member States justify the development of a new strategy to reduce public expenditure.

E-public procurement can be a key instrument to achieve a significant reduction of such expenditure without introducing more cuts on governmental outputs to serve citizens, communities and corporations, particularly in the sensitive areas of social assistance, education and health.

Actually, public procurement accounts for more than 16% of GDP and it has not yet made full use of innovative models and tools already adopted by advanced business sectors to streamline their supply chains, to increase transparency and speed as well as to reduce administrative cost and contract price.


Therefore, a significant potential for public savings can be used in public procurement but such process of change requires a new management culture and new tools. In this communication, the author analyses key lines of change to be pursued and show that e-procurement and, particularly, e-tendering are the appropriate tools to implement such changes because they can support significant improvements to cope with strategic and tactical challenges of public procurement if supported by Procurement Business Intelligence Instruments (PBI).

The experience of Portugal is adopted as an important case study because it is the first Member State to have mandatory e-public procurement including e-public Tendering for any open, restricted or negotiated procedure, since Nov. 2009.

The different types of savings were estimated using public procurement data for 2010 and an overall reduction between 6% and 12% can be estimated for the total public expenditure due to e-Tendering and PBI.

Several remarks and conclusions drawn up from this case study are also presented herein.

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*"Innovation rather than price competition
in what drives the market process"*
Prof. William J. Baumol, New York
University.

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1

WHY A STRATEGY TO IMPROVE PUBLIC PROCUREMENT?

Public expenditure is under scrutiny due to the well known financial problems of most European member States with too high public deficits and national debts:

Estimated data for 2010

	EU Average μ	Member States with public deficit or public debt above μ
Public Deficit (% GDP)	6.8	IR, GR, ES, FR, LV, LT, PL, PT, RO, SK, UK
Public Debt (% GDP)	79.1	BE, IR, GR, IT, PT

Table 1

Public expenditure includes quite rigid components related to salaries of civil servants or to social expenditures (pensions and subsidies) but also more flexible amounts due to the acquisition of goods, services and public works counting for about 16% of the GDP (EC, 2010) and this percentage tends to grow because of the prevailing paradigm of the “contratualizing state” (Vincent-Jones, 2006).

Therefore, a key strategy to improve public management reducing public expenditure should be based on the improvement of the efficiency of the total bill related to contracts between public contracting authorities and all types of suppliers ranging from utilities (energy, communications, oil, etc.) to specialized high tech suppliers (Health, ICT, etc.) and from common goods sellers to construction firms.

However, pursuing such strategy is an endeavoring enterprise for three reasons:

A – Political priority is being given to the improvement of governmental services (outputs) using ICT, (See e-Governmental programs or the Digital Agenda) rather than restructuring inputs.

B – The administrative culture and tradition has given priority to the need of having contract formation according to the existing European and national legal rules rather than on the evaluation of their efficiency or effectiveness explaining why in most cases there are audits checking the observation of such rules but there is no systematic evaluation of their effectiveness.

C – European directives on public procurement and most national legal frameworks are designed to guarantee the implementation of principles concerning the equality of treatment, the freedom of movement and the transparency of decision in order that any economic operator will have similar opportunities and that the public markets will not violate the principle of a single market for the whole European Union.

Perhaps these facts explain why there are annual benchmarking exercises about e-government but no results available about the efficiency and effectiveness of public procurement.

On the other hand, quite a high priority has been given by any successful business during the last decade to redesign its supply chains or to improve the efficiency and effectiveness of its procurement systems and so a gap is growing between the procurement systems of the private sector and of the public administration, undermining the possibility of delivering better public services using less resources.

Public procurement should be also an instrument of key public policies oriented to pursue a paradigm of sustainable low carbon society, to promote innovation and to support SMEs but these objectives should be achieved without increasing the existing problems of public finances and hence improving the efficiency of public procurement becomes even more critical.

2

WHICH STRATEGY?

Improving public procurement efficiency should not ignore the lessons from different types of business (See Aberdeen Group, 2009) and hence the following lines of development should be considered (Mentzer, 2001 and Chaffey, 2007):

A – Dissemination of information about future needs and contracting opportunities.

This principle is well illustrated by industrial groups planning and scheduling ahead most supply contracts.

B – Qualification and certification of potential suppliers according to strategic principles and avoiding lack of information about any occasional tenderer.

This trend is increasing due to the additional requirements of quality, environmental compliance (green procurement), corporate social responsibility, etc. Automobile industry is a good example of procurement based on qualification.

C – Wide spread of information concerning any opportunity to attract potential candidates or to receive tenders.

This is a key condition to buy well as high value for money implies competition and increased worldwide competition is crucial in most sectors as it happens in the energy and petrochemicals industry.

D – Easy to use collaborative standards and protocols to facilitate the participation of multiple suppliers with low entry costs.

Examples from aircraft industry (See, for instance, the well known case of Boeing using CATIA, in Bakos and Brynjolfsson, 1993) and from construction sectors can be quoted (Costa and Tavares, 2011).

E – Transparent procurement rules including negotiations, auctions and multicriteria evaluation of candidates or tenders.

Avoiding traditional long and bureaucratic processes and adopting transparent evaluation and award methods improves procurement and stimulates a confidence relationship between buyers and suppliers. Food distribution chains adopt this approach for a wide diversity of products.

F – Evaluation of the execution of procurement contracts in terms of key performance indicators clearly specified by the contract.

This practice is quite widely disseminated in most industries and generates key results to apply line B.

G – Fast on-line management of operations to implement procurement procedures avoiding paperwork

E-platforms have been widely used to implement these procedures reducing delays and costs as it happens in health and many other logistic systems (books, equipment, etc.).

It should be noted that A, B and C include strategic decisions on procurement, D, E and F concern more tactical challenges and G focus on operational issues (See, Bailey et al, 2008).

The implementation of these 7 lines implies an appropriate management culture as well as adequate tools and experience shows that such tools require the implementation of procurement through an e-platform to achieve:

A – quantitative forecasting and communication about future needs

B – self assessment and on-line evaluation of suppliers profiles

C – web based dissemination of information including segmented mails and alerts to groups of potential suppliers

D – collaborative spaces allowing submission of applications, tenders and multiple contributions from different actors implying minor setup and interaction costs

E – on-line negotiation and e-auctions

F – multicriteria evaluation of candidates and tenders to improve transparency, fairness and speed

G – integration and use of business intelligence tools operated by different organizations

H – best use of the new and prevailing paradigm of cloud computing to establish the most appropriate procurement IT networks (Pescatore, 2010).

Electronic platforms can be the basic tool to support these functions if they are not reduced to a secure communication system but if they are enriched with key decision and management tools to offer **Procurement Business Intelligence (PBI)**, following challenges already discussed (See Monteiro et al, 2003).

Modernization of public procurement has been pursued by several governments since the eighties (See, e.g., Cabinet Office, 1984 and HM Treasury, 1995) but the new culture and instruments provided by eprocurement are boosting the development of new approaches, methods and solutions as it is clearly presented by the European Commission (EC, 2010).

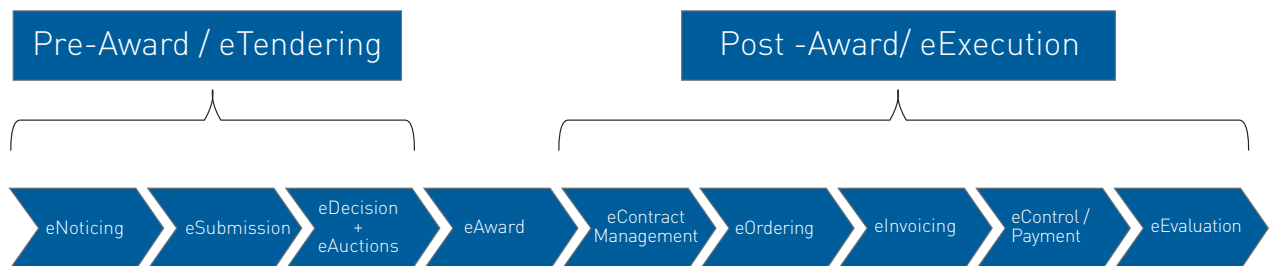
Thus, the adoption of e-procurement and particularly of e-tendering seems to be the appropriate tool to support a new culture on public procurement explaining why EC is giving a high priority to this process of change since 2005 (Manchester Declaration of the Informal Council of Ministers of EU), following the important directives on public procurement: 2004/17/EC and 2004/18/EC.

3

ePUBLIC PROCUREMENT AND eTENDERING

The concept of ePublic Procurement includes multiple stages that should be clearly defined and which are presented in Fig.1.

The ePublic Procurement Process



Source: Adapted from "The 2009 EU eGovernment Procurement Benchmark Report"

Fig1

The full implementation of ePublic procurement implies all these stages and their degree of development or dissemination is not homogeneous (See Nguyen and Coscia, 2010). Several remarks should be made:

e-noticing: all member States have already achieved a rate higher than 80% and 45% of member States have reached more than 98% of eNoticing, according to the EC Publication Office (See, Reis and Hardly, 2010). However, there is a significant number of contracts without notice due to their lower value despite interesting experiences such as that pursued in UK (www.supply2.gov.uk);

e-submission requires high availability of services and it can be helped by more advanced tools such as those oriented to compile personalized profiles. There is clearly quite a long way to go to complete availability for these activities, which are the core of the eTendering process;

e-decision is a crucial stage as it includes the process of analysing the tenders with three objectives:

- a) Checking if each tender complies with all attributes imposed by the procurement documents and rejecting it if not;
- b) Evaluating the descriptors of the criteria under competition to estimate their scores for each accepted tender;
- c) Estimating the overall score for each tender in terms of the scores and weights of the evaluation criteria and ranking the tenders in terms of the so-called "**most economically advantageous tender (MEAT)**" to obtain the best value for money.

The adoption of an electronic platform can help very much to perform these activities effectively and efficiently because:

- a) All tenders can be easily compared by each attribute and criterion through electronic matching of documents avoiding cumbersome paper-based handling;
- b) Any queries can be immediately sent to each tenderer through the electronic platform and their answers collected avoiding mail delays;
- c) Decision support tools to estimate scores and rankings can be directly applied to elicited information;
- d) Preliminary rankings and reports can be prepared through collaborative work supported by the electronic platform;
- e) Negotiations, final decisions and notices can be automatically produced and shared through the electronic platform.
- f) E-negotiation and e-auctions can be a powerful tool to increase competitiveness. All these activities are included in e-tendering and they are a major factor for higher levels of competition and transparency.

The post-award phase includes all the activities necessary to execute the contract and to control its execution.

The activities of e-ordering and e-invoicing are adopted in several member States such as Denmark but less disseminated in southern Europe.

The pre-award stages are critical to apply better principles of strategic procurement as they should include all tasks concerning procurement forecasting and planning, environmental and social responsibility guidelines, certification and qualification of tenderers, wide spreading bidding competition.

Pre-award stages are also critical to improve tactical procurement management, namely promoting the adoption of collaborative standards and protocols, reducing entry costs, increasing transparency on award criteria, improving negotiation and price/cost reduction procedures and evaluating contracts.

Obviously, post-award stages focus more on operational issues and they can also contribute to cost/time reduction and to support better processes for contract management and control.

The improvement of procurement business processes depends mainly on the new solutions developed to cope with the strategic and tactical procurement issues as it was pointed by experts on management (Bailey et al, 2008) or on IT research (Wilson, 2010).

Therefore, it is not surprising finding out that the critical stages to achieve higher transparency, more cross-border competition and better value for money are based on e-tendering as it can be concluded from the survey on impacts answered by several experts (Tavares, 2010):

The impact matrix

Level of Impact of eProcurement Stages on key goals <small>(0 → No impacts; 10 → extremely high positive impact)</small>	Anticipation and Integration Needs (A)	Wider access to notices (B)	More cross-border competition (C)	More transparent awarding (D)	Less paperwork along project execution (E)	Better evaluation -KPI- (F)	Total Impact
eTendering	5	10	10	10	5	5	45
eAward	-	-	5	10	5	5	25
eExecution	-	-	-	-	10	15	15
eEvaluation	-	-	-	-	10	10	10

Fig. 2

Thus, e-tendering supported by an e-platform is the appropriate tool to develop a real e-public marketplace and facilitating an intensive and extensive spectrum of interactions between procedures and candidates or tenderers as well as the use of tools to contribute to better procurement: Procurement Business Intelligence (PBI).

Therefore, electronic platforms should meet key expectations to facilitate and to enhance the potential of e-tendering.

4

FROM ELECTRONIC DATA EXCHANGE TO PROCUREMENT BUSINESS INTELLIGENCE (PBI)

The e-platform should act as a transactional device offering appropriate security levels and encryption tools but also as a supporting resource for suppliers and procurers.

Therefore, the e-platform should be not just an instrument to exchange data electronically but also on electric instrument to perform key and advanced functions denoted by PBI:

A – Document editing, transfer, storage and classification. Classification should be carried out using appropriate taxonomies;

B – Web dissemination of documents (notices, news, etc.) – $1 \times \infty$ – including pre-defined links;

C – Sending notices and other documents to official journals (Official Journal of the European Union, national journals, etc.) including an automatic system to respect pre-defined formats, protocols of transaction, passwords, etc. – $1 \times N$ –

D – Sending invitations, notices, news, etc. to sub-groups of registered entities according to pre-selected lists or to lists generated in terms of keywords and, eventually, of previous evaluated performances – $(1 \times M)$ – through expert systems identifying for each case the most appropriate entities. This tool can be applied either to suppliers or to buyers.

E – Identification of collaborative domains of interactive entities (for instance, procurers and potential candidates, candidates or tenderers) and automatic communication or sharing of messages (clarifications, etc.) – $(M \times M')$ –

F – Receiving communications from non-registered entities or from registered entities;

G – Time-stamping and time checking;

H – Electronic signatures according to EU rules for certification purposes;

I – Attestation according to EC member State rules (e-Certis);

J – Supporting tools to treat documents received from economic operators for qualification or tender evaluations;

K – Classifying documents in terms of external taxonomies available through the platform (CPV, GMDN, etc.) but also in terms of keywords elicited from the text using a specific library of keywords to produce ontologic descriptions. This functionality is essential to classify notices in terms of types of contracts but also to match suppliers with a specific invitation;

L – Self-assessment on-line tools to support the qualification of candidates in terms of taxonomies developed to describe firms and procurement opportunities.

M – Alert systems for suppliers about procurement opportunities in terms of their features and of contracts taxonomies;

N – Pre-checking of tenders (“Click-Check”);

O – Supporting tools for tender submission and monitoring the process of tender acceptance and evaluation;

P – Supporting tools to build and to apply a multicriteria evaluation model for the complex qualification model or for tender evaluation (Graça and Tavares, 2009);

Q – Formulation of Key Performance Indicators (KPI) in terms of the multicriteria evaluation models;

R – Supporting tools for contract award and review procedures;

S – Supporting evaluation of contracts based on Key Performance Indicators (KPI);

T – Preparing and sending e-orders and e-invoices;

U – Preparing and sending e-payments;

V – Grading suppliers in terms of evaluated contracts;

X – Production of lists of suppliers by types of contracts and by their grades.

Y – Easy interaction with external libraries of documents (e.g., models of contracts);

Z – Easy integration with ERPs (inventory, accounting, management, etc.)

An e-platform performing these functions becomes a key instrument to implement the new concept of Procurement Business Intelligence (PBI) helping to achieve higher levels of efficiency on the whole procurement process.

5

EVIDENCES ON SAVINGS

Savings from substitution of paperwork by electronic systems have been studied by several authors since the eighties.

For instance, Guth (1988) concluded that the administrative costs account for more than 25% of the transactions costs for hospitals and avoiding paperwork can reduce more than 60% of such administrative costs. More recently, the potential offered by transaction marketplaces to reduce transaction and purchase costs has been estimated by several authors (See, e.g., Gulbreth et al, 2005).

However, the recent case of Portugal (Tavares, 2008) is much more relevant and important because, for the first time in EU, and across all sectors, e-public procurement including etendering, is mandatory for any open, restricted or negotiated procedure since Nov. 2009, and tendering by invitation is also often carried out through an e-platform.

The market of e-platforms is open to competition under a regulatory agency and hence key platforms such as Vortal (leader of the market of e-platforms, www.vortal.biz) are contriving to pursue the new paradigm of Procurement Business Intelligence.

Evidences on savings can be now discussed after one year of mandatory application of e-public procurement including e-public tendering:

- a) Pre-award administrative savings
- b) Post-award administrative savings
- c) Better value for money of the awarded tender

Pre-awarded administrative savings were studied by (Deloitte, 2008) concluding that:

Type of procedure	Average saving per procedure ()
Invitation	113
Open or restricted procedure	437

Table 2

Post-award savings can be estimated assuming that an average saving of 3 per document is obtained and that an average member of 10 documents per procedure have to be issued.

Better value for money is quite an important advantage of e-public procurement as it is confirmed by the 2nd National Survey on e-Public Procurement enquiring more than 2000 portuguese procurers and suppliers (Tavares et al, 2010):

How do you rate e-public tendering compared to traditional paperwork procedures?

	Better	Worse
Procurers		
More competition	36%	21%
Higher transparency	65%	2%
Higher value for money	40%	16%
Suppliers		
More competition	53%	11%
Higher transparency	61%	11%
Higher value for money	29%	9%

Table 3

Several case-studies show that e-tendering increases significantly the number of tenderers and that price is reduced around 20% (Ricou, 2007).

The estimation of the price reduction was carried out for a sample of 50 public hospitals (EC, 2010) comparing the best price offered by tenderers that have bid before adopting e-tendering and the best price now offered by those old tenderers and also by new tenderers attracted by e-tendering obtaining savings of about 18% of contract value.

Another important business case was developed by the author to IESE (Business School, University of Navarra) estimating the savings due to the increase of competition generated by e-procurement for a major public hospital in Lisbon and the percentual estimated savings are 22.1%; 9.3%; 43.3% for goods, services and public works, respectively (Tavares, 2011).

Therefore, the estimation of savings due to e-procurement including e-tendering can be carried out using a conservative saving estimate of 18% and considering the statistics about the procedures carried out during 2010 in Portugal using e-platforms.

Such data were officially presented by the national regulator of public contracts (InCI, Instituto da Construção e do Imobiliário, 2011):

	Nº of Procedures using e-Tendering	Contract Value (M€)
Goods / Services		
Invitation	62150	2394
Open or restricted competitive procedures	4315	1876
Public works		
Invitation	11139	1462
Open or restricted competitive procedures	2135	5225

Table 4

and so, the following results can be obtained:

Estimated Savings by e-Public Procurement (Portugal, 2010)

Pre-award administrative savings	a) Invitation b) Open / restricted	2.8 M€ 8.3 M€	11.1 M€
Post-award administrative savings	2.4M€*		
Better value for money using e-tendering in open/restricted procedures, assuming that: a) Full benefits of competition are not hampered by undue obstacles (too short bidding periods, too tight specifications, etc.) in p = 100% of procedures	0.18 x 7101M€ = 1278 M€		
b) p = 50%	639 M€		
Total = 652.5 M€ ↔ 1291.5 M€			

* For a total of 10957M€ contracted amount and assuming that all orders and invoices are electronically implemented

Table 5

Hence net savings can reach about 6% - 12% of the procured value (Portugal, 2010).

Several important remarks can be now drawn up:

A – The increase of competition and the reduction of price accounts for more than 98% of the savings as the administrative savings are no more than 2% of the total. The smallest percentage is due to post award administrative savings even if e-ordering and e-invoicing are fully implemented.

B – This means that the increase of competition in EU has also quite positive impacts on savings of public expenditure as it is explicitly acknowledged by the recent memorandum of understanding agreed between the European Commission, the ECB, the IMF and the Government of Portugal.(**)

C – Quite an efficient strategy to increase savings can be implemented moving procedures from invitations to open/restricted procedures and avoiding undue obstacles to hamper competition (too short bidding periods, too tight specifications, etc.).

D – An overall saving of about 12% of public expenditure could be obtained for EU if these results were generalized assuming full competitive conditions and those savings are more than 200 000M€ per year.

E – Besides savings, there is a strong consensus about the increase of transparency due to e-procurement and hence this change can also be useful to open up public markets to cross-border competition, to stimulate SMEs development, to increase innovation and to fight against corruption.

(**) See paragraphs from 3.63 to 3.82, 8.2; 8.3 and on the specific topic of general public procurement: 8.4 to 8.11 in "Portugal: Memorandum of Understanding on Specific Economic Policy Conditionality", 3 May, 2011.

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eVA - European Vortal Academy is an interdisciplinary program devoted to the training of leaders and of technical staff in charge of leading and implementing the process of change from traditional bureaucratic tendering to eTendering. More than 1000 participants followed different courses covering an wide spectrum of topics such as the new legal European framework, eBusiness, ePlatforms, ePublic procurement and eTendering applied to the acquisition of supplies, services and works. The evaluation by the participants has been systematically between 4 and 5 out of a scale from 1 to 5 (excellent).

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