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Article

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Public Procurement of Innovation: A Cultural Challenge!

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Abstract

The promotion of innovation is a key objective of modern public policies promoting sustainable development and public procurement of innovation can be considered as a strategic instrument of such policies as it is clearly expressed by the recent EU Directives on public procurement.

The concept and the requirements of public procurement of innovation (PPI) are studied in this paper identifying traditional obstacles to its dissemination and suggesting several initiatives allowing an easier application of this concept compromising legal traditions with innovative rules.

Special attention is given to the new Portuguese legal framework transposing 2014 Directives focusing on its new potential but also on shortcomings that should be corrected shortly.

Keywords

public procurement of innovation (PPI); EU directives; MEAT; flexibility; public interest

1. Why Innovation?

According to *[Mazzucato, 2018*], "*If there is one thing that economists agree on (and there are not many) is that technological and organizational changes are the principal source of long term economic growth and wealth creation* " and, of course, such changes imply innovation, or using the well-known term coined by [Schumpeter, 1954] "*creative destruction*" inventing new products, new processes or new channels connecting the market players. The impact of technologic innovation was estimated by [Solow, 1987], concluding that it is responsible for more than 80% of the economic growth.

However, innovation is becoming even more important during last two decades because several trends are now strongly prevailing in modern economies of developed world:

A - Digital economy is becoming the main arena for communication, exchanges, cooperation and added value generation through trading and negotiation as most consumers use and are connected though smart phones (in Portugal, more than 7 million from a population of 10 million) *[Marktest, 2018*] or other devices;

B - Globalization was spread not just due to the reduction of barriers but also as a consequence of digital economy being each consumer just one click away of each seller from any geography;

C - Supply is exceeding demand for most goods or services and so markets are demand driven which means that each producer or seller has as main objective to obtain the preference of the consumers explaining why when a corporation is evaluated the portfolio of contracts and customers can be much more important than traditional accounting figures.

This is why innovation has become so important as a strategy to seduce customers and why is feasible because digital technologies tend to be cheap, flexible and widely applicable.

Furthermore, innovation can be also promoted by SMEs which are the major source of employment and can enhance local and sustainable development.

The most valuable corporations are based on continuous innovation as Google, Apple or Microsoft and so any modern economy has to design a development strategy giving special priority to innovation. Extensive research studying the relationship between innovation and economic growth has identified significant interdependency of three types: Innovation leading growth, growth leading innovation and bidirectional connection between innovation and growth for most European countries [*Maradana et al, 2017]*

Innovation is often associated to new products produced by private companies but behind such successes there are important public investments made under strategic public policies which have been a key necessary condition for their development. Well known examples include the Navy computation project, the Defense Project (DARPA), the public smartphone project or the CIA screen project which have allowed the development of the first computer (ENIAC), of Internet, of iPhone or of touchscreen technology, respectively.

This is confirmed by the wise quotation by [*Mazzucato, 2018*], "*Innovation is a collective process, with different types of public institutions playing a pivotal role*".

Therefore, the need to design public policies promoting innovation into most States does not need any additional justification but the discussion about which are the most effective political options is quite an interesting debate and four major options have been adopted:

A - Funding Research and Development reinforcing the links with industry and services hoping to increase innovation;

B - Establishing a system of intellectual property rights (IPR) often associated to tax benefits to increase the profits from innovation;

C - Offering venture capital to selected startups hoping that they will find economic and financial sustainability;

D - Using public procurement to stimulate innovation, or, shortly, public procurement of innovation (PPI).

All these options have quite a long history and perhaps one of the oldest examples of **D** was the acquisition of a new communication system (Telegraph) by the US Congress to the famous engineer Morse on 1843.

The first EU Directives on public procurement addressing innovation are 2004/17/EU and 2004/18/EU but just the new Directives 2014/23/EU, 2014/24/EU and 2014/25/EU focus innovation as a key priority [*Estorninho, 2016*] which can also easily understood because they were proposed by the European Commission and approved by the European Parliament to cope with the deep economic and financial crisis started on 2009 and to speed up the implementation of the strategy EU 2020.

The rationale behind this political option is quite clear: if public markets account for more than 17% of EU GDP, why not directing such high budget to promote a consistent strategy for development enhancing innovation?

However, more conservative or traditional groups criticize this option saying that it will increase the risk of bad contracting because it introduces higher levels of uncertainty and therefore a

discussion on PPI will be presented in this paper contributing to a better understanding of its risks and benefits.

2. What is Public Procurement of Innovation (PPI)?

According to the [*European Commission, 2017, a*)] "*public procurement of innovation*" refers to any process that has one or both of the following aspects:

- buying the process of innovation;
- buying the outcomes of innovation.

In the first instance, the performance of the public procurement contract starts with the research and development of products, services or processes, which do not exist yet. The public procurer effectively becomes part of the innovation from the very beginning. It describes its need with little to no concrete idea of the solution and supports innovative businesses and researchers in finding the perfectly-suited product, service or process.

In the second instance, the public procurer, instead of renewing or replicating existing contracts, chooses a product, service or process that is new to the market or simply new to the public procurer.

The adoption of PPI implies being able to describe the relevant attributes, goals and performance levels avoiding the full specification of the contract object. This approach requires a deep understanding of the "*raizon d´être*" behind the decision of contracting which should be fully justified and such requirement is quite well exemplified by technologic contracting where the easiest approach is "copying " specifications of an available product avoiding any innovation and favouring the so called "*locked in*" capture by a supplier of goods or services.

The new Directives provide a general background to enhance innovation through several procedures allowing different types and levels of innovation but PPI implies also a deep cultural change of public administration values and processes avoiding the most bureaucratic traditions. *[Tavares, 2013] [Tavares, 2014] [Georghiou et al, 2014].*

3. How Can Public Procurement Prevent Innovation?

Most often private business considers that public procurement is an obstacle to innovation and this may be the case if the public contracting authority prefers:

A – Select candidates requiring high levels of financial and/or human resources levels

This approach tends to exclude SMEs which are the major source of innovation and this is particularly true in Digital Economy.

Strong evidences confirm that easier participation of SME's in public procurement can contribute to PPI [*Saastamoinen, 2018*]

B - Specify the contract object not in terms of performance but rather in terms of their features including their physical description and their technological properties.

Of course, such specification leaves no room for innovation and the full specification of technological properties tends to imply the choice for a specific brand or product.

C – Adopts a procedure to form the contract not allowing new contributions from the tenderer such as variants or a stage of negotiation.

This is often the case of the most common application of open or restricted procedures as well as direct invitation for lower value contracts. Obviously, these procedures do not allow the innovative contribution of tenderers to find better solutions for the contract object.

D - Excludes tenders abnormally low expressed in terms of the total price

Using this restriction expressed in terms of the total price may be against innovation because an alternative innovative solution may be more economical, and this is often the case in technological services.

E - Awards tenders in terms of the minimal price criterion

The criterion of minimal price does not allow the trade-off of quality-price being subject to competition and therefore all attributes but the price are fixed and innovation is not stimulated or, in some cases, even allowed.

4. Why Obstacles to PPI?

Consequently, promoting PPI implies rejecting these bad practices and so the reasons explaining why they have been adopted should be discussed:

A - Why high levels of financial and resources requirements?

This mistake is based on the assumption that "*bigger is better*" which is opposed to all modern management principles recommending specific thresholds for specific types of jobs as it is quite common in private sector. Who is contracting a big firm for some local rehabilitation work?

B - Why full specification of the object based on existing features of products available in the market?

Unfortunately, most public contracting authorities have a general lack of knowledge about the systemic features of the contract object and so the easiest alternative is "copying" catalogue features but this approach is not just against the principle of competition but also an opportunity to increase the risk of corruption through procedure documents designed to favor a single economic provider. A recent survey of the European Commission about factors of corruption and lack of competition covering the answers of a large number of economic operators identifies the biased nature of procedure documents as the major source of corruption and lack of competition [*European Commission, 2017, b)*]

C - Why traditional procedures not allowing new contributions from tenderers such as variants or a stage of negotiation?

Traditional Administrative Law has been based in most EU States on the assumption that public contracting authority has full information and knowledge about the contract object and so the classic procedures to form a contract are just three:

a) Direct invitation for lower value contracts;

b) Open procedure without negotiation and requiring full specification of the contract object;

c) Restricted procedure without negotiation and requiring also a stage of selection of candidates based on financial or technical conditions.

Thus, most contracting authorities are not using the other procedures presented by 2004 and 2014 Public Procurement Directives due to lack of knowledge, experience and self-confidence.

D - Why adopting an abnormally low tender condition expressed in terms of the contract price?

This rule stems from the assumption that no variants or room for innovation can be considered. Obviously, this rule condemns to the exclusion any tenderer inventing better approaches requiring less human or material resources.

This explains why an appropriate approach may be expressing this rule not in terms of the contract price but rather in terms of unit prices of all components used in each tender and this is why the Article 69º of the Directive 2014/24/EU refers to "costs" besides price.

E - Why using the minimal price as the award criterion?

Public contracting authorities tend to be attracted by this criterion because it is extremely easy to be applied and avoids any type of suspicion or doubts about their evaluation role.

5. The Directives of 2014 and PPI

The new Directives give a high priority to innovation as an accelerator of social and economic development pursuing the EU 2020 Agenda [*Piga and Thai, 2007] [Cunha Rodrigues, 2015].* as it is clearly stated in Recital 95 (Directive 2014/24/EU):

"It is of utmost importance to fully exploit the potential of public procurement to achieve the objectives of the Europe 2020 strategy for smart, sustainable and inclusive growth. In this context, it should be recalled that public procurement is crucial to driving innovation, which is of great importance for future growth in Europe."

The objective of promoting PPI is tackled by 11 recitals emphasizing:

a) The "*relevance of research and innovation, including eco-innovation and social innovation*" as "*main drivers of future growth and have been put at the center of the Europe 2020 strategy for smart, sustainable and inclusive growth*"(Recital 47).

b) The importance of "*Pre-commercial procurement. Driving innovation to ensure sustainable high quality services in Europe*" already presented by the Commission Communication of 14 December 2007 and helping to contract R&D services falling outside of the scope of these Directives (Recital 47).

c) The need to adopt technical specifications based on "*performance criteria linked to the life cycle and the sustainability of the production process of the works, supplies and services*" to promote competition and fulfilment of the contracting authority objectives (Recital 74).

The new Directives have also included a set of articles contributing and helping to introduce PPI:

a) Since 2004, the Directives are giving progressive priority to the adoption of an award criterion based on multicriteria evaluation of tenders [*Tavares et al., 2008*] *[Tavares, 2009]* behind the label of "*most economically advantageous tender* " (MEAT) (Article 53º-1 a) of Directive

2004/18/EC). The recent Directive 2014/24/EU reinforces the priority to adopt such criterion (Article 67º of the Directive 2014/24/EU) considering alternative and important formulations such the ratio quality/price or the linear additive model covering costs, durations, qualities, etc as well as the generalized cost function called "*life cycle cost*" (Article 68º of Directive 2024/24/EU). The adoption of MEAT is quite essential to implement PPI as it avoids the obstacles to innovation due to the minimal price criterion already discussed.

b) The mandatory adoption of e-public procurement since 18 October 2018 (Article 90º of Directive 2014/24/EU) bringing public procurement to the realm of digital economy and stimulating innovation through an easier access to public markets by SMEs *[Arantes et al., 2013]* and a significant reduction of paperwork as well as time and cost bureaucratic loads [*Costa et al., 2013*]. Furthermore, e-public procurement is responsible for the generation of a new market of public and private e-business applications based on e-platforms (virtual companies dossiers, e-catalogues, tender checking, multi criteria tender self- evaluation, taxonomic expert opportunity systems and selection of economic operators to be invited, performance contractors evaluation, remote digital signature, block chain applications to reputation analysis, supporting library for evaluation models and contract minutes, etc.) [*Tavares, 2011*].

c) The introduction of procedures oriented to form contracts spurring innovation, namely, the competitive procedure with negotiation, the competitive dialogue and the partnership for innovation and design contests.

Special attention should be given to these three procedures:

a) The competitive dialogue is appropriate whenever the contracting authority has clear objectives to be achieved but has no knowledge about the most appropriate solution (a bridge or a tunnel? a wastewater station using bio or chemical technology? etc.) as this procedure allows an open and collaborative method to construct and to evaluate the best options to be adopted.

b) The competitive procedure with negotiation is quite convenient if the contracting authority has chosen the most appropriate solution but it is not able to set up full specifications and if prefers opening room to innovation and negotiation concerning not just the physical and technical configuration of the contract object but also about the financial arrangements.

c) The partnership for innovation is the procedure closest to R&D pre-commercial procurement as it is based on targets and criteria to be achieved through competitive developments pursued by selected contractors. Such developments are justified if the available market products and services do not fulfil the defined targets. The final contract is awarded to the tenderer offering most promising results after a sequence of stages where partial results were evaluated and just the best competitors are being selected to move to the next stage.

Summing up, it is quite clear that the new Directives [*Tavares et al., 2014*] clarify the role of public procurement to promote PPI, present major guidelines and offer a wide variety of tools to implement this new culture and procedures.

6. The Case of Portugal: Main Cultural Traditions Of Portuguese Public Law With Implications On PPPI

Several cultural traditions can be identified in the Portuguese legal framework (Code of Public Contracts, CCP, published on 2008 and subject to multiple revisions, namely DL 111-B/2017 to transpose the 2014 Directives) having quite a significant impact on PPI, namely:

A - Full specification of the contract object

This tradition stems from the fifties when most public procurement outside Defence just included very basic common goods or services and public works based on implementation designs with full specification and no technological options. An interesting example is the Article 43º-1 of CCP and of DL 111-B/2017 preserving such tradition which requires an execution design as part of the procedure documents if the contract concerns public works.

B - Maximal price restriction to form a contract

The process of contract formation is based on the concept of "*Preço base*", introduced by CCP (Article 47º) which is the maximal price defined in the beginning of the process and that can be paid by the contracting authority to the contractor for the execution of the contract. This means that the selection of the procedure should be based on such upper limit assuming that such price can be determined even before starting the process of contract formation.

Obviously, this concept is much more rigid than the concept adopted by the EU Directives, the estimated value of procurement (Article 5º of Directive 2014/24/EU) and such lack of flexibility is against innovation. Even the concept of estimated price is found too restrictive for innovative contracts by several member States and so it is relaxed for such contracts (e.g, the French Code [*Ministère de l'économie, de l'industrie et du numérique, 2016*] and [*Ben Khelil, 2018*].

C - Duty of awarding and of contracting

The articles 76º and 79º state clearly that the contracting authority should award and contract the tenderer offering the best tender excepting in very special cases and this duty stems again from the general assumption that there is no uncertainty into the formation process "protected " by the "*preço base*". However, CCP was careful enough to acknowledge that in the case of Competitive Dialogue such certainty about the merits of the winning tender may not exist and so this exception is considered (Article 79º-1 f)). Unfortunately, the new law was not careful enough to relax this rule, namely for the new procedures also implying higher levels of uncertainty such as the Partnership for Innovation and the Competitive Procedure with Negotiation.

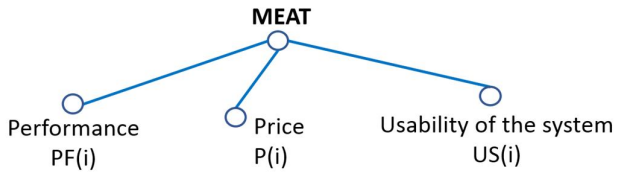
D - General adoption of the single criterion "*minimal price*" to evaluate tenders

The adoption of the minimal price assumes that all attributes, but the price, can be set up "*ex-ante*" according to their most convenient configuration which is not true because nowadays markets are in a continuous and rapid process of change inventing new attributes (materials properties, recycling systems, quality profiles, technological functionalities, etc.). Also, such attributes, even if they can be anticipated, cannot be assessed independently as they are interconnected by complex relations and so the specification of individual levels of requirements is not appropriate. For instance, the specification of the technological features of a Management Information System (MIS) has to take into account the interaction between features such as data recording, retrieval and searching implying that interdependent multiple attributes have to be

described and presented in the program of the procedure to describe the performance of the system related to each tender i, PF(i).

This means that even if the whole set of attributes relevant to define the object performance can be fully anticipated and defined, the multi attribute function , PF(i), describing such performance, should be specified and used as a partial contribution to the tree structure formulating the MEAT criterion to maximize the "*value for money*", compromising price and quality. For the MIS example, the MEAT criterion may be defined by the following evaluation tree (Figure 1):

Figure 1 – Evaluation Tree



It should be noted that a minimal requirement can be specified for each attribute associated to each node of the presented tree (for instance, PF(i) or US(i)) and any tender not satisfying each requirement should be excluded as it is confirmed by the important and recent decision of the Court of Justice of the European Union (Judgement of the process C-544/16 of 20 September 2018)

The main exception to the adoption of MEAT is the acquisition of standardized goods explaining why the Directives give so much priority to the adoption of MEAT, as it was mentioned.

Unfortunately, a less modern culture in Administrative Law based on scarce knowledge of present markets believe that the features of the fifties still prevail and so it tends to be in favour of the "*minimal price*" approach which nowadays is not appropriate even to buy a laptop or a printer. This may explain that in Portugal the percentage of contract awarding based on the minimal price criterion has increased from 48% in 2011 to 73% in 2016 [*Tavares, 2017].*

E - Reduced flexibility to introduce modifications along the project execution

The DL 111-B/2017 as well as CCP establishes the rules for the execution of contracts classified as "*administrative contracts*" which apply if the contracting authorities belong to the first group of public contracting authorities (Article 2º of DL 111-B/2017) and in some other particular cases. The concept of administrative contract is not included in the Directives but it is quite important in Latin countries (Spain, Portugal, Italy, France).

The rules adopted to permit any modifications of such contracts (Article 370º to 382º of DL 111-B/2017) are much more restricted than those defined by the Directives.

This lack of flexibility is also an obstacle to the development of more innovative public procurement.

7. The Case of Portugal: The Transposition of 2014 Directives

Fortunately, the DL 111-B/ 2107 [*Tavares, 2018*] transposes most of the new principles and developments presented by the Directives favouring innovation such as the new procedures of Competitive Procedure with Negotiation and the Partnership for Innovation allowing an optimistic view about this new legal framework.

However, the five traditions pointed out are still present and so several amendments should be considered in future revisions:

a) An article was added about innovative contracts (Article 301º-A) stating that the usual rules can be relaxed for such contracts, but further guidelines are required to reduce litigation risks;

b) The Directive 2014/24/EU is clear about the innovative requirement for being applicable the Competitive Procedure with Negotiation, the Competitive Dialogue and the Partnership for Innovation through its Article 26-4 stating that *"(a) with regard to works, supplies or services fulfilling one or more of the following criteria: (i) the needs of the contracting authority cannot be met without adaptation of readily available solutions*; *(ii) they include design or innovative solutions.*"but, unfortunately, the DL 111-B/2017 just refers to *"goods or services that include the design of innovative solutions"* (Article 29º-1 b)). Obviously, this second condition is more restrictive than the one adopted by the Directive as it does not mention public works and because there is a wide scope of innovative contracts not including any conception but rather new approaches concerning materials, execution processes, mix of products, etc.;

c) The general principle of adopting MEAT as the award criteria is stated by Article 74º-1 a) and Article 75º of the DL 111-B/2017, but, regrettably, the Article 74º-1 b) considers that the minimal price criterion is an example of MEAT which is an obvious conceptual contradiction and reduces the practical impact of the Directive principle;

d) The Articles 30º-1 and 31º-1 of the Directive 2014/24/EU impose the adoption of the award criterion based on the ratio quality/price for the Competitive Dialogue and the Partnership for Innovation respectively, but unfortunately, DL 111-B/2017 ignores these important requirements;

e) The rules concerning the "*Preço-Base*" and the duty of awarding and contracting for the formation of contracts should be relaxed.

8. Final Remarks

Nowadays, innovation is an essential component of any sustainable development strategy as it is well expressed by the European Strategy EU 2020 and the new Digital Economy facilitates the global dissemination of a wider spectrum of innovative products and services. Demand driven innovation plays a key role in innovation policies and so PPI is a major objective of the new Directives approved by the European Union on 2014.

Traditional culture of Public Procurement has been based on the respect of a complex legal framework oriented to preserve the general principles of equity and transparency, of cross border mobility and freedom of establishment across EU and hence public contracting authorities tend to have less degrees of freedom and higher levels of responsibility than economic operators to organize and to implement their processes of procurement. Also, the culture of public administration has a more bureaucratic style than the private sector which does not promotes the application of new concepts and instruments [*Tátrai, 2018].*

This is why the application of PPI is still facing multiple obstacles and new solutions have to be found in order than PPI can achieve a relevant role in EU as it was discussed in this paper.

However, such process of change implies a change of the prevailing public culture, not just of the public law but also of the public administration as PPI has to be based on more competent and autonomous public contracting authorities. This means that a new balance has to be found

between the aims of stability and equality pursued by the public administrative culture and the objectives of improving the "*value for money*" through for more innovative solutions meeting the needs of the public contract authorities (see *[Aroso de Almeida, 2016], [Craig, 2012], [Feliú, 2014], [Otero, 2016]* and *[Guidi]).*

Portugal is not an exception about the existing obstacles to implement PPI not just due to a very bureaucratic culture still prevailing in public administration but also due to quite a complex legal framework giving more attention to the observation of very detailed procedural rules rather than to the promotion and evaluation of the intrinsic merit of the awarded contracts and of their execution. Also, several shortcomings of the DL 111-B/2017 transposing the Directives do not facilitate the application of PPI as it was discussed in section 7.

According to the previous sections of this paper, it is clear that the main assumption of the traditional legal culture on public contracts opposing PPI concerns the dogmatic believe that the public contracting authority has complete knowledge about the market and is able to describe the full specification of the contract object in the procurement documents including the required levels of quality in all relevant attributes not allowing room for innovation or trade-offs between attributes and price. The Portuguese case exemplifies well this assumption through rules such that the mandatory adoption of the " *preço base* ", the duty of awarding and contracting by the public contracting authority or the recommended award criterion based on the minimal price.

The development of guidelines, the dissemination of best practices and the organization of interdisciplinary training programs for public contracting authorities will be quite useful to modernize public procurement stimulating innovation and promoting the best "*value for money*" in each contract which is essential to the general aim of defending and serving the public interest.

Summing up, the issue of PPI should be approached as a process of cultural change covering not just public law but also public administration in order than public procurement will be aligned with modern markets and will be a key instrument of sustainable and coherent development.

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