HOW E-GOVERNMENT MAY ENHANCE PUBLIC PROCUREMENT

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ABSTRACT: Huge asymmetries characterise information within public procurement systems. While enhancement has been achieved at an upper level of the procurement chain (i.e., centralisation of bids), poor efforts characterise the lower level. E-Government, which aims to better manage public information, could represent a way to augment transparency and apply more effectively market rules, as well as to advice public managers in defining solutions to emerging problems. The article starts with a theoretical review of the link between e-Government and procurement, then analyses two concrete cases: one on the supply side (CONSIP) and one on the demand side (Hermes), paying particular attention to perspective and actual effects of this latter R&D project, which sees a joint effort of private and public entities.

INTRODUCTION

Information and Communications Technology (ICT) is radically changing productive processes in both private and public sectors.

Mainstream economic thinking generally accepts the argument according to which the transaction and information costs that are inherent to policy-making are largely greater than those incurred by the private sector (Dixit, 1996). If this is true, then public sector intervention is denied the possibility of achieving more efficient results than those obtained by the private sector (Holstrom & Milgrom, 1991). Yet, ICT is radically transforming the way government entities perform their

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activities, which makes a timely debate on public sector information, in all its forms, all the more crucial.

Public administrations are following the example of the private sector by harnessing the efficiency-boosting potential of these new technologies. This development goes under the name of "electronic government" (e-Government) and it encompasses both the internal and external applications of ICT in the public sector.

The importance of this development is increasingly evident in many countries of the world. Experiments are underway in Europe, at all levels of public administration (local, regional, national and supranational), to improve the efficiency of public services and to increase interactions with the external world. ICT not only facilitates the inner workings of administrative machinery, it also eases communication between different branches of the administration and its interaction with citizens and businesses. This latter aspect is one of the main advantages of e-Government, as it brings public sector entities, businesses and citizens closer together, as well as improving the standard of public services.

In September 2003 the European Commission issued a Communication on “The Role of e-Government for Europe’s Future”: it stated that e-Government “is an enabler to realise a better and more efficient public administration. It improves the development and implementation of public policies and helps the public sector to cope with the conflicting demands of delivering more and better services with fewer resources” (p.7). More recently, in the Ministerial Declaration approved unanimously in Manchester in November 2005, EU Member States agree that “by 2010

- e-Government will be contributing to high user satisfaction with public services
- e-Government will have significantly reduced the administrative burden on businesses and citizens
- the public sector will have achieved considerable gains in efficiency through the use if ICT
- European administrations will have significantly increased transparency and accountability wherever possible and relevant through innovative use of ICT” (p.4)

In order to understand just how complex the impact of ICT on public sector information actually is, it may be useful to start with a clear definition of the scope of e-Government.

Definition of e-Government

E-Government is defined in the literature as "the process of transforming public administration's internal and external relations through network-based activities, information and communications technologies, in order to: (1) optimize service delivery, (2) increase citizen and business participation, and (3) enhance government capability" (Di Maio, 2001). This is probably the most comprehensive of all of the different formulations suggested so far to mark out the contours of this process, in that it identifies two macro areas - increased internal efficiency in the public administration and improvement of external relations with all parts of society - in addition to setting the medium-to-long term objectives. The implementation of these strategies is part of a broader process of re-definition of the administrator-citizen relationship, in an effort to respond to the need for change in the mechanisms of participation in the democratic life of a nation and also to boost efficiency - in terms of quality and cost - of the public services delivered to the community and to business, enabling the largest possible number of individuals and businesses to enjoy the advantages of the emerging Information Society (Aichholzer & Schmutzer, 2000).

Many of the definitions advanced at an international level go much in the same direction. European Commission (2003) defines e-Government as "the use of information and communication technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes and strengthen support to public policies"(p.7). EPAN (2004) and IDABC (2005) identify seven types of interconnected benefits: 1. improved quality of information and information supply; 2. reduction of process time; 3. reduction of administrative burdens; 4. cost reduction; 5. improved service level; 6. increased efficiency; 7. increased customer satisfaction.

All definitions imply a rather broad vision of e-Government, which is perceived not only as an evolution of the activities linked to the public sector, but also as part of a more generalized transformation of the State, through a deep re-examination of democratic practices and processes. For instance, in Zulfiqar *et al.* (2001) e-Government is portrayed as a

process that entails a complex and dynamic transformation of the entire state apparatus, at all levels, with ICT being used to involve citizens (C), businesses (B), administrations and governments - including foreign - (G) and public employees (E). These four categories represent the so-called "constituency" - the beneficiaries - of e-Government strategies: in practice it covers civil society and its democratic apparatus as a whole.

In a knowledge-based approach, a successful e-Government plan hinges on the full-fledged participation of all of the categories of stakeholders in the process. The combined contribution of all of these agents is the only way to achieve the "dissemination of information and knowledge" which - together with a profound re-thinking of relations between social "communities" - may not only bring about a powerful infrastructural and conceptual evolution of the administrative apparatus, but also modify the way individual rights and duties are exercised (Lenk & Traunmuller, 2000).

The use of ICT in the implementation process of e-Government closely reflects the two macro areas mentioned above. On the one hand, these new technologies contribute to an improvement of the internal efficiency of public administrations, by streamlining information and administrative process management - which will have an impact on relations between administrative apparatuses at both a horizontal level (between agencies, departments and ministries) and a vertical one (between central and local agencies). On the other hand, ICT enables better management of external relations - with the constituency - ensuring higher standards of service and information delivery to the public, as well as - at least potentially - enabling levels of democratic participation that were previously unimaginable (Caldow, 2001).

INFORMATIONAL ASYMMETRIES AND PUBLIC PROCUREMENT

From an economic point of view, the purchasing sector of a Public Administration is an area of intense public interest. Although data regarding the size of public procurement markets are limited, available statistics suggest that the amounts implicated are very large: the ratio of government procurement markets to Gross Domestic Product is estimated to be over 15%. Public procurement in the European Union equalled approximately EUR 1.5 trillion in 2002 – including the

purchase of goods, services and public works by governments and public utilities (OECD, 2005).

Furthermore, in the purchasing sector of a Public Administration there is much scope for savings: as pointed out by Wallis & North (1986), in a modern economy 45% of GDP can be accounted for by transaction costs. Since the costs of institutions are mainly transaction costs, ICT make institutions more efficient.[1]

In general, the use of ICT in procurement processes may lead to reduced costs and time for managing information, to integration, comparability and rapid update of data coming from different sources (e.g., enhanced monitoring), and, finally, to disintermediation and reduction of discretion, hence to more transparent information, limiting opportunities for bribery.[2]

As stressed in the literature, the reliability of public procurement can be damaged by the discretionary power of a public procurement agent or by a bidder, who holds information that is not accessible to government. Where and if interests diverge, this information asymmetry may consent exploitation. While the government aims to ensure adequate quality and service at a reasonable price, the public agent who holds information related to the process and the bidders might be tempted to overspend. In the same way, a public procurement agent who is in charge of defining the specifications of the bidding might have less knowledge of the market than suppliers (cost, average price, technical solutions, etc.). Therefore, a private firm might be asked to advise public institutions on technical aspects of tender specifications, even if the firm is among the competitors for the contract. Clearly, this represents an opportunity to influence the terms in a direction that could advantage certain market players or the firm itself.

By definition, corruption in procurement markets involves a different process of allocation of contracts than would have been obtained through a competitive process. Corruption either leads to a situation where the contract is not awarded to the lowest bidder (or the bidder who has offered the best solution from price and qualitative standpoints) but rather to the firm who has offered a bribe (or the highest bribe), or to a situation in which there are fewer bidders than would otherwise have been the case. In most cases, the end- user will end up paying more than he would have without the bribe and/or will receive lower quality

services. In this sense corruption in public procurement implies a distortion of the competitive process.

As stressed by OECD (2005), there are two types of related situations in which corruption by public officials can prosper. The first one is the situation in which a public official can allow or prevent an economic operator from exercising a profitable economic activity through the granting or the withholding of an authorisation. The second one is the situation in which the public official can exercise discretion in the awarding of a lucrative contract. In both cases, there is a "principal-agent" problem. Whereas the awarding of the authorisation or the contract are supposed to be done to maximise public welfare, the complexity of transactions makes it impossible for the end-users to award contracts directly and they have to go through an agent over whom they have limited control because of informational asymmetries. In such cases, there is a possibility for procurement officers or the members of the procurement commission to behave strategically, that is to say to design the contract, to select the bidders and award the contract in such a way that the winning bidder will not inevitably be the one who maximises the social benefits, but the bidder who will maximise his own welfare (by offering the largest bribe), without this strategic behaviour being easily detected.

In contrast, in cases where the procurement contract involves the provision of a standardised product (such as chairs or office desks), it will be more difficult for procurement officers to behave strategically without being exposed and, generally, there will be less concern about the possibility of corruption. However, when such standardised products are technologically complex and/or have to be used in conjunction with or by a highly specialised service provider, the risk of strategic behaviour on the part of a corrupted procurement officer (or of any person intervening in the procurement process) rises again.[3]

The conclusion reached by the Forum on "Improving Transparency in Public Procurement" organized by the OECD in 2005 is that for transparency to be an effective tool, public information should be *accessible* (i.e., understandable), *timely* (e.g., defining reasonable deadlines for submitting the bid), *consistent* (i.e., the same rules apply for all the bidders at the different stages of the public procurement process already outlined) and *objective* (i.e., a competitive environment for bidders is fostered by allowing the largest number of participants in

the awarding process and by ensuring that the public procurement process is based on objectively measured factors and it is not influenced by specific interest).

It is clear that improving transparency of the procedure by which the contract will be designed, the bidders will be chosen and the winner will be selected, on the one hand can diminish the ability of the public body in charge of organising the procurement market to exercise discretion and, on the other hand, allows the controlling bodies to monitor the process in a easiest way. Thus increased transparency is likely to diminish corruption.

However, some care must be taken that increasing transparency in order to decrease the possibility for public officials to engage in corrupted practice does not increase the scope for anticompetitive practices and for the corruption among the bidders themselves. It is well known that if perfect information is a condition leading to efficiency in competitive markets, it is also true that on oligopolistic markets (and the number of bidders on most public procurement market is limited) transparency can facilitate tacit collusion.[4]

In general, the literature agrees that process automation is an excellent tool to promote transparency in public tenders. Clear and simple procedures, in contrast with uncertain and unpredictable rules, drastically reduce the opportunities for corruption. Furthermore, managing the entire procedure online favours process standardization and reduces time-consuming and confusing paper procedures.

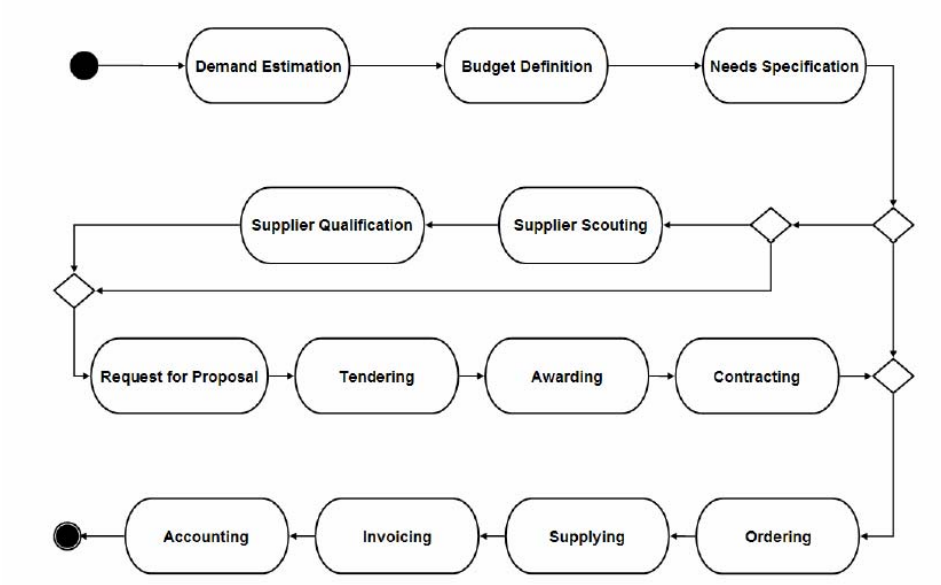
Definition of e-Procurement

In the literature, *e-Procurement* refers to the use of electronic methods, typically over the Internet, to conduct transactions between awarding authorities and suppliers. This process covers every stage of purchasing, from the demand estimation and the needs identification, through the tendering process, to the payment and potentially the contract management.

Its first phase is called *demand estimation*. During this first step, an organization estimates its needs. In a second moment, the previously identified needs are related to the available economic resources; hence we have what is known as *budget definition*. The *needs specification* matches the requirements detected in the first phase with available resources in order to determine the actual specifications of the goods and

services that can be procured. The *supplier scouting* consists in looking for suppliers that could provide services and goods compliant with the specifications drawn in the previous process and the *supplier qualification* aims to verify if the potential suppliers selected satisfy some general prerequisites (fixed by the buyer organization) in terms of quality and reliability. Once the potential suppliers are selected, the awarding authority can request them to formulate proposals that could satisfy the specific requirements drawn in the needs specification process (*request for proposal*). The *tendering* is the process by which offers to perform or provide goods are called for in a competitive environment and it covers the preparation of an offer and its submission to the awarding authority. The *awarding* phase begins with the opening of the tenders that are checked in order to select the winner: the chosen supplier

FIGURE 1
The workflow of the procurement processes represented through a UML activity diagram

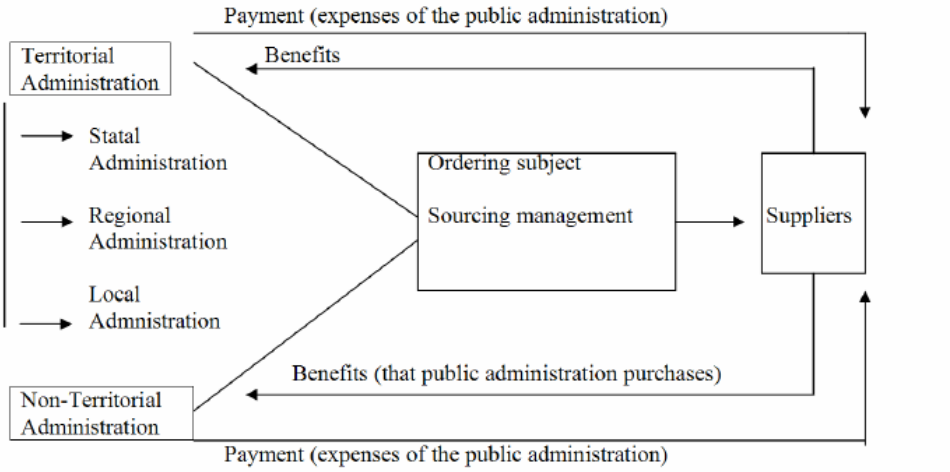


Notes: Branches are used to convey alternate paths and mean that not all processes must occur in a procurement instance.

and the rejected ones are informed on the results of the evaluation. This step is followed by the establishment of the commercial agreements with the awarded supplier (*contracting*) and by the order to the supplier (*ordering*). Once accepted the order, the supplier provides the buyer with the ordered goods or services (*supplying*) and, after their successful delivery, this phase is followed by the *invoicing* and the *accounting* ones.

As stated in the study on "Access to SME's in Public Procurement Contracts" by the European Commission - DG Enterprise, the typical evolutionary stages of e-Procurement include the possibility of accessing tender notices for public contract via the Internet only (stage 1), the chance of taking advantages of tenders being provided electronically, namely, suppliers can either download the tender documents via the designated website or are transmitted by email upon request (stage 2) or, in the last stage, suppliers have the possibility of transmitting proposals electronically. Moreover, the third stage enables awarding authorities to extend the process to include e-Invoicing, e-Auctions and even e-Catalogue. These tree stages, however, on the one hand, depend on what we can call a "pre-requisite", the access to information and, on the other hand, they electronically manage a flow of information and contribute to make it more transparent and accessible.[5]

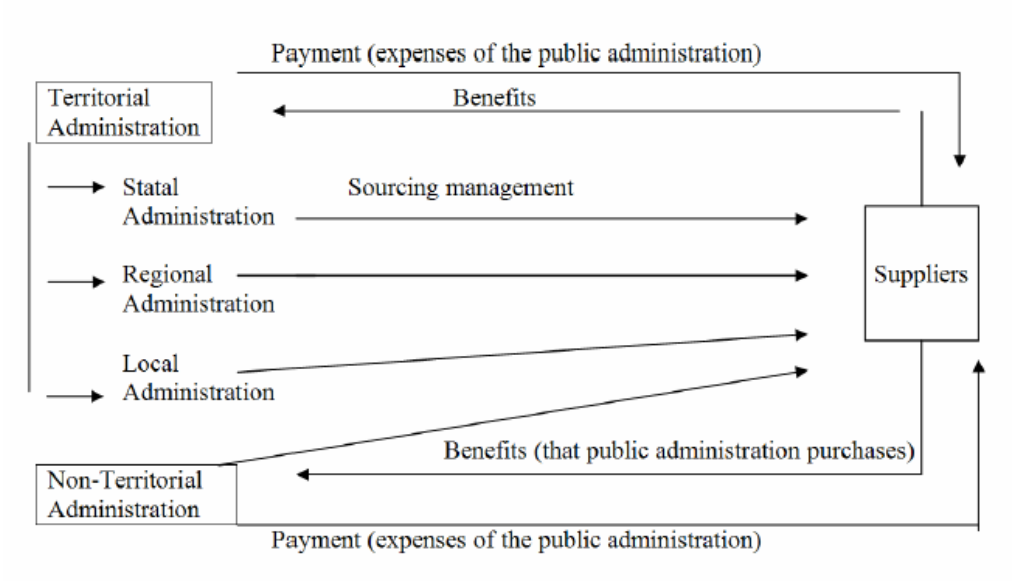
FIGURE 2
Indirect Procurement System Model



In general, a system of electronic procurement can be implemented in different organizational forms which are referable to two models, the *Indirect Model* or *IPS* (Indirect Procurement System) and the *Direct Model* or *DPS* (Direct Procurement System) which can be described through two key-concepts: the "contracting unit", namely the public administration that purchases goods and services and bears the relative costs, and the "ordering subject", which manages the *sourcing* phase of the e-Procurement process (*supplier scouting*, *supplier qualification*, *request for proposal*, *tendering*).

In the IPS model, the contracting unit estimates the demand, defines the budget and notifies the needs. The sourcing activity is handled by a different subject that does not coincide with the ordering one. In the IPS model the ordering subject can be a corporate body, which can be both public and private. The other phases of the e-Procurement process are managed by the contracting unit. Differently, in the DPS model the contracting unit coincides with the ordering subject: the public administration that purchases good or services manages the relative procedure of sourcing.

FIGURE 3
Direct Procurement System Model



In a few words, the difference between IPS and DPS is the following. In the IPS model the ordering unity does not manage the *sourcing* phase, which is managed by a different subject, whereas, in the DPS model, the *sourcing* phase is managed directly by the ordering unit. Nevertheless, from a juridical point of view, any e-Procurement model adopted must guarantee some fundamental juridical principles such as *equal treatment*, *transparency*, *security* and *confidentiality* (European Commission, 2004).

Hence, due to the high procedural management uniformity, to the reduction of the number of decision maker units and to a standard decision making process, the IPS model allows more inventory coordination and cost control, more simplification and accountability than the DPS. On the other hand, the IPS model may lead to less competitive markets than DPS because not every enterprise may be able to supply all the goods and services ordered by the central administration to cover all the needs identified.[6]

The DPS model, instead, allows the achievement of a high autonomy of the single administrations, facilitate the access of new suppliers, even of the smallest and local one and, as stressed by the literature, to more corporate social responsibility. On the other hand, the DPS does not facilitate budget and procedures coordination, does not offer uniform solutions for standard problems and induces a loss of control due to the improved number of decision makers.

PUBLIC PROCUREMENT ON THE SUPPLY SIDE: THE CONSIP EXPERIENCE

The Italian experience revealed the need to obtain a balance between the promotion and rollout of e-Procurement through a compulsory market, as in the IPS model described in the previous section, and the possible subsequent restriction to competition due to the fact that only big businesses may be able to supply all the goods and services ordered by the public administration. However, the centralization of purchases allows the public administration to achieve better economic conditions, thanks to the aggregation of demand and the increase of its contractual strength.[7] Besides, the centralized purchasing models can favour the emergence of public spending areas which before were not competitive, owing to the fact that, when considered singularly,

their size would have been too small for consideration under community standards.

The primary driver of e-Procurement in Italy was the "Rationalization Program on Public Spending for Goods and Services" mandated by the Financial Act in 2000. This program was part of a wider reform of the Italian public sector in the '90s, that aimed primarily at the optimization of public spending and at the modernization of the public administration through the diffusion of ICT. At the same time, the Italian Anti- Trust Authority was focused on strengthening public procurement practices through fairer competition and audit recommendations that improved cost efficiency in the purchasing of goods and services. Hence, the first aim of Italian government was obtaining significant savings in expenditures for procurement goods and services and "opening up the government supply market to make it more competitive" (Magrini, 2006), meanwhile the reduction of corruption and the increase in transparency were seen as side effects.

The responsibility for the Rationalization Program was delegated to CONSIP (Concessionaria Servizi Informatici Pubblici), a private company owned by the Ministry for the Economy and Finance (MEF). CONSIP is a public information services agency and provides consultancy, assistance and IT solutions aimed at the innovation of public administration (Piga, 2004).

It must be stressed that the "first" e-Procurement model adopted by Italian government was a sort of IPS, as described in the previous section of this paper. In 2000, central public administrations were obliged to purchase through CONSIP, whereas local entities were not obliged to buy through national frame contracts, although they were required to take into account the price and quality displayed in the agreements. One of the most important disadvantages of the mandatory adoption of national frame contracts was that small and medium enterprises (SMEs) felt cut out from the market, which was left open only to few big enterprises. To answer to the pressure from SMEs, in 2003 and 2004 the "mandatory market" was lifted and public administrations were set free to negotiate their own contracts.

Currently, the e-Procurement model in Italy is comprised of electronic shop, online auctions and the electronic marketplace (Buscemi, 2006). Hence, CONSIP strategy is threefold: it stipulates national frame contracts with suppliers and allows public administrations

to purchase directly online via an e-Shop; it runs online auctions (for purchases above and below EU threshold) on behalf of public agencies or supporting them in the bidding process; finally, it sets up the public administration's e-Marketplace (for purchases below the EU threshold).

The e-Shops and on line auctions tools are used for the purchase of goods and service above and below the EU threshold. On the one hand, e-Shops are built according to the frame contract based on a "many to one" approach with multi-vendor product catalogues. With the stipulation of national frame contracts, all the contractual and economic conditions necessary for the conclusion of a single purchasing contract are defined. Along with this, there is no cost for the administrations which, after having defined their own needs and purchasing requisites, provide for the provisioning directly to the suppliers. The acceptance of the contracts on the administrations' side happens, then, only through the emission of the supply required. In this way, the administrations have also available the analytic data for spending control, and they manage directly their payments with regard to their suppliers. E-Shops are particularly suitable for large volumes of standardized goods characterized by a not high price volatility and low obsolescence.

On the other hand, reverse online auctions are increasingly recognized as a platform for purchasing goods and services that are specialized, highly configurable, with high price volatility and rapid obsolescence.

As far as concern the e-Marketplace, built by IBM, it can be described as a "flea market" where public administrations can purchase directly from suppliers catalogues or submit a request for quotation. It is open to all Italian suppliers and, unlike the e-Shop, it is based on a single vendor product catalogue where products are found in specific areas. Both the registration of suppliers and buyers are completed online and orders can only be placed online.

The development of the e-Marketplace was a direct response to a need to support SMEs. In fact, a large portion of the Italian economy is based on small and medium enterprises, which pushed for having equal access to government orders. The SMEs were concerned that in creating economies of scale through the aggregation of demand, they would be excluded.

Currently, public administrations have no legal obligation to buy from the system. They can use the frame contracts or proceed autonomously to the purchasing of goods and services. In the latter case, however, if there is an active CONSIP frame contract and the goods are comparable among themselves, they must use the price-quality parameters. Moreover, administrations may decide to use the frame contract or recede from any previous act, negotiated with the suppliers chosen by CONSIP. The administrations that do not adhere must justify their motivations for purchasing goods and services at prices and conditions which were less advantageous than the ones offered in the frame contracts.

The introduction of the Rationalization Program on Public Spending has allowed the realization of important standards of quality in the Public Administration's purchasing processes. In particular, it has been possible, up to now, to monitor the state of the art in the supply market, for a vast range of goods and services, developing a constant assessment of service levels that can be guaranteed by the free market. This type of assessment is of vital importance, considering the fact that service levels are constantly and dynamically changing.

At the same time, this program has allowed for a reduction both in direct costs and in indirect costs. On the one hand, the reduction of direct costs has been made possible through the realization of demand aggregation processes, the development of competition among suppliers, and the attainment of satisfactory levels of product standardization. On the other hand, the reduction of indirect costs has been made possible by using an online bidding and ordering mechanism, the centralization of litigation, and, more generally, thanks to the realization of simplification of the purchasing process. Finally, the model dictates that CONSIP carries out a supply monitoring function, with the goal of guaranteeing the respect of the predefined qualitative levels.

The technological evolution on the one hand, and CONSIP's specific knowledge in the field of information technology on the other, have allowed for the adoption of technologically advanced tools for facilitating the meeting of suppliers and administrations, promoting a series of initiatives which have, as a goal, that of building a system of public e-Procurement.

As already stressed, e-Procurement is a way for managing negotiation procedures for purchasing goods and services that take

advantage of the possibilities offered in the diffusion of the Internet and e-Commerce. The growing interest regarding the introduction of systems of e-Procurement in the public contracts sector can be ascribed to the real possibility, offered by these instruments, of rendering the provisioning procedures more efficient. In fact, experience already gained in the use of these tools reveal how the use of advanced technological systems for the purchase of goods and services brings with it savings which stem from a reduction of costs relative to product research on the administrations' side, and a reduction of spending for commercial transactions.

More specifically, e-Procurement technologies realise a virtual market, open to qualified suppliers (and goods) according to not particularly restrictive selection criteria, in which public administrations can select goods and services offered by several suppliers. The entire process is digital, using digital signature in order to guarantee transactions legally.

Among the major advantages that a public administration can obtain through a system like this there are:

- costs and process cutting,
- potential broadening of suppliers base,
- easy access to selected goods (pre-defined quality standards),
- information transparency and ease of comparison among goods,
- purchases logging and subsequent expenditure monitoring,

while, from the suppliers side advantages are:

- selling cost reduction (due to broadening of potential customers base and lower intermediation cost),
- major visibility,
- more competitiveness especially in local markets (for small and medium sized enterprises),
- B2G introduction, especially for large sized enterprises, in addition to existing B2B and B2C.

There is no doubt that the purchasing centralization model has given benefits within the Public Administration. Still, this model leaves unanswered some questions whose solutions are not simple.[8]

First of all, one must consider that the public administration seeks a frame contract after a necessity, a need, has developed within the administration itself. In the attempt to find an answer to its need, it turns to the system represented by the Rationalization Program on Public Spending. CONSIP does not participate actively in this process, but instead acts as a simple observer, and does not have the possibility of intervening, anticipating purchasing and directive strategies that may need addressing and development. CONSIP can do nothing more than take note that a specific provisioning necessity that is in need of a certain answer has been produced.

One of the consequences of the absence of direct participation in the question-forming process, has to do with the substantial inability, on the CONSIP side, to forecast adequately the evolution of needs within individual administrations. This fact, in particular, does not allow for a satisfactory planning of demand, or rather a preventive action with the goal of optimising the answer to assumed future needs.

A similar plan for necessities would allow a substantial reduction of waiting time for an answer to specific need. More precisely, from the moment in which a specific need emerges, the norms dictate a series of formal steps for setting up a public bid, with the goal of building an adequate frame contract. The time it takes to set up a bid, including the evaluation of all the offers, the acknowledgement of the winner and the activation of the agreement, is not short. It can take up to twelve months, in function of the specifications of the frame contract. Thus, it is evident that an administration's need may not be addressed in a short time. By contrast, it can happen that an administration's specific need is given a temporary answer by using short-term solutions that might be rendered obsolete in a subsequent frame contract. It is evident that the rigid nature of the mechanism of public bidding cannot always be in accordance with the search for flexibility and quick answers.

Besides these problems, it must be underlined the lack of guarantee of access to the frame contract for a generic public administration. In fact, let us hypothesize that a certain administration needs a certain number of products in order to carry out its activity (for example, personal computers). The administration can choose not to announce a bid of its own, and instead to wait for the establishment of a national frame contract. At the time of its activation, which will make available a certain number of the products of interest, if other administrations

acquire all the available products before the administration we are observing can access them, the request will not be able to be satisfied. In other words, there is no system that "prioritizes" needs: it lacks a model, shared by the public administrations, that is able to guarantee, upon presentation of a specific need, the satisfaction of that need by means of a centralized agreement.

Finally, the Rationalization Program of Public Spending, has a non-negligible consequence over the small and medium-sized firms, which the implementation of the e-Marketplace has not permitted to overcome yet. On the one hand, national frame contracts enabled the start-up of the market, expenditure aggregation and helped price reductions. On the other hand, however, small and medium enterprises felt cut out from the market while public agencies were not enough skilled and prepared to switch to the new procedures and "reported poor quality of the supplies, late deliveries, excessive ties imposed by national frame contracts and limited assistance by CONSIP in the assessment of their needs and in follow up operations".[9] There has been an attempt to address this problem by creating a norm that would make the use of CONSIP frame contracts optional even for the central Public Administrations. Obviously, a similar norm is helpful for small and medium firms, but it has not been possible to verify yet, if this strategy will be able to solve a problem that is rather relevant for the Italian economy.

It must be stressed, however, that the use of e-Procurement has strongly increased since its adoption as well as the number of suppliers, that is to say that there has been substantial uptake in the use of e-Shops over the last years and that the introduction of e-Procurement tools has led to increased competition. According to CONSIP, the number of qualified suppliers increased from 324 in 2004 to 603 in 2005 and, over the same period, the transacted value passed from 8,3 million of euro to 13,3.

Although this increase cannot *per se* point to reduce corruption, it unquestionably shows the existence of a wider array of opportunities for potential suppliers. Furthermore, "the possibility of accessing online information about auctions provides real time notification of new business opportunities, thus reducing the so called "power of invitation" whereby a public official decides which enterprises to invite to the tender and/or tries to keep the call secret as long as possible" (Magrini, 2006). Moreover, standardized products with clear technical specifications

usually transacted on the e-Marketplace or during online auctions generate anti-corruption benefits and help a more transparent flow of information inducing a reduction in the existent informational asymmetries.

PUBLIC PROCUREMENT ON THE DEMAND SIDE: THE HERMES PROJECT

While information and opportunities grow, and public procurement procedures becomes more transparent, thanks to the use of ICT, users experience new boundaries due to the increase difficulty of finding the truly needed information at the right time and without mattering about their source.

Enterprises, and SMEs in particular, are often misaligned with the wide offer of tenders which are provided by the Public Sector: problems arise due both to the huge amount of different procedures setup in a short time and to the difficulty of the private sector to follow geographical opportunities. Another factor affecting the effectiveness of e-Procurement clearly refers to overabundant regulation that often characterises the answer procedures, as well as a number of explicit or implicit boundaries referred to the proponent.

In few words, even a strong and fully functional e-Procurement system, could be prevented to work, if enterprises (the “demand side”) are not able to precisely know which opportunities are available at a certain time, if they might be of some interest and, finally, if they could be eligible to participate to the tender, according to specific requirements.

Apart from the political commitment, which should favour the adoption of a standardisation in the regulation on informational format and procedures referring to e-Procurement at an international level, e-Government Service Providers should play a significant role in eliminating informational burdens and fostering entrepreneurial knowledge of public opportunities, while fighting a new form of potential “opacity” due to the overabundance of the information and the difficulty in pick it up.

In 2003, Methis Sviluppo, an Italian-based consultancy company, begun to develop a methodology and an Internet Portal

(www.hermesimprese.it) aimed at defying informational asymmetries in public procurement (not just "e"-Procurement, even if Internet, as a media, plays a crucial role in this project), giving Italian enterprises more accurate and sharp information on public opportunities at a European-wide level.

Hermes – Real Time Business Alert ® fully represents a private-provided e-Government service, as it uses and re-compose information available at a public level, while giving to them an added value stemming from the format it is disseminated, making people paying for such added value (even at a differentiation) and being totally complementary to the Public Administration's role. Moreover, it represents a case of "gone-to-market" applied research, where private capital has been invested, together with public funding, and where continuous innovation is pumped in, in order to assure always better results to the constituency.

In what follows, we point out the main lines which inspires this project, which has been experimented on a panel of Italian enterprises, thanks to an agreement with one of the operative division of the Confederation of Italian Industry (Sistemi Formativi Confindustria). In that sense, the Hermes – Real Time Business Alert ® also represents a truly knowledge economy by-product, having put into practice the learning-by-users approach which characterises the rise of such a new antropogenetic model, to use Boyer (2004) words. In this specific case, real needs and expectations of users have been widely used to deliver a perfectly constituency-fitted product; this approach also characterises the actual level of R&D activities, whose goal is to provide even better and sharp services, while enlarging the perspective audience.

Main features of the project

For sake of simplicity, we can split Hermes conception in five stages. The goals linked to the first two stages have been almost reached, while the other three need further development:

Stage 1: eliminate asymmetries thanks to speed and sharp profiles

Stage 2: promote the knowledge of opportunities

Stage 3: foster the development of a research engine

Stage 4: help Public Administrations in providing information and control the processes

Stage 5: internationalise the service

At present, the Hermes – Real Time Business Alert ® solves two main problems linked to the production of information on tenders, whenever they refer to electronic handled procedures or not: (a) it allows enterprises to receive perfectly profiled and clear information on tenders; (b) it makes enterprises receiving them in real time.

This answer to the first two objectives, mainly through the development and the adoption of two different tools: (1) a profiling tool for the tenders; (2) a profiling tool for the enterprises. Both of them rely on an open-source relational database and Internet portal, and on a daily work by a three-people scouting team.

Profiling tool for the tenders aims at classifying them following two approaches, linked to the geography and to the trade categories. Both these approaches stem from agreed procedures with panel-enterprises. In particular, the experimentation, lasted one year, involved ten local associations of Confindustria, overall representing about 5,000 enterprises, making an attempt to audit enterprises both on the actual and the optimal format to receive information.

Hermes staff actually monitors both traditional and ICT-handled tender procedure at a worldwide level, even with a stronger attention on EU-25: once the tenders are monitored, they are translated into Italian language (if coming from abroad) and organised following a three-fold approach:

- First information, which gives highlights to enterprises by email
- Information at glance, which gives enterprises deeper knowledge, even concentrated in a page
- Complete information, which usually provides the entire set of information related to tenders.

Information are split taking into account the nature of the opportunity (i.e., public funding or strictly considered tenders, and in this case, deepening the traditional statistical-base trade categories approach) and on a geographic base, and then instantly reorganized and daily send to customers.

Users are profiled in the beginning, taking into account a number of features, such as their core activity and their usual geographic area of

business: this, in order to send them a perfectly profiled information, and to price them just for what they really need.

At the moment, users are invoiced on the basis of a matrix – the same that the ICT infrastructure uses to distribute information – relying on the average information they daily receive: in practice, they pay a fee at the begin of their contract period, based on the number of geographical / trade sector they are interested in.

Such an approach succeeded into solving a lot of enterprises' problems, especially those emerging at a SME's and micro-enterprises' level. In particular:

- it strongly reduces asymmetries among Public Sector and enterprises, substituting to the latter into its role of fair informational provider;
- it reduces the enterprises' uncertainty both with reference to the availability of real-time information and to the degree of interpretation which tenders often requires;
- it prices the additional value using a fair approach, making users paying on the basis of the amount of "structured" information they require.

In this sense, Hermes – Real Time Business Alert ® is designed as a public-like e-service, provided by a private company. The main difference it presents, in relation to other similar services, relates to the profiling approach – at both demand and supply level – and the degree of "added valued" linked to the way and the speed information is provided. This is clearly the result of the experimentation approach, which put into practice the latest theory, which posits the possibility of quality improvement in ICT-based products, through "learning by coordinating" among producers and users.

Finally, even if relying on a complex ICT info-structure, Hermes – Real Time Business Alert ® will always require a certain amount of workforce, in order to produce better results. In particular, the effort of Methis Sviluppo are going in the direction of refining the automatic search engine and to foster the real-time providing procedures, while aiming at using workers to refine, verify and format information. In fact, while the first phase should continuously improve through the adoption of better technology, the latter will always be based on the ability of

human staff to interpret tenders information and translate non-standard formatted and heterogeneous data into a structured and fully interoperable knowledge base. This clearly represents the real added value of this tool, and the main reason for pricing a public-based informational service.

Making these features successfully functioning will solve many other problems, related to procurement procedures. At first, they will strongly contrast boundaries related to international differences, both with reference to language and to ability of discovering crucial information. Secondarily, they will foster international competition and cooperation, while clearly improving the ability of enterprises of selling their service and products, or even to use financial support-schemes in order to wide their activity, also abroad. Finally, they will help the Public Sector in providing more structured information on tenders, while acting a more efficient control on the entire management process related to public procurement: this will concern traditional and e-activities, without any differences among central and local administrations, and minimizing their financial burden to acquire such services.

NOTES

1. The transaction cost theory focuses on the comparative efficiency of different ways to organize economic transactions, and specifically develops the analysis of the choice between hierarchical, network and market solutions, while institutional economics applies the transaction cost approach to the institutions, stating that their survival depends on the relative comparative efficiency.
2. In fact, as stressed in OECD (2005), procurement, in any country, is one of area most vulnerable to corruption. Procurement involves a high degree of discretion in decision-making both in the nature of the goods or services purchased and also on the choice of contractor.
3. A different situation concerns the case in which a firm bidding for a public contract bribes a potential competitor not to bid or to deposit an artificially high bid. In this case corruption is not due to a “principal-agent” problem but to the desire of avoiding competition because competing would mean a lower level of profits for both of them.

4. In fact, a controversial practice is, for instance, the release of information on all bidders after the award of the public procurement contract that might help bidding firms monitor the behaviour of their competitors.

5. From the technological point of view, the applications of e-Procurement are differentiated mostly by the degree of ICT use in the different phases of any given project. The simplest application use ICT only in the publicity phase: tenders can be published on line, or, even more simply, news about the publication of a call for tenders can be made available on line. More complex ICT infrastructures are necessary in order to make it possible for potential suppliers to accept economic offers on line. Even more complex systems are needed for the electronic management of purchased supplies, which require shared standards for electronic data exchange in the ordering, invoicing, accounting and payment phases.

6. In particular, there might be a stronger loss of competition if both central and local public administrations are obliged to purchase through a single subject (as in the IPS). Even if, on the one hand, this provision can facilitate market start-up, enable expenditure aggregation and brought about as price reduction, on the other hand, small and medium-sized enterprises (SMEs) can feel cut out from the market, which would be left open only to a few big enterprises. Moreover, another disadvantage of IPS model is due to the fact that its implementation requires a high organizational change and the necessity of human resources reallocation and training.

7. We could quote many references about this topic. See, for example, Garofoli & Sandulli (2005), Fiorentino (2004) and European Commission (2005).

8. The problems discussed in this paper at qualitative level are easily monitored by means of direct interviews with those responsible for the so-called *ordering points*, i.e., the organizational units within the public administrations, which have the task and/or the responsibility of interacting with the central purchasing system represented by CONSIP. Unfortunately, it appears extremely difficult to find quantitative data to better identify the points at which the system performs better. In fact, while it exists a vast amount of information about the number of National Frame Contracts stipulated, the number of on-line auctions realized, and the number of accesses and

transactions carried out in the marketplace, it does not exist a corresponding conspicuous information regarding the difficulties that the public administrations present in their relationship with the central purchasing process. In this sense, only recently some initiatives for a rigorous analysis of user satisfaction have begun to be undertaken.

9. Related to this subject, it is interesting to note that in 2003 took place an initiative, carried out autonomously and now suspended, by a series of small and medium firms which brought about the creation of the website www.controconsip.it. This initiative had, as a goal, the protection of small and medium firms in the administration supply process; in their opinion, CONSIP violated this supply process, since it effectively impeded free competition. News about this initiative can be retrieved from http://db.formez.it/ArchivioNews.nsf.

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